



THE PHARM D PROGRAM: PROSPECTS AND CHALLENGES IN NIGERIA

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Abstract

Pharmacy profession has experienced tremendous changes over the years. In Nigeria, the profession is traceable to the colonial period when some people were trained to handle drugs and functioned as dispensers of medicines, sanitary officers, medical aids and anaesthetists in operating theatres. This progressed to the supply and dispensing of medications, bulk compounding and administrative functions by pharmacists and then to the acceptance of clinical pharmacy practice in the 1980s. PharmD program is part of the rapid changes being experienced in pharmacy practice and started in the United States over 5 decades ago. Today, the program has been introduced in many countries including United Kingdom, Canada, Qatar, Saudi Arabia, United Arab Emirates, India and Nigeria. Fueled by the increasing use of prescription drugs by an aging population, scientific advances leading to the introduction of new drugs and the emerging trend of pharmacists becoming directly involved in patient care across the world, PharmD program opens opportunities for pharmacy graduates to practice in US and other countries currently running PharmD and several new job prospects in academic/research institutions, hospitals, community pharmacies, glossary stores and NGOs and increase overall respect for the pharmacist. University of Benin has made inexorable bold steps in starting the program and this has now opened opportunities for other faculties of pharmacy in Nigeria. However, accreditation of the program by relevant bodies, slow progress in PharmD implementation by many faculties of pharmacy, low level of appropriate academic manpower, disparity within the pharmacy profession, rivalry between pharmacists and doctors, adequate remuneration for PharmD holders in public service, limited faculties of pharmacy, limited number of pharmacy technicians to assist pharmacists in dispensing functions and development/enforcement of areas of specialization for pharmacists in hospital and community practice are areas of major challenges in Nigeria. Like the health care delivery system itself, the PharmD program cannot thrive in isolation in the face of so much emerging technological innovations and uncertainties making it critical for pharmacists to create forward thinking and flexible vision of the PharmD program and the roles other health care professionals play in the evolving health care system.

Keywords: Health care delivery; Patient-centred pharmacy practice; Pharmacist; Pharmacy education

INTRODUCTION

Pharmaceutical programs have been around the world for thousands of years even though they have not been in the same way we now consider pharmacy today. In prehistoric era, man used medicinal plants to fight off ailments in a more or less compacted form. Pharmacological knowledge was

spread throughout the growing modern world, although the next instance of recorded pharmacy did not occur until the 1st century in China, after which it was well recorded throughout the Islamic Golden Age and other Near Asian artifacts. Advances in chemistry and botany in the Middle East yielded the discovery of medical uses of chemical compounds and how to

prepare medicines through distillation by scientists. Europe began to pick up on these studies after the Dark Ages, opened up apothecaries, and the scientists were able to take the early studies of the Middle Eastern scientists and apply them to their benefit.

Over the years, advancements in technology, scientific breakthroughs, and developments in the medical field continued to experience increasing growth in their contribution to patient care. Socio-demographic and epidemiologic transitions have imposed demands on health service provision, health sector reforms, challenges of aging populations, disease profiles, changing pharmaceutical backdrop, and new care models created to respond to changing disease patterns. These developments have had considerable impact on the different sectors of today's practice of pharmacy. In recent decades, pharmacy experienced the transition from the historical orientation of product-focused service to patient-centered approaches. In some countries such as USA and Kuwait, the profession has developed enhanced inter-professional relationships with other health care providers, particularly medical doctors and nurses. Changes have occurred not only in service delivery but also in other spheres and drug development in the scientific field has moved from innovative chemistry to molecular drug designs. Lately, the focus has been on predictive models, with the center stage being genetics. Today, the practice of pharmacy has transformed from experimentation to evidence generation.

In Nigeria, the practice of pharmacy did not start as a well defined profession as it is today. The training of those who handled drugs, other than medical doctors, was borne from the

necessity to provide assistance to expatriate medical officers. The first pharmacy shop in Nigeria, which marked the genesis of pharmacy practice in the country, was opened in Lagos in 1887 by Dr RZ Bailey for Europeans (Adenika, 1998; Erah, 2003). During the colonial period, those trained to handle drugs were called "dispensers" and functioned as dispensers of medicines, sanitary officers, medical aids and anesthetists in operating theatres. The role of the pharmacy professional followed the pattern of other British colonies and was in line with the developments in Britain (Daily Times, 1975). Wholesale drug trade resulting from the need to import drugs on a large scale became an additional role for the pharmacy profession. Since 1960, the education, legislations, and practice of pharmacy in various areas including academia, industries, hospitals and communities have undergone remarkable changes (Erah, 2003). While in the 60s and 70s, emphasis was mainly on the supply and dispensing of medications, bulk compounding in extemporaneous preparations, administrative functions including care and custody of drugs, drug tendering and purchasing, record keeping and accounting, staff supervision and management, manufacturing of drugs within the hospital system, due to the need to cost consideration, were witnessed in the 1980s. Within the same period, clinical pharmacy was introduced into the practice of pharmacy (Erah, 2003).

After almost three decades, the professional role of the pharmacist in hospitals and community pharmacies is still changing from a focus on product, dispensing and sale of medications to one of patient-focus as defined in pharmaceutical care (Hepler & Strand, 1989). The practice of clinical pharmacy in Nigeria hospitals and

community pharmacies has suffered setback from several factors including poor staffing, infrastructure, willingness of the pharmacists to add new evolving roles to their duties, lack of proper coordination of activities, lack of proper training for pharmacists, failure of pharmacists and many hospitals as well as community pharmacies to adopt new changes, and lack of self-confidence by pharmacists. These are also frequently compounded by the continuous resistance of most medical doctors against patient-oriented pharmaceutical services. The path for continuous growth of the pharmacy profession thus certainly requires expansion, resurfacing and modernization. This justifies the need for new pharmacy program that can produce the manpower required for the new roles.

PharmD Program Overview

In 1955, the University of California at San Francisco in United States of America (US) surprised many pharmacy professionals when she introduced the professional Doctor of Pharmacy (PharmD) degree. However, the program was met by a lot of resistance from among some pharmacy professionals in the US for several years. The profound positive impact of PharmD graduates in the health care delivery system prompted the American Association of Colleges of Pharmacists (AACP) and the American Pharmacy Professional Organisations (APPO) to take a joint unanimous decision to make PharmD the minimum requirement for the practice of pharmacy in US by the beginning of 1990s. Before this time, bachelor's degree in pharmacy, BS Pharm, was the first-professional degree for pharmacy practice and some schools and colleges of pharmacy offered a post-baccalaureate graduate PharmD degree.

The professional PharmD degree in the US prepares the graduate for patient-focused pharmacy practice with a curriculum that is very different from that of the BS Pharm. PharmD degree is awarded after four years of pharmacy school education, which includes extensive didactic clinical preparation and a full year of hands-on practice experience. Most States in US require students to take an entry test and complete 60-90 credit hours (2-3 years) of university coursework in the sciences, mathematics, composition and humanities before entry into a professional program. Many pharmacy students complete a bachelor's degree before entry to pharmacy school.

In Nigeria, the process of improving pharmacy education started in 1994 when the Federal Ministry of Health, through the Pharmacists Council of Nigeria (PCN), sponsored the Deans of Faculties of Pharmacy on a study tour of Pharmacy Schools in the United Kingdom and US. It was then recommended that pharmacy practice in Nigeria should be more patient-focused. However, the follow-up on this initial effort was hampered by the dissolution of PCN Governing Council in 1995. Subsequent to the inauguration of a new Governing Council in 1999, PCN made a policy decision to commence a shift from BPharm to PharmD in 2000. Both PCN under the chairmanship of Late Dr Fred Adenika and his Registrar, Late Pharm Rafindade, and the Pharmaceutical Society of Nigeria (PSN) then made strong requests for the University of Benin to embark on the PharmD program as the Faculty of Pharmacy in the University was willing to start the program. In fact, the communiqué of the first ever Special Pharmacists Summit held in 2002 called on PCN to ex peditate action on the phasing out of the BPharm program over the next 10 years.

PharmD Program in University of Benin

The approval of a 6-year PharmD program along with minimum academic standards (MAS) was conveyed to the University of Benin by PCN in February 2002 even though both the full-time and conversion program for registered pharmacists started in the University following approval by the Senate of the University in February 2001. The full-time program is either for duration of 6 years for applicants with senior secondary school certificate holders or 5 years for applicants with first degree in science.

The PharmD program in University of Benin is the first such program in Africa and was modeled after similar programs in many universities in US with the scientific contents of the British type of BPharm education in mind. The program was designed to educate and prepare graduates for practicing the profession of pharmacy in a variety of health care settings including the hospitals, community pharmacies, research and other academic institutions, and the pharmaceutical industries, in addition to regulatory and administrative settings. It was expected to create independent thinkers and problem solvers who are knowledgeable in all aspects of drug therapy and who can communicate and counsel health care professionals and patients. The 6 years curriculum, consisting of one year of pre-professional coursework in biological and physical sciences including physics, chemistry, zoology and botany, social sciences and the humanities followed by five years of professional pharmacy training, is structured to develop the high levels of scientific comprehension and professional skills. A comparison of

the years of study for PharmD in USA and Nigeria is shown in Table 1.

Table 1: PharmD years of study in USA and Nigeria

Duration (years)	Program
USA	
2-4	Undergraduate (associate or bachelor degree)
4	PharmD
1-3	Specialization (residency/fellowship)
Nigeria	
0	Senior secondary school education
1	Pre-professional education in biological, physical and social sciences, and the humanities
5*	Professional pharmacy education for award of PharmD
1	Internship program for professional certification

**Entry point for science undergraduate degree holders*

Although the BPharm curriculum in Nigeria already had significant volume of clinical exposure of pharmacy students, the clinical pharmacy and pharmacy practice contents are significantly increased in the PharmD curriculum as it is in the one approved by the PCN, while retaining the scientific contents in the BPharm curriculum. In the PharmD curriculum, all subjects already being taught in BPharm program including biological and physical sciences including physics, chemistry, zoology and botany, social sciences and the humanities and key subjects such as anatomy, biochemistry, physiology, pharmaceuticals, pharmacognosy,

pharmaceutical chemistry, pharmacology, microbiology, pharmacy jurisprudence, medicinal chemistry, pharmacokinetics, biopharmaceutics, pharmaceutical formulations, and clinical pharmacy and pharmacy practice are covered. New subjects such as pharmacogenetics, pharmacoeconomics, biostatistics and research methods, pathology, clinical toxicology and veterinary pharmacology have been introduced. Pharmacotherapeutics, which was being taught in some institutions as part of pathophysiology, has been separated from pathophysiology and spread over the last two years of study to better equip the students with sufficient knowledge and skills in drug management of diseases. Clerkship hours for clinical pharmacy practice have been increased from 135 hours to 810 hours and now involve attending ward rounds on daily basis during the fifth and final years of the course. Also, students now have to attend and present seminars regularly in their final years.

Non-Traditional PharmD Program

The Non-Traditional PharmD program is a recent development which is part of the American Council on Pharmaceutical Education accredited program in US. It is an important advancement in the level of practice of pharmacy that is designed to provide practicing pharmacists the opportunity to extend their education, enhance their clinical skills, and complete PharmD training while remaining in the work force. In the program, courses are often delivered using distance learning techniques, primarily internet-based education including classroom conferencing on the Internet and

videotapes with or without visits to the University campus where the program is resident. In some institutions, all applicants accepted into the program need to be, or willing to become, proficient at using personal computers and must have Internet access and an E-mail account. The didactic portion of the curriculum is sometimes designed to be completed in about 2 years with a 3 year maximum and the experiential portion is designed to take 1.5 to 2 years.

Prospects of PharmD

PharmD as Requirement for the Practice of Pharmacy

There are several studies that have demonstrated that pharmacists make significant interventions to reduce medication errors and adverse drug events (ADEs) (DHSS, 1970; Bond et al, 2001 & 2002). PharmD has positively influenced the pharmacy educational institutions and authorities through out the world. The program is now offered in several countries and many Western/European countries, and Asian countries, India and Pakistan, have risen to the challenge and taken timely decisions to introduce the patient-oriented program. Interestingly institutions in the Middle-East countries such as Saudi Arabia, Jordan, Syria and Egypt too have started 5 year PharmD degree courses. Some of the many countries that have introduced PharmD are given in Table 2.

With the recent increasing rate of introduction of PharmD in some countries, it is expected that within the next few years, PharmD will be a minimum requirement for the practice of pharmacy in several countries, including Nigeria.

Table 2: Some countries running PharmD (Wikipedia, 2010a)

Country	Status of PharmD
<i>Patient-Oriented program</i>	
USA	Pioneered PharmD in the late 50's
Canada	Pioneered by Universite de Montreal in 2007
United Kingdom	Started a few years ago
UAE	Gulf Pharmacy College, under the Gulf Medical University has pioneered PharmD
Lebanon	First PharmD graduated in 1992 at the Lebanese University Faculty of Pharmacy
Qatar	Students will be accepted into the final year of the 6-year PharmD program in 2011
Saudi Arabia	Taif University started their PharmD program in 2008
India	PharmD was approved in 2008 and first graduate expected from 24 institutions in 2011.
Philippines	Centro Escolar University has been offering PharmD for many years
Thailand	PharmD was established at Naresuan University in 1992 and Siam University in 2007
<i>Other programs</i>	
Czech Republic & Slovakia	PharmDr (Pharmaciae doctor) diploma is obtained by pharmacists who have previously graduated in pharmacy
France	PharmD is granted to pharmacists after they have completed a thesis
Portugal	Master's degree in Pharmaceutical Sciences is equivalent to the PharmD program
Hungary	Effective from 2008, all pharmacists, who have acquired the Masters degree of Pharmacy are entitled to the PharmD

Job Opportunities

There are reports that in US, 17 of the 30 fastest-growing occupations are health-care related (Gogoi, 2010). These include pharmacists, physicians and surgeons, registered nurses, physician assistants, licensed practical and licensed vocational nurses, clinical laboratory technologists and technicians, and dietitians and nutritionists. These professions are expected to expand through 2018 (Best, 2010). According to

the Occupational Outlook Handbook published by the Bureau of Labor Statistics in US, the demand for pharmacists will continue to increase into the 21st century to 17% by 2018. This growth is being fueled by several factors including benefits of new pharmacotherapeutics, expansion of pharmacists' practice roles and non-traditional job markets, a marked increase in prescription drug use and spending, drug quality and safety concerns, scientific advances leading to the introduction of new drugs and

the emerging trend of pharmacists becoming directly involved in patient care, limited uses of automation and pharmacist extenders such as pharmacy technicians, inefficiencies in the workplace, greater numbers of female pharmacists, who work fewer hours than men do, and direct-to-consumer drug marketing; (Zellmer, 2001; Cooksey et al, 2002).

In Nigeria, PharmD will lead to high demand for pharmacists, particularly in the hospitals, research institutions, academic institutions, and international non-governmental organizations (NGOs) as in the USA. Presently, PharmD program in Nigeria has opened opportunities for pharmacy graduates with PharmD to practice in US as Pharmacists rather than as Pharmacy Assistants as the current PharmD program in University of Benin is acceptable in many States in USA. Some of University of Benin PharmD graduates have been able to take up lucrative job positions locally and abroad. Locally, some have taken up jobs in international NGOs, while others are now lecturers in both government-owned and private Universities including University of Benin, University of Jos, Niger Delta University, Delta State University, Madonna University and Igbinedion University.

Professional Respect

Within the health care system, pharmacists have had little respect from medical doctors partly because of their limited knowledge in pharmacotherapeutics and identification of drug-related problems as well as lack of self-confidence. As the acquisition of name titles has fast become part of the culture of Nigerians, the addition of the prefix, "Dr", to the name of a PharmD holder earns him/her additional respect and

recognition as a knowledgeable member of the health care delivery system, not only by the patients but also by other health care professionals and managers. Added to his/her additional knowledge and skills acquired during PharmD training program, this respect, in itself, confers some level of confidence on the pharmacist, while at the same time, allowing pharmacists to be fully embraced as knowledgeable professionals by all other members of the health care team.

Challenges

Training of Pharmacists

Training facilities and clerkship program

There is no doubt there is a good relationship between the environment where a person is trained and the overall performance elsewhere. For all the Universities awarding BPharm in Nigeria, there is a big challenge in looking at the facilities currently available. For effective teaching and learning, greater interaction among students is required than other courses pharmacy students have to take to graduate. Other than the application of modern technology in teaching pharmacy students and in the students' learning process, the design of the building now has to take a new dimension. Opportunities must now be provided for students to interact after the normal classroom lectures in appropriate seminar rooms which should hold 5-10 students each.

Clerkship program in hospitals often require the assistance of Preceptors who are usually staff of each of the hospitals where the clerkship programs are taking place. One of the greatest problem in wards rounds for pharmacy students centres around payment of

honorarium to the Preceptors who may be pharmacists or medical doctors. Preceptors who are medical doctors or pharmacists will often work better if adequately remunerated based on their hourly contribution to the program. Since most Universities in Nigeria often do not want to provide adequate remuneration for Preceptors, Faculties running the PharmD program may have to think of other sources of funds for this purpose which may include payment of “clinical practice fees” by pharmacy students.

Clinical lecturers for PharmD

Examination of the benchmark for PharmD program that was approved by PCN in Nigeria shows that the credit hour load for clinical pharmacy and pharmacy practice courses is 2-5 times that of pharmacology, pharmacognosy, pharmaceutical and medicinal chemistry, pharmaceutical microbiology, pharmaceutical and pharmaceutical technology or any other relevant disciplines. A major challenge is now the training and meaningful sourcing of qualified personnel for lecturing positions in faculties of pharmacy in Nigeria. Engagement of lecturers with pharmaceutical care skills as Honourary Consultants such as medical consultants in our teaching hospitals will add value to effectiveness, easy access to patients and greater respect of pharmacists by medical doctors and other health care professionals.

Accreditation of PharmD program

The introduction of PharmD in Nigeria

has some similarity to that of the US. Unlike the approach adopted in India where 24 institutions were initially accredited by the Pharmacists Council of India to commence PharmD program (PharmD, 2010), PCN directed all faculties of pharmacy that had the capacity to start the program to do so. Ten years after, the path to accreditation of PharmD programs in many faculties in the country willing to commence the program is still in jeopardy due to political bickering, and personality problems within the pharmacy profession. It is now a major challenge for both the PSN and PCN to work assiduously to ensure proper funding of faculties of pharmacy in the country and the early accreditation of PharmD programs in most of the universities currently offering BPharm degrees.

Pharmacy Residency Program

In US, residency program is specialist training program the pharmacist pursues beyond PharmD in some sort of inpatient health care facility or community pharmacy. The first year post graduate year 1 or PGY1 is normally a general year which could be Pharmacy Practice residency based in hospital setting, Community Pharmacy residency based in a community pharmacy or Managed Care Pharmacy residency based in managed care organizations such as health plans or pharmacy benefit management companies (Table 3). A second, and possibly a third year PGY2, is specialized residency often undertaken in one of many different specialties.

Table 3: Types of one-year general residency program for pharmacists in USA

Residency type	Coverage
Pharmacy Practice	Variety of topics and judge to be eligible for Board Certification in Pharmacotherapy Specialty.
Community Pharmacy	Many patients' issues coming to community pharmacies and provides in depth knowledge of patient medication adherence patterns, medication therapy management, and collaborative drug therapy management with associated practitioners with prescribing authorities
Managed Care Pharmacy	Delivery of pharmaceutical care utilizing (a) individual patient care, (b) care provided to targeted groups of patients (pharmacist designs, conducts, monitors and evaluates the outcomes of organized and structured programs), and (c) population care management.

To be considered for PGY1 equivalent experience the individual must have practiced at least 3 years as a pharmacist and must be licensed to practice as a pharmacist in the US

The PGY2 trains the pharmacist with symptoms as well as drug and non-drug treatments in different sub-specialties such as Managed Care Pharmacy Systems, Health Administration Pharmacy, Ambulatory, Cardiology, Critical Care, Drug Information, Emergency medicine, Geriatric, HIV, Infectious Disease, Internal Medicine, Medication Use Safety, Nephrology, Nuclear, Nutrition Support, Oncology and Palliative Care/Pain Management. Upon completion of a PGY2, the pharmacist becomes eligible to take the Pharmacy Board Certification Examination for one of the specialties such as psychiatry, nutritional support, oncology, pharmacotherapy and nuclear pharmacy currently recognized by the Board of Pharmaceutical Specialties (Wikipedia, 2010b).

In Nigeria, the grand challenge is in establishing a Nigerian Postgraduate College of Pharmacists that will develop and pilot a 4-year Pharmacy Residency Program in the country. In such a program, all residents will participate in various patient care, teaching and educational activities, including giving lectures and conducting small group discussions for undergraduate pharmacy students, serving as a preceptors for the students during their clinical clerkships, and successfully defend a patient-care-based project. Suggested initial areas of specialization are drug information, internal medicine, psychiatry, paediatrics, ambulatory (family) care, cardiology, geriatrics, and accident and emergency care.

Remuneration for Pharmacists

Although in the US, the earnings of physicians and surgeons are among the highest of any occupation in a survey conducted in 2008 by the Medical Group Management Association's

Physician Compensation and Production, with physicians practicing primary care earning a total median annual compensation of \$186,044, physicians practicing in medical specialties earning a total median annual compensation of \$339,738.00, and nurses earning a median annual wage of \$62,450.00 (Gogoi, 2010), pharmacists are now some of the top salary earners with an average earning of US\$106,410.00 (\$77,390.00 - \$131,440.00) per year. The annual earnings of pharmacists in community practice in US is given in Table 4.

Table 4: Median annual earnings in some industries employing the largest numbers of pharmacists (McKay, 2010)

Industry	Median annual earning (US dollars)
Department stores	99,050.00
Grocery stores	95,000.00
Pharmacies and drug stores	94,640.00
General medical and surgical hospitals	93,640.00

In Nigeria, there are no accurate statistics on salaries for pharmacists, other than those in the civil service salary scale. The present civil service salary structure for pharmacists in government employment is based on the bachelor's degree (BPharm) and efforts to increase the salary entry point for PharmD holders in line with 6-year study period for PharmD rather than the 5-year study period for BPharm upon which the present salary in the civil service for pharmacists is based has not yielded a positive response so far. This is a serious

challenge that the PSN and PCN must vigorously pursue while encouraging and supporting institutions to implement PharmD programs.

Demography of Pharmacists and PharmD holders

Globally, pharmacists represent the third largest profession. In terms of practice and geographic area, sector, and sex, the distribution varies (Chan & Wuliji, 2006). Across the world, earlier reports indicate that the pharmacist:population ratios vary widely from <5 to >200 pharmacists per 100,000 population and there is no set standard as to what the norm for pharmacist:population ratio should be. The number of hospital pharmacists per hospital beds differs between countries, with only a few countries having a standard. Belgium has 1 full-time pharmacist for every 150 weighted hospital beds which depends on the specificity of the hospital service (EAHP, 2002). While in Europe, it has been estimated that there are more than 22,000 hospital pharmacists, the level of hospital pharmacy services provided and the number of hospital pharmacists available are unknown in other regions, particularly Africa (EAHP, 2008). Moreover, the different categories of pharmacy occupations make it complex to calculate the number of pharmacy personnel.

There are about 10,000 pharmacists in Nigeria. Over the years, incomprehensive data from PCN often reveal that it is only a proportion of the pharmacists that register annually; most of those registering annually are those who work in community pharmacies and pharmaceutical industries while many of those in academia and hospitals often do not see the need for them to register. The distributions of those pharmacists and pharmaceutical premises registered in 2008 are shown in Tables 5-6. Available data for the 2008 indicate that the number of registered

Table 5: Distribution of registered pharmacists in Nigeria by State and population

State	Population 2006	Pharmacists 2008	Pharmacists per 100,000 population
FCT	1,405,201	567	40
Lagos	9,013,534	2028	22
Enugu	3,257,298	196	6
Anambra	4,182,032	233	6
Plateau	3,178,712	166	5
Edo	3,218,332	147	5
Rivers	5,185,400	206	4
Oyo	5,591,589	213	4
Abia	2,833,999	106	4
Ogun	3,728,098	139	4
Osun	3,423,535	126	4
Imo	3,934,899	136	3
Delta	4,098,391	141	3
Kwara	2,371,089	76	3
Kaduna	6,066,562	177	3
Niger	3,950,249	113	3
Nassarawa	1,863,275	44	2
Ondo	3,441,024	79	2
Bayelsa	1,703,358	32	2
Akwa Ibom	3,920,208	72	2
Kogi	3,278,487	54	2
Ekiti	2,384,212	36	2
Adamawa	3,168,101	45	1
Kano	9,383,682	126	1
Borno	4,151,193	53	1
Ebonyi	2,173,501	25	1
Benue	4,219,244	44	1
Cross River	2,888,966	30	1
Gombe	2,353,879	20	1
Sokoto	3,696,999	28	1
Bauchi	4,676,465	29	1
Kebbi	3,238,628	20	1
Katsina	5,792,578	35	1
Zamfara	3,259,846	18	1
Taraba	2,300,736	12	1
Yobe	2,321,591	10	0
Jigawa	4,348,649	13	0
Total	140,003,542	5595	4

Sources: National Populations Commission. 2008 Census Tables. Available from <http://www.population.gov.ng/files/nationafinal.pdf>. Accessed 18 Sept 2010.

Pharmacists Council of Nigeria. List of Licensed Pharmacists and Pharmaceutical Premises as at 31 December 2008

Table 6: Distribution of registered pharmaceutical premises in Nigeria by State and population

State	Population 2006	Premises 2008	Premises per 100,000 population
FCT	1,405,201	206	15
Lagos	9,013,534	941	10
Anambra	4,182,032	124	4
Rivers	5,185,400	116	3
Abia	2,833,999	55	2
Enugu	3,257,298	61	2
Ogun	3,728,098	63	1
Imo	3,934,899	61	1
Plateau	3,178,712	49	2
Delta	4,098,391	58	2
Nassarawa	1,863,275	26	1
Kwara	2,371,089	32	1
Edo	3,218,332	43	1
Kaduna	6,066,562	77	3
Oyo	5,591,589	68	1
Niger	3,950,249	47	1
Osun	3,423,535	34	2
Ondo	3,441,024	21	1
Adamawa	3,168,101	18	1
Kogi	3,278,487	18	0
Akwa Ibom	3,920,208	21	1
Bayelsa	1,703,358	7	0
Kano	9,383,682	37	1
Borno	4,151,193	16	0
Cross River	2,888,966	10	0
Sokoto	3,696,999	12	1
Ebonyi	2,173,501	7	0
Taraba	2,300,736	6	0
Bauchi	4,676,465	10	0
Ekiti	2,384,212	5	0
Gombe	2,353,879	4	0
Benue	4,219,244	7	0
Kebbi	3,238,628	5	0
Yobe	2,321,591	3	0
Katsina	5,792,578	1	0
Jigawa	4,348,649	0	0
Zamfara	3,259,846	0	0
Total	140,003,542	2269	99

Sources: National Populations Commission. 2008 Census Tables. Available from <http://www.population.gov.ng/files/nationafinal.pdf>. Accessed 18 Sept 2010.

Pharmacists Council of Nigeria. List of Licensed Pharmacists and Pharmaceutical Premises as at 31 December 2008

pharmacists per 100,000 population varies from <1 to 40 in different States of the Federation which is far lower than that of the developed countries. Though not indicated in the PCN report, nearly all these professionals and pharmaceutical premises are concentrated within cities, living the rural areas with very small numbers or nothing at all. Even in the cities, it is common to find many 100-150 bed government hospitals with one or two pharmacists while small hospitals may not have any.

Since the introduction of PharmD by University of Benin, 491 PharmD graduates have been produced as at September 2010 (Table 7). The PharmD conversion not only just provided opportunity for registered pharmacists with BPharm to upgrade their knowledge in patient-focused care but was expected to produce a

force of experienced pharmacists who will protect the tenets of PharmD, particularly within the pharmacy profession, while at the same time protecting and nurturing the young 6-year PharmD graduates. In Table 8, the distribution of the PharmD holders who graduated from the conversion program indicates that many pharmacists are yet to embrace the opportunity. With only 10 approved faculties of pharmacy presently in the country graduating less than 1,000 pharmacists per year, matched against the population growth, improvement in the pharmacists' labour force to match the demands of effective pharmaceutical care may be a long way off. The need to establish more faculties of pharmacy in the country to match the expected demand for qualified PharmD holders is a challenge.

Table 7: PharmD graduates from University of Benin* 2004-2008

Year	PharmD graduates	
	Full-time	Conversion
2004	-	92
2005	-	67
2006	-	28
2007	102	28
2008	66	21
2009	87	-
Total	255	236

**As at 2010, University of Benin (Uniben) was the only institution offering PharmD in Nigeria and was given approval by Pharmacists Council of Nigeria (PCN) for the purpose in 2001. Uniben offers both 6-year full-time for qualified secondary and post-secondary school certificate and holders and 3-year conversion program for BPharm holders.*

Table 8: Distribution of part-time trained PharmD graduates from University of Benin by 2008

State	No of Part-time trained PharmD holders	No registered Pharmacists	% Part-time Trained PharmD holder
Edo	72	147	49.0
Delta	63	141	44.7
Abia	15	106	14.2
Bayelsa	4	32	12.5
Ondo	9	79	11.4
Ekiti	3	36	8.3
Kogi	4	54	7.4
Rivers	15	206	7.3
Cross River	2	30	6.7
Imo	9	136	6.6
Anambra	14	233	6.0
Ebonyi	1	25	4.0
Akwa Ibom	2	72	2.8
Nassarawa	1	44	2.3
Enugu	3	196	1.5
Ogun	2	139	1.4
FCT	6	567	1.1
Kaduna	1	177	0.6
Lagos	10	2028	0.5
Total	236	5595*	4.2

*Total number of registered pharmacists in Nigeria in 2008. No graduate from PharmD conversion program from 18 States in Nigeria including Adamawa, Bauchi, Benue, Borno, Gombe, Jigawa, Kano, Katsina, Kebbi, Kwara, Niger, Osun, Oyo, Plateau, Sokoto, Taraba, Yobe and Zamfara

A major problem in Nigeria today is that many consumers of pharmaceutical products do not often recognize the need to seek the expertise of the pharmacists when they need drugs. The distribution and sale of drugs is seen as business most people can be involved in as the BPharm pharmacy graduates have limited knowledge in the area of patient care which an average consumer can often recognize. With the limited number of pharmacists in the country, individuals and corporate bodies that should normally not have anything to do with the distribution and sale of drugs have bridged the gap and synthesized the chaotic drug distribution system in Nigeria. Several

unregistered pharmaceutical premises, thousands of patent medicine stores which out number the number of pharmacy shops many fold, and individual, including politicians, engage in drug business under the existing ineffective medication business control system. Therefore, the need to develop new opportunities for training pharmacists with adequate knowledge in efficient and effective patient-oriented pharmacy practice is therefore a major challenge.

Poor Infrastructure in Health Care System - What Relevance for PharmD?

In Nigeria, health care system comprises both public and private

health facilities. In the public sector, the facilities are in three levels. These are primary, secondary, and tertiary which corresponds to the three tiers of the government (FMOH, 2004)]. There is evidence that the primary health care (PHC) facilities, which are under the control of the local governments, are often poorly managed (Chan & Wuliji, 2006) and funded as evidenced by lack of skilled and competent personnel, inadequate equipment, irregular drug supply and poor state of infrastructure in which many centres are actually in a state of dilapidation and waste (FMOH, 2004; HRFN, 2007). While less than half of PHC facilities in Nigeria provide antenatal care (ANC), a reproductive health resource inventory carried out by FMOH and WHO found that almost 60% of PHC offering ANC and delivery services had no midwives and another 17% had neither midwives nor senior community extension workers (FMOH, 2001). This has rendered them underutilized sometimes making the tertiary facilities overburdened (Akande, 2004). The state of the secondary and tertiary health facilities is not much different. Most health workers now work in unsafe workplaces with poor access to needed supplies, tools and information (Uneke, 2008).

The continuous decay of infrastructure in Nigeria health care system is a major challenge in the health sector of the economy as it has led to the untimely death of many Nigerians as well as increased the unemployment rate of health workers in the country. The lack of commitment by Nigerian leaders to budget implementations for the development of health system infrastructure needs to be addressed.

Access to Patients in Hospitals

In the 70's, schools of pharmacy in

Nigeria existed under the Colleges of Medicine or Health Sciences and pharmacy and medical students shared lecture rooms and other infrastructure. But pharmacists were often undermined in many decision-making processes and the result was the withdrawal of most schools of pharmacy from the collegiate system to form faculties independent of the medical professionals. Ever since then, pharmacy staff and students in Nigeria Universities have continued to experience increasing hostility from the medical profession. Pharmacy students are often denied access to patients' information and pharmacy lecturers are often unable to effectively teach students during clerkship programs in hospital wards; in some instances, pharmacy students are even denied entry into the hospital wards under false pretences from the hospital authorities, usually under the leadership of medical doctors.

There is no doubt that free access to patients and patients' information in hospital wards is critical in achieving the objectives of clerkship programs. Therefore, the need to ensure that a system that allows pharmacy students and the relevant academic staff unrestricted access to patients and patients' information is put in place is a major challenge. In this direction, PCN, PSN and the relevant Department in the Federal Ministry of Health should work collectively to address the situation. As at today, the annual license issued to pharmacists in Nigeria is product-oriented and has no focus on patients. The legal phrase that grants permission for a pharmacist to practice in Nigeria is as follows:

“... having duly paid the prescribed fees is hereby licenced to practice as a Pharmacist under the Pharmacists Council of Nigeria

Decree 91 of 1992 and, in Nigeria, is authorized to import, export, mix, compound, prepare, dispense, sell and distribute drugs and poisons”

As a matter of urgency, PCN needs to ensure a review of the content of the license to legally empower pharmacists to provide patient-oriented services, particularly in hospitals. A suggested amendment to the current content of the licence is as follows:

“... having duly paid the prescribed fees is hereby licenced to practice as a Pharmacist under the Pharmacists Council of Nigeria Decree 91 of 1992 and, in Nigeria, is authorized to import, export, mix, compound, prepare, dispense, sell and distribute drugs and poisons as well as undertake other activities that will ensure the best therapeutic outcomes for patients in hospitals and in the communities”

Hospital and Community Pharmacy Practice

There have been tremendous changes going on during the past decade in the expansion and development of the role of the pharmacists in Nigeria and elsewhere in the world. In this country, every pharmacist often freely discusses implementation of pharmaceutical care. Pharmaceutical care is now an acceptable practice to Nigerian pharmacists and the need for its application is frequently addressed in continuing education programs, conferences, and workshops. Presently, many pharmacists in Nigeria are not comfortable in actively providing “patient-focused care” as many of them lack self-confidence in this direction or do not wish to be held

responsible for their adaptations/recommendations. Most of them are used to the traditional count, check, and dispense routine and are not too willing to adapt changes. Also, most hospital pharmacists are still mainly focused on provision of drugs to patients while most retail pharmacies are still money-driven businesses.

The new roles for pharmacists in hospitals and community pharmacies in the provision of pharmaceutical care means that pharmacy profession must begin to address the

- Steps to changes by ensuring the interest of all current and future pharmacists to work together in making a more effective health care system and securing pharmacists’ position. This will require a well-designed education program directed at (1) trainers who will include all university lecturers in faculties of pharmacy, (2) current pharmacists, and (3) pharmacy students;
- Complete movement of the practice of pharmacy from provision of drugs or retail focus to a patient care focus;
- Need for the training of more technicians to assist in dispensing functions - if pharmacists will have the time to effectively provide patient-focused-care;
- Development and enforcement of areas of specialization for pharmacists in hospital and community practice; and
- Realistic approach to ending illegal channels of drug distribution in the country.

With the progress in health care delivery system worldwide and

following the initiative in California, it is hoped that in the near future, physicians will be mainly involved in the identification of patients' medical conditions, treatment of non-drug related ailments, such as surgical interventions, and following up of progress of patients' conditions, pharmacists will then be prescribing the medications, identifying drug-related problems and monitoring the response to drug therapy according to the symptoms and the medical doctors' diagnoses while the nurses will be responsible for ensuring the comforts of patients, and continuous monitoring.

Patronage of Pharmaceutical Services in Nigeria

The choice of health facilities for healthcare is largely known to be determined by individual's taste, satisfaction with service, and the perceived quality of care provided (Bashour and Abdulsalam, 2005; Ham, 2005; Razzak et al, 2008; Yu et al, 2008). This is however limited by factors such as availability, accessibility, affordability of services of the health facilities, cultural beliefs, the situation at any given time that is urgency of care needed and the kinds of services provided meet the needs of the users (Parakoyi et al, 2001; Sajid, 2007; Yu et al, 2008). It is also influenced by the users' understanding of the functions of the different levels of health facilities which ultimately result in the appropriate (or otherwise) utilization of health services. A recent study in Ilorin (Abodunrin et al, 2010) shows that the preferred health facility for medical care was private hospitals (35.2%) followed by pharmaceutical stores (27.9%) and 17.0% for

general/teaching hospitals, and only 12.3% for primary health care (PHC). Among the reasons given for preference for choice of health facility are cost of service, proximity, quick service, availability of drugs and qualified personnel (Table 9). This recent evidence has far reaching implication

Table 9: Respondents' usual choice of health facility as the first point of call for care according to recent study in Ilorin (Aboderin et al, 2010)

Variable	No.	%
Health facility of first choice	129	35.2
Private hospital	45	27.9
Pharmacy/medicine store	62	12.3
Basic health centre	28	17.0
General/teaching hospital	102	7.6
Any hospital	106	29.0
Any hospital	162	44.3
Reasons for patronage	240	65.6
Cheap service	303	82.8
Convenience/proximity	215	58.7
Qualified personnel	256	69.9
Quick service	284	77.6
Privacy	286	78.1
Good attitude of staff	65	17.8
Equipments an lab service	174	47.5
Drug availability	212	57.9
Family hospital		
Other reasons		
No other choice		

for the practice of pharmacy by PharmD holders. The possession of PharmD in itself is a booth for patient's acceptance of the pharmacists as highly qualified personnel to provide the most effective medicines and advise for treatment. It also has a profound psychological impact on the

patient's recovery process as psychology of the patient has a great role to play in illness and good health.

CONCLUSION

The PharmD program has come to stay and is continuing to be introduced as the requirement for the practice of pharmacy in different parts of the world. The program has very good prospect in Nigeria and elsewhere but is being faced in Nigeria with many challenges including unparalleled remuneration, lack of residency program for further development of knowledge and skills, limited number of pharmacy technicians to support the pharmacists carry out patient care activities, poor infrastructure, limited access to patients, lack of accreditation of the program and limited qualified academic staff for clinical pharmacy and pharmacy practice.

With continuing advances in the biomedical area, and in information and communication technologies, as well as growing consumer expectations, it can be predicted that the demand for PharmD holders will continue to increase and salaries will be encouraging. It is expected that in Nigeria, the demand for entry into Faculties of Pharmacy in the country will be very high and applicants will be required to acquire bachelor's degree in science or health-related discipline before admission into the program in the near future. Any institution in Nigeria thinking of introducing PharmD program must consider the availability of the right staff. Because of the heavy workload in clinical pharmacy and pharmacy practice, the splitting of the existing Department of Clinical Pharmacy and Pharmacy Practice (or Administration) in Nigeria Universities into at least two independent Departments should be considered in order to increase

efficiency and dictate better training of pharmacy students.

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