

Pharmacy Education and Curriculum Review for Contemporary Pharmacy Practice

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ABSTRACT

The art and science of drug development, manufacture, distribution, dispensing, sale and appropriate use of medicines, devices and services in order to achieve optimal therapeutic outcomes is called Pharmacy, and the qualified professionals are Pharmacists. The Pharmacist is one of the most accessible members of today's healthcare team. The pharmacist is both a scientist and a practitioner who is trained to provide quality drug products and quality pharmaceutical care to his/her patients. Traditionally, pharmacists were known as compounders and dispensers of medicines, but roles have now been extended in healthcare system by performing functions to ensure rationale, safe and cost-effective use of medicines, which generally optimize patients' drug therapy. These changing roles will necessitate continuous periodic review of the pharmacy curriculum to enhance student learning. Pharmacy education started with a dispensers' certificate and culminated over the years to the PharmD program.

INTRODUCTION

Although the practice of pharmacy began with the beginning of life, pharmacy education perhaps began around 300 BC with the Greek Philosopher and Natural Scientist Theophrastus (Father of Botany), who gathered young men and taught them the medical qualities and peculiarities of herbs.¹ The profession (education) of pharmacy has since undergone series of changes in terms of philosophy and practice as it seeks to meet the dynamics of societal expectations and changes in the legal/regulatory standards as well as technology of healthcare provision.² In this evolutionary process therefore, a number of practice models have been identified such as the apothecary, compounding, distribution, clinical pharmacy and pharmaceutical care with clearly discernible changing roles for the pharmacist.² In Nigeria, profession and practice of pharmacy did not start as a well-defined healthcare area of specialization as it is today but rather pharmaceutical training was borne from the necessity to provide assistance to expatriate medical officers.³ The initial training at the school of Pharmacy in Zaria for example, started around 1947 to train dispensers (Dispensers Course) and much later in October 1961 it was upgraded to the Chemist and Druggist Diploma; this was the first requirement for registration as Pharmacist by the former Pharmacists Board of Nigeria (PBN).⁴ This

was followed by the three-year Pharmacy degree program which was started in 1968 in the department of pharmacy and pharmacology, Faculty of Science Ahmadu Bello University Zaria.⁴ The philosophy in both the Diploma and BSc programs was to train manpower for drug preparation (compounding) and dispensing. In what appears to be a major shift in pharmacy practice, the BSc curriculum was overhauled to pave way for the BPharm program. Pharmacy being an international profession is influenced by its practice in other parts of the world.² Clinical pharmacy, the cornerstone of the BPharm program, originated in the USA in the 1960s. In early 1980s, the Pharmacists Council of Nigeria directed that all faculties offering pharmacy education in Nigeria should emphasize clinical pharmacy practice in the bid to train a patient-oriented professional.³ The first set of the BPharm in Ahmadu Bello University Zaria graduated in 1988. It was in 1989 also that the first set of Minimum Academic Standard (MAS) was developed by the National Universities Commission (NUC) incorporating the Bpharm.

BSc Curriculum and Pharmacy Practice

Training of pharmacists under the BSc program was geared towards product orientation where pharmacists prepare, dispense, sale medications in community and hospital settings. Community

pharmacy became a channel of distribution for the pharmaceutical industry.⁵ Hospital pharmacists functioned primarily in a support role for the management of drug products. The core disciplines in the BSc program are pharmaceutical chemistry, pharmacognosy, pharmaceutics and pharmacology. Emphasis was thus placed on applied pharmaceutical science rather than professional pharmacy practice.

Bachelor of Pharmacy (BPharm) Curriculum and Pharmacy Practice

The Bachelor of pharmacy (BPharm) has been operational in Nigerian universities for over thirty years. The BPharm program is intended to produce pharmacists with adequate education and skills, as well as flexibility to meet the 21st century challenges of pharmaceutical healthcare in a global setting.⁵ Paradigm shift in practice of pharmacy to meet divergent patients' medicines needs in Nigeria necessitated the approval and introduction of the BPharm program. The focus in

pharmacy education became the need to acquire competencies in medicines-related needs of the community than on product. The new BPharm curriculum includes clinical pharmacy, anatomy course and organized clinical ward rounds that were absent in the BSc curriculum.³ The NUC introduced BMAS (2007) mandated pharmacy students to participate in both externship and clerkship programs and that students are to be rotated between hospitals, community pharmacies and primary health centers; periods of at least 3 hours are to be spent with the aim of the students acquiring clinical experience.⁵ Public health, communication skills and pharmaceutical care have also been introduced. Pharmaceutical care ensures that the pharmacist takes responsibility for functions he/she performs or are performed under his/her supervision. Opara outlined the differences between traditional drug dispensing and pharmaceutical care as follows:²

Table 1: Differences between Traditional Drug Dispensing and Pharmaceutical Care

Traditional Drug Dispensing	Pharmaceutical Care
Focus on dispensing the medicine	Focus on patients' management and outcomes with the drug treatment
Patients' education and counselling concentrates on technical advice	In addition to technical advice, the pharmacist is training the patient to practice the drug treatment in everyday life
No monitoring of the outcomes of drug therapy	The pharmacist is finding methods to monitor the outcomes of drug treatment
Drug related problems would emerge if the patient tells about them	The pharmacist is actively and systematically identifying possible problems in the drug treatment
No responsibility for the drug treatment	The pharmacist takes responsibility that the drug treatment will be achieved

The clinical pharmacist therefore acquires skills and perform such diverse functions as monitoring of drug utilization by the patient, accessing information on drugs, providing drug information to patients and other health professionals, guiding patients in the selection and use of non-prescription medications among other traditional roles.⁵

Doctor of Pharmacy (PharmD) Curriculum and Pharmacy Practice

The Doctor of Pharmacy program (PharmD) is designed to produce well educated and competent pharmacists. The Pharmacy Council of Nigeria had in 2016 rolled out an 'implementation strategy' for the adoption of PharmD program by faculties of pharmacy in Nigerian Universities. The

National Universities Commission also listed PharmD alongside BPharm in its' revised Benchmark Minimum Academic Standards in 2018. NUC had noted the expansion of the pharmacy profession and the incorporation of pharmaceutical care which necessitates the creation of a clinical arm in the Nigerian educational system.⁵ The future of pharmacy as a healthcare profession lies in its' ability to contribute to the rational use of medication and pharmaceutical care is the philosophy of practice that will facilitate this future³.

According to the NUC, PharmD curriculum has been reviewed to include more clinical skills (especially in the last two years) with better understanding of pathophysiology of diseases, pharmacogenomics, and pharmaceutical care, to optimize patient care outcomes. The advent of the coronavirus pandemic in 2019 has revealed gaps in the healthcare systems of many countries. As the pharmacist is expected to always ensure the continued availability of quality drugs, supply chain management and logistics of health commodities have been given more prominence. In the same light, emergency preparedness was also included.⁶

The recently released, to be effective September 2023, Core Curriculum Minimum Academic Standard (CCMAS) in PharmD has also included 21st century skills that will produce pharmacists with clinical, industrial, academic and leadership skills, entrepreneurial, and critical thinking for practice anywhere in the world. The NUC has outlined the unique features of the program as follows:

1. The mix and quality of courses have been compiled to produce pharmacists for pharmaceutical services in the 21st century;
2. Supply chain management and logistics for drugs and other health commodities have been given more prominence to ensure continued availability of quality drugs and enhanced employability;
3. Emphasis placed on better understanding of pathophysiology of diseases, pharmacogenomics, and pharmaceutical care, to optimize patient care outcomes;
4. Acquisition of soft skills such as leadership and, communication skills to

produce pharmacist for the 21st century;

5. Inclusion of Emergency Preparedness for integration of pharmacists in national and international response to public health emergencies as is obtained in many countries;
6. Addition of more hospital, community and primary healthcare practical experience for an all-round service to the community;
7. The rich mix of courses prepares graduates for practice in all areas of pharmaceutical sciences as against the bias towards clinical practice alone as found with PharmD programs from other countries;
8. Clinical Pharmacognosy included because of increasing use of herbal remedies and other complementary and alternative medicines by many communities the world over;
9. Emphasis on entrepreneurial and business creation for self-employment and employment creation; and
10. Minimum academic standards to produce graduates that can compete favorably globally with life skills for flexibility and competitiveness in a rapidly changing world.

The PharmD graduate is therefore equipped with the following employability skills:

1. Specialist skills in hospital pharmacy practice (oncology, paediatrics, nuclear, psychiatric, veterinary, emergency medicine and many others);
2. Clinical pharmacy skills (pharmaceutical care/patient care);
3. Ambulatory care pharmacy skills;
4. Community pharmacy skills
5. Public health pharmacy skills
6. Complementary and alternative medicine practice (herbal);
7. Teaching and research skills in tertiary institutions;
8. Drug manufacturing skills;
9. Drug supply chain management and logistics;
10. Drug development and regulatory control; and
11. Pharmaco-informatics and robotics

It is to be noted however, that despite the prospects posed by the PharmD program many Nigerian

universities are yet to commence its' implementation.

CONCLUSION

Contemporary pharmacy practice is dependent on sound pharmacy education delivered through a standards-based sequence of planned experiences where students practice and achieve proficiency in content and applied learning skills. It is expected that the curriculum is reviewed every two to five years to meet up with dynamics of the population and or society.

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