



Review

Challenges facing pharmaceutical care provision in Nigerian tertiary hospitals: A short review

Adeniyi Ayinde Abdulwahab¹, Deborah Oluwaseun Shomuyiwa^{2,*}, Nwachuya Chukwuemeka Augustine³, Akwue Marytheresa Chinaza³, Muhsinah Adesewa Abdulwasiiu⁴, Agada Emmanuella Chinecherem⁴, Usman Ridwan Kolade⁵, Timileyin Omolayo Awolola⁶, Taiwo Olawehinmi^{7,8} and Yusuff Adebayo Adebisi⁹

¹ Faculty of Pharmaceutical Sciences, Bayero University, Kano, Nigeria

² Faculty of Pharmacy, University of Lagos, Lagos, Nigeria

³ Faculty of Pharmaceutical Sciences, University of Nigeria Nsukka, Enugu state, Nigeria

⁴ Dora Akunyili College of Pharmacy, Igbinedion University Okada, Nigeria

⁵ Department of Computer Science and Engineering, Obafemi Awolowo University, Osun state, Nigeria

⁶ International Pharmaceutical Federation, Hague, Netherlands

⁷ Pharma Incubation Hub, Lagos, Nigeria

⁸ Advantage Health Africa, Lagos, Nigeria

⁹ Faculty of Pharmacy, University of Ibadan, Ibadan, Nigeria

* **Correspondence:** Email: deborahshomuyiwa@gmail.com; Tel: +2348168897149.

Abstract: Pharmaceutical care is the core of pharmacy practice. The reform and development of this practice are essential for the optimization of patient care and improvement of population safety. While pharmaceutical care has been established to have a long history in Nigeria, the implementation of the practice in Nigeria's tertiary health system is very limited and, in some regions, non-existent. Challenges such as knowledge deficits of pharmacists and the inadequacy of practice guidelines, a lack of knowledge, support, and an enabling environment to foster inclusiveness, limited access to patient records, the absence of documentation of interventions and the paucity of policy support and implementation, among others, stall pharmaceutical care provision in Nigeria's tertiary institutions. Here, we recommend that improving the interprofessional environment through collaboration, adequate regulations and policy development, the design of insurance and health support, pharmacy education, training and research optimization will bolster the pharmaceutical care practice in Nigerian

tertiary hospitals. Moving the practice of pharmaceutical care in Nigerian tertiary hospitals requires transformational change and strategic collaboration among the pharmacists and health community.

Keywords: pharmaceutical care; tertiary hospitals; clinical pharmacy; healthcare; Nigeria

1. Introduction

The concept of pharmaceutical care defines the evolving roles of pharmacists. Pharmaceutical care, according to Helper and Strand in 1990, is “the responsible provision of drug therapy for the purpose of achieving definite outcomes that improves patients’ quality of life” [1]. This definition was modified by the International Pharmaceutical Federation in 1998 to include the preservation and improvement of patients’ quality of life [2]. With the global increase in the number of drugs and drug use, emerging challenges in rational drug use has facilitated the evolution of the pharmacy practice. Pharmaceutical care is a practice that has seen implementation and success on a global scale. The development and implementation of pharmaceutical care practice in Nigeria, particularly, has been stalled by various factors. This inadequacy has reflected in the quality of healthcare delivery in Nigeria. The aim of this review is to assess the challenges in designing, reforming, and developing pharmaceutical care in Nigerian tertiary hospitals. The review also provides recommendations for the integration of quality pharmaceutical care in Nigerian tertiary healthcare practice.

2. Methods

We conducted a review of data sources that explore the challenges of the pharmaceutical care provision in Nigerian tertiary hospitals. This included a comprehensive search on PubMed, PubMed Central, ScienceDirect and Google Scholar platforms using predetermined search terms. The inclusion criteria were data sources that highlighted the structure and provision of pharmaceutical care, challenges, possible solutions and future recommendations for pharmaceutical care provision in Nigerian tertiary hospitals. Articles published in peer-reviewed journals from authentic websites such as PharmaNews and NPS MedicineWise were prioritized. All included literature was published in English between March 01, 1990, and August 04, 2021. Supporting information and data were also gathered from commentaries and other reports. The collected articles were managed by using Mendeley Reference Manager after a prior review of the title and abstract. The retrieved data are discussed narratively to explore the aim of the study.

3. Results and discussion

3.1. *Insights into pharmaceutical care: Design, reform, and development in Nigeria*

3.1.1. Pharmaceutical care design

Pharmaceutical care aims to establish a therapeutic relationship with the patient, and it is a system put in place wherein clients and other health professionals are involved within the system to detect, prevent and proffer solutions to drug-related problems to improve the patient’s quality of life [3]. The

basic parts of the pharmaceutical care design framework that can be observed in Nigeria's developing healthcare system are the "clinical pharmacy" and "community pharmacy".

The Nigerian pharmaceutical care practice, in its crude form, is more closely tied to the community pharmacy, as it provides drugs and other health-related services at the community level. Through the years, the structure of pharmaceutical care design and operation implementation in Nigeria, mostly affected by the practice of clinical pharmacy and community pharmacy from pre-colonial years to post-colonial years, seems to be responsible for the somewhat theoretical nature of pharmaceutical care in Nigeria. Emerging technologies over the years have changed the dynamics of the provision of health care by pharmacists in Nigeria, but the nature left by the pre-colonial masters is still dwelled upon without much improvement or adaptation to the changing frontier of pharmaceutical care.

The provision of pharmaceutical care in Nigeria is mostly offered by hospital pharmacists and community pharmacists. These two levels of basic pharmaceutical health care provision, and particularly the former, are divided into levels ranging from the federal to the individual state level. The community pharmacy, on the other hand, has its regulations of procedures, locations, logistics and services implemented and regulated by the Pharmacists Council of Nigeria, which is a professional body established to instill discipline and maintain professional ethics among members of the organization.

3.1.2. Pharmaceutical care development

Pharmaceutical care evolved from clinical pharmacy practice and emerged in Nigeria in the 1980s [4]. The development started with the introduction of clinical pharmacy into the practice of pharmacy, which was followed by the gradual evolution of pharmaceutical care practice in response to the evolving roles of the pharmacist [5]. Despite its associated success in several high-income countries, its adoption and uptake are varied within Nigeria, especially in tertiary healthcare.

Although the inclusion of the consultant pharmacy cadre in the public sector scheme by the National Council of Establishments in 2019 was an important recognition of the pharmacists' evolving role in healthcare, the delivery of pharmaceutical care in the tertiary healthcare system in Nigeria is very limited and, in some regions, non-existent [6]. Even with global development, Nigeria's pharmaceutical care is still a theoretical concept with no efficient practice. It is still characterized by a disparity in availability across the various levels of care in Nigeria, with the practice only marginally evident in tertiary healthcare facilities.

3.1.3. Pharmaceutical care reform

With the introduction of pharmaceutical care in Nigeria in the 21st century, few reforms have been implemented, especially in the community pharmacy practice. Most of the reforms in the southwest are on drug utilization, on chronic disease management in the southeast, on drug utilization and patient care evaluation challenges to pharmaceutical care services in the north-central region and drug utilization and evaluation of disease state management in the north-east.

There has been remarkable growth in comparison to the initial stages of other developed countries. While Nigeria is currently at a lower level when using the Oxford and Scottish benchmarks for the hierarchy of clinical studies, there is an indication of sustained development in the practice with the

current growth [7]. The reform of pharmaceutical care is already being observed in hospitals, and it is currently moving into community pharmacy via training, programs, and the introduction of clinical pharmacy education into the curriculum offered in schools. The conferment of the PharmD degree promotes pharmaceutical care outside of the hospital setting [7].

The reform of pharmaceutical care in Nigeria remains low, as unauthorized drug sellers continue to sell drugs. A suggestion that the lack of regulation that empowers pharmacies to be the leading dispensers of drugs and vaccines may be another reason for the registration of hospital names with names that translate to drug givers [8]. While some practice reforms exist in Nigeria's pharmaceutical care, they are not fully practiced by a large percentage of pharmacists. They include identifying errors in prescriptions, observing the progress of patients' responses, documentation, and an efficient drug supply system. Far-reaching bribery and corruption influence the implementation of these policies and practice guidelines.

3.2. Challenges facing pharmaceutical care implementation in tertiary hospitals in Nigeria

Over the years, clinical pharmacy practice in Nigeria has drifted from the traditional and ancient ways of extemporaneous drug compounding and dispensing to the ground-breaking concept of pharmaceutical care. Pharmaceutical care, being an act of drug therapy management, encompasses the changes in the orientation of professional attitudes and thus re-engineers the traditional pharmacy profession [9]. Clinical pharmacists play a critical role in ensuring the safe use of high-risk drugs and identifying medication-related problems and patient and medication risk factors that can compromise patient safety. Clinical pharmacists' interventions have been indicated in the reduction of medication errors, improved prescribing procedures and improved medication safety [10]. Polypharmacy, a common incidence in the geriatric population, has seen pharmacists provide increasing interventions such as de-prescribing and medication counseling [11]. The safe use of high-risk drugs, e.g., anticoagulants, insulin, antibiotics, opioids and immunosuppressants, are also important pharmacist interventions.

Pharmaceutical care is emerging today as a professional area in pharmacy, as it was designed to complement existing patient care practices by ensuring drug safety, efficacy, quality therapy and rational cost, among others [9]. The pharmaceutical care pharmacist does not, in any way, replace the physician or any other health care practitioner. Pharmaceutical care, as a professional practice, has the sole aim of putting the patient's quality of life first through the provision of safe and efficient healthcare by respecting the needs and common goals of other healthcare professionals and society at large without interference [9,12].

The concept of pharmaceutical care is sweeping across the pharmaceutical world, but not much has been implemented [13]. In Nigeria, the concept of pharmaceutical care is garnering much prominence among hospital pharmacists, though, there is a series of challenges to its implementation [12]. For adequate implementation of pharmaceutical care, there is a need for an enabling environment. Adequate remuneration, counseling space, knowledge about pharmaceutical care, communication skills, systems that enable data collection, documentation and transfer of information, as well as a commitment to quality improvement and assessment, are all the backbone upon which pharmaceutical care can be implemented [12].

The following are some of the major obstacles to pharmaceutical care implementation in Nigerian tertiary institutions:

a. Lack of knowledge about pharmaceutical care

In line with the knowledge of pharmaceutical care in Nigeria, Funsho and Titilayo, in 2015, reported that there is a statistically significant association existing between pharmacists' qualifications and the knowledge of pharmaceutical care and practice [12]. The study showed that additional qualifications positively influence the knowledge of pharmaceutical care. Today, most pharmacists in tertiary hospitals in Nigeria do not have additional patient care-related qualifications, and, for the purpose of achieving professional competence in the delivery of pharmaceutical care, there is a need for pharmacists to acquire additional patient care-related qualifications [12].

Even though pharmacists in Nigeria are aware of the concepts of pharmaceutical care, there is an urgent need for improved mandatory continuing professional development. Pharmacists' attitudes toward mandatory continuing professional development are not satisfactory [14], posing a serious challenge to implementing pharmaceutical care. Providing quality patient care requires a knowledge base that is continuously expanding and being updated [15]. The lack of a pharmaceutical care guide within the hospital setting has posed a serious challenge in the implementation of pharmaceutical care in tertiary institutions [12].

b. Non-cooperation among other healthcare teams

Physicians, pharmacists, and nurses, among other healthcare teams, are frequently involved in improving the quality of healthcare delivery, and thus improving the quality of life of the patient. Non-cooperation among healthcare teams has also been shown to be a serious challenge in pharmaceutical care. Most pharmaceutical care providers in tertiary hospitals participate mainly in pharmacists' rounds rather than in the multidisciplinary ward rounds [12]. Healthcare providers should work as a team, contributing their specialized knowledge, skills and expertise to patient care efforts to lead to the improvement of patients' quality of life.

c. Lack of plan for effective patient counseling as a result of limited pharmacist access to patient medical records

Limited pharmacist access to patient medical records is a critical challenge to effective pharmaceutical care provided by pharmacists. As much as providing drug consultation to other medical professionals may be on request, pharmacist-patient counseling is a must-do. Pharmacist-patient medication counseling is an important means of achieving pharmaceutical care. By assessing patients' medical records, pharmacists provide patient counseling, which is associated with encouraging safe and appropriate medication use [12].

d. Lack of proper documentation

Documentation is an important element of pharmaceutical care, and it is needed for the continuity of care, research and evidence of action taken, among others. According to a report by Suleiman and Onaneye, most pharmacists tend to identify drug-related problems, but neither the errors nor their interventions were documented [15]. This is a significant challenge because correct documentation of

the pharmaceutical services supplied is critical for proper monitoring and modification of a drug treatment plan, which can help to reduce therapeutic errors.

As highlighted by studies, the non-involvement of most pharmacists in ward rounds, especially hospital pharmacists, has been a major weakness in pharmaceutical care services [15]. Lack of an enabling environment, knowledge deficits, inadequate pharmacy personnel and excess workloads, among others, pose challenges to pharmaceutical care [15].

3.3. Recommendations and way forward

To address some of the issues impeding the successful provision of pharmaceutical care services in Nigeria's tertiary institutions, we propose the following recommendations and way forward as shown in Table 1:

Table 1. Way forward for the optimal integration of pharmaceutical care.

Number	The way forward
1	Transformational change in pharmaceutical care evolution in Nigeria's tertiary institutions.
2	Strengthening of interprofessional relationships between clinical pharmacists and other healthcare providers toward good implementation of pharmaceutical care.
3	Provision of adequate funds to support the research and management of undergraduate and postgraduate education of clinical pharmacists by relevant institutions to broaden their knowledge of pharmaceutical care.
4	Collaboration between community pharmacists and clinical pharmacists to organize public enlightenment and sensitization programs toward increased acceptability by members of the public.
5	Improved remuneration for members of the healthcare team.

a. Strengthening the interprofessional relationship with other health care workers in the hospital premises

Findings have shown that poor communication between physicians and pharmacists and other healthcare professionals is a major cause of medical errors and unfavorable health outcomes [16]. Deliberate and effective physician-pharmacist collaboration within certain clinical settings significantly improves pharmaceutical care, resulting in improved patient outcomes [17].

The pharmacists should develop a strong partnership with other healthcare providers in the hospital, especially with the physicians. The tertiary hospital has been structured in such a way that there is too much segregation among healthcare professionals. Pharmacists are supposed to work hand in hand by attending ward rounds together with the physician and organizing occasional seminars whereby information is shared about the new drugs on the market. Studies that have integrated pharmacists into primary care practices have shown improved patient outcomes [18].

While pharmacists have the potential to standardize medication-therapy problems and recommend solutions, they also have access to first-hand information about recent developments in

the industry. Though physicians are structured to prescribe drugs to patients in tertiary hospital settings, constant deliberation will enable them to provide and share necessary information. Thus, provisions should be made to strengthen the relationship between healthcare workers based on professional grounds, rather than allowing them to be isolated without regular exchange of knowledge and discussion. There is a need for constant reviews of drugs and drug information.

b. Government intervention in drug production regulation as well as price policy

Regular evaluations of drugs and drug production, regulations and price regulations outside of tertiary hospitals are important. In a bid to provide adequate pharmaceutical care by clinical pharmacists, the model of the supply and profits being made cannot be overlooked. Oftentimes, there are so many monopolies in the pharmaceutical industry that they directly or indirectly cause an unnecessary surge in the price of certain classes of drugs. Substandard drug products are being avoided, and when the standard brands become expensive and unaffordable, it makes more people shy away from seeking pharmaceutical care in a tertiary setting and opt for self-medication, which, in turn, leads to more inaccessibility to adequate clinical care. Drug regulation by bodies such as the National Agency for Food and Drug Administration Control and the National Drug Law Enforcement Agency should always be in check to reduce taxes on some imported drugs and drug products that affect the provision of pharmaceutical care. For home-based pharmaceutical companies, checks and constant inspection should be put in place to ensure quality assurance of the drugs both in the process of manufacturing and packing and in the outcome.

c. Availability/Accessibility of population insurance

According to statistics, only about 5 million Nigerians, representing 3% of the Nigerian population, are covered by the National Health Insurance Scheme (NHIS) policy, and they are mostly formal sector workers, particularly, federal civil servants. Provisions should be made to educate the public on the importance, benefits and how they can be a part of this social insurance scheme [19]. Except in the case of serious health problems, the average Nigerian middle-class person will not want to pay a yearly commission.

The NHIS is intended to provide easy access to healthcare for all Nigerians, and it should be made available to the public. The new National Health Insurance Authority Act of 2022, which repealed the National Health Insurance Scheme Act of 1999, will serve as an important tool in attaining universal health coverage [20]. The act integrates a mandatory mechanism for the provision of health insurance, with the goal of promoting quality and affordable care. Thus, educating the public and implementing the scheme will increase access to tertiary hospital pharmaceuticals. Implementation and accessibility to the NHIS will allow for adequate pharmaceutical care implementation.

d. Implementation of postgraduate education and research-focused institutes in tertiary hospitals

Clinical pharmacists working in a tertiary hospital setting have access to drug information rather than maximizing research-focused education. Provisions should be made, and encouragement given to clinical pharmacists to be involved in research. This can be implemented by providing a World Health

Organization-assisted laboratory research institute, even in certain tertiary hospitals. Through this, pharmacists, while on duty, will have access to formulate and conduct research on the already available drugs and drug products made available by the pharmaceutical industry. They can make clinical findings based on their access to direct drug consumers, comparing the side effects, contraindications and interactions of different drugs and drug products on different people.

e. Standard documentation practice

Pharmaceutical care documentation is essential in achieving evidence-based, patient-centered and outcome-oriented pharmaceutical care interventions; it also facilitates continuity of care and provides a platform for interaction with other members of the healthcare team. Several documentation models have been proposed for effective pharmaceutical care and optimum therapeutic outcomes. Notably, among these systems is the Subjective Objective Assessment Plan system, the Pharmacist's Workup of Drug Therapy system and the Condition Outcome Regimen Evaluation–Pharmaceutical Risks Interactions Mismatch Efficacy–Finding Assessment Resolution Monitoring (CORE-PRIME-FARM) system [21].

The CORE-PRIME-FARM model provides a formative and summative approach to pharmaceutical care. The CORE component of this model helps the pharmacist and healthcare team to come up with a dynamic pharmacotherapy working plan for a specific patient. The second component, PRIME, enables the identification of medication-related problems. While FARM provides a clear and brief note for each medication-related problem, it also highlights the progress, activity, and projected follow-up in a simple and systematic manner such that it is applicable in a busy working environment. Hence, these three interconnected components serve to provide a standardized and systematic approach to pharmaceutical care [21].

4. Conclusions

Pharmaceutical care represents an integral aspect of the pharmacy practice and an integral part of quality healthcare delivery in Nigeria. This article described the gaps that exist in the delivery of pharmaceutical care in Nigerian tertiary institutions. Pharmaceutical care boosts patient care and optimizes medication safety. Gaps such as inadequate knowledge, turbulent interprofessional relationships and mislaid standards of service delivery stall the appropriateness of these interventions. The provision of this care can be improved by strengthening health workforce culture, providing an adequate policy framework for implementation, improving the standard of practice, and incorporating continuous education and research in tertiary institutions.

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Conflict of interest

The authors declare no conflict of interest.

Authors' contributions

YAA conceptualized the idea. All authors contributed to the first draft. AAA, NCA and DOS edited the first draft. All authors reviewed and prepared the final draft. All authors reviewed the final draft and authorized the draft for submission.

References

1. Hepler CD, Strand LM (1990) Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm* 47: 533–543. <https://doi.org/10.1093/ajhp/47.3.533>
2. International Pharmaceutical Federation. Statement on pharmaceutical care 1998. Available from: www.fip.nl/pdf/pharmcare.pdf. Accessed 20 Sept 2022.
3. Penna RP (1990) Pharmaceutical care: Pharmacy's mission for the 1990s. *Am J Hosp Pharm* 47: 543–549. <https://doi.org/10.1093/ajhp/47.3.543>
4. Erah PO, Nwazuo JC (2002) Identification of standards for pharmaceutical care in Benin city. *Trop J Pharm Res* 1: 55–66. <https://doi.org/10.4314/tjpr.v1i2.14585>
5. Erah PO (2003) The changing roles of pharmacists in hospital and community pharmacy practice in Nigeria. *Trop J Pharm Res* 2: 195–196. <https://doi.org/10.4314/tjpr.v2i2.14599>
6. Udoh A, Akpan M, Ibrahim UI, et al. (2021) Clinical pharmacy services provided in public sector hospitals in Nigeria: a national survey. *Int J Pharm Pract* 29: 471–479. <https://doi.org/10.1093/ijpp/riab046>
7. Ogbonna BO, Oparah AC, Odili VU (2019) Pharmaceutical care activities in Nigeria from 1970 to 2018: A narrative review. *EC Pharmacol Toxicol* 7: 789–805.
8. Obayendo T (2021) Pharmaceutical care: right of every Nigerian, says CPAN Chairman [Internet]. Pharmanews online. Available from: <https://pharmanewsonline.com/pharmaceutical-care-right-of-every-nigerian-says-cpan-chairman/>
9. Okoro RN, Ibrahim BF (2012) Hospital pharmacists' knowledge of pharmaceutical care in Maiduguri, North Eastern Nigeria. *Pharm Glob* 3: 1–5.
10. Surugue J, Vulto AG (2006) The hospital pharmacist: your stakeholder for in-hospital medication safety. *EJHP Practice*. Available from: https://ec.europa.eu/health/archive/ph_systems/docs/ev_20080617_rd03_en.pdf
11. Dowden A (2017) Deprescribing: reducing inappropriate polypharmacy. *Prescriber* 28: 45–49. <https://doi.org/10.1002/psb.1541>
12. Funsho EJ, Titilayo OO (2015) Evaluation of the Knowledge and Practice of Pharmaceutical Care Among Hospital Pharmacists in Secondary and Tertiary Hospitals in Lagos State, Nigeria. *World J Pharm Sci* 1200–1306, 2321–3086.
13. Okonta JM, Okonta EO, Ofoegbu TC (2012) Barriers to implementation of pharmaceutical care by pharmacists in Nsukka and Enugu Metropolis of Enugu State. *J Basic Clin Pharm* 3: 295–298. <https://doi.org/10.4103/0976-0105.103823>
14. Ekpenyong A, Udoh A, Kpokiri E, et al. (2018) An analysis of pharmacy workforce capacity in Nigeria. *J Pharm Policy Pract* 11: 1–9. <https://doi.org/10.1186/s40545-018-0147-9>
15. Suleiman IA, Onaney O (2011) Pharmaceutical care implementation: a survey of attitude, perception and practice of pharmacists in Ogun State, South-Western, Nigeria. *Int J Health Res* 4: 91–97.

16. Tiwary A, Rimal A, Paudyal B, et al. (2019) Poor communication by health care professionals may lead to life-threatening complications: examples from two case reports. *Wellcome Open Res* 4: 7. <https://doi.org/10.12688/wellcomeopenres.15042.1>
17. Gallagher RM, Gallagher HC (2012) Improving the working relationship between doctors and pharmacists: is inter-professional education the answer? *Adv Health Sci Educ* 17: 247–257. <https://doi.org/10.1007/s10459-010-9260-5>
18. Rigby D (2010) Collaboration between doctors and pharmacists in the community. *Aust Prescr* 33: 191–193. <https://doi.org/10.18773/austprescr.2010.088>
19. Shobiye HO, Dada I, Ndili N, et al. (2021) Determinants and perception of health insurance participation among healthcare providers in Nigeria: a mixed-methods study. *PLoS One* 16: e0255206. <https://doi.org/10.1371/journal.pone.0255206>
20. National Health Insurance Authority (2022) National Health Insurance Authority–News Release. Available from: <https://www.nhis.gov.ng/2022/09/03/nhia-act-2022/>. Accessed 21 Sept 2022.
21. Canaday BR, Yarborough PC (1994) Documenting pharmaceutical care: creating a standard. *Ann Pharmacother* 28: 1292–1296. <https://doi.org/10.1177/106002809402801114>



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