Developing a Leadership and Practice Advancement Training Curriculum for Intern Pharmacists in Nigeria Using the ADDIE Model

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ABSTRACT

The Problem: Leadership and clinical-pharmacy advancement training are lacking during post-graduate pharmacy internships in Nigeria.

Objective: To design and develop a leadership and clinical-pharmacy advancement training curriculum for intern pharmacists.

Innovation: The curriculum was designed to include leadership development, process improvement, and project management, with a culminating capstone project, using the analysis, design, development, implementation, and evaluation (ADDIE) model. Twelve intern-pharmacists were selected representing three pharmacy schools and four hospitals in Nigeria. Baseline assessments included previous exposure to module topics, beliefs, and level of comfort with module skills.

Findings: The leadership curriculum was developed and tested on 12 intern pharmacists. Their average age±SD was 23.4±1.9 years and 7(58.3%) of the participants were males. The participants had received previous training in leadership (33.3%), project management (16.7%), and process improvement (16.7%). In addition, 91.6% believed intern pharmacists could be leaders in advancing clinical pharmacy practice.

Conclusion: The leadership and clinical-pharmacy advancement training curriculum was designed and developed using the ADDIE model for intern-pharmacists, who were highly prepared.

Keywords: Leadership, Practice Advancement, ADDIE model, Pharmacy Interns, Nigeria

DESCRIPTION OF THE PROBLEM

The Nigerian pharmacy training curriculum currently includes didactic and experiential clinical pharmacy training for five (BPharm) or six years (PharmD), followed immediately by a mandatory year-long internship. The internship involves practical training in the handling of pharmaceutical equipment, manufacture/preparation of galenicals and other medicinal products, prescription validation, dispensing, medicines management, drug information, and pharmacy management. However, leadership training is not done.[1]

Leadership brings together the skills needed to achieve an objective by creating an inspiring vision, then motivating and inspiring others to understand the vision.[2] In pharmacy practice, leadership means continuously improving service delivery to optimize patient health outcomes.[3] Pharmacists now have leadership responsibilities that include technological advancements, operations, financial and human resource management, regulatory and quality issues, patient safety, and inter-professional collaborative health care.[4]

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Leadership in clinical pharmacy practice is important because the pharmacist's roles are evolving from traditional dispensing to patient care and team roles. Leadership in pharmacy is important not only for senior pharmacists, but also for young pharmacists to carry out their tasks better. As they embark on their careers, intern pharmacists can benefit from informal leadership work by acquiring effective communication skills, holistic judgment, and forward thinking to become more confident and ready to tackle future challenges.[5] Therefore, leadership training and development should be started as early in the pharmacist's career as internship training.

STATEMENT OF THE INNOVATION

Stakeholders have advocated for additional professional development in leadership in pharmacy students in the United States.[6] Guidance for this development comes from the Accreditation Council for Pharmacy Education (ACPE) 2016 Standards, the Center for the Advancement of Pharmacy Education (CAPE) educational outcomes,[7] and the literature[8] Leadership development is taught didactically to pharmacy students in Nigeria, but not during pharmacy internship.[1] The objective of this study was to design and develop a leadership and clinical pharmacy advancement training curriculum for intern pharmacists in Nigeria.

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DESCRIPTION OF THE INNOVATION

The leadership and clinical pharmacy advancement training curriculum was developed using the analysis, design, development, implementation, and evaluation (ADDIE) model to train newly employed intern pharmacists in Nigeria during their one-year period of internship training. ADDIE is an instructional model used to provide the necessary guidelines and frameworks for designing training in various settings.[9] It is used in creating a training program that is geared toward producing specific learning outcomes. The program used a blended learning, which is a formal education model that involves the student undergoing online learning with some element of student control over time, place, path, and/or pace.[10,11]

In this training, we used a modified project-based learning model that combined a standardized 7-month online didactic learning sequence and a concurrent, 9-month, face-to-face capstone project that advances clinical pharmacy practice in partnership with preceptors, who were practicing pharmacists within the internship site . The project started on the third month of the training with problem identification and conceptualization of project ideas during a project management module and continued through a second module on process improvement (month-7), to the end (month-12), where project reports were submitted. The overlapping enabled the immediate translation of knowledge learned didactically into practice. In addition, the interns had time to develop, implement, monitor, evaluate, and report incremental changes observed.

The internship's experiential learning involved clinical rotations to the various units in the site (i.e., accident and emergency, medical, surgical, obstetrics and gynecology, pediatrics, anesthesia, psychiatry, pharmacy store, out-patient/ambulatory pharmacy, drug information, and infectious disease units).

Setting

This training was completed at Jos University Teaching Hospital (JUTH), and Plateau State Specialist Hospital (PSSH), located in Jos East and Jos North Local Government Areas of Plateau State respectively, North-Central Nigeria. It was also completed in the Federal Neuro-Psychiatric Hospital (FNPH) Benin City, Edo state, and the Delta State University Teaching Hospital (DELSUTH), both in Southern Nigeria. JUTH and FNPH are tertiary health facilities that receive referrals from health facilities within town, other Local Government Areas within the state, and neighboring states. PSSH and DELSUTH are state-owned tertiary health institutions that receive referrals mainly from general hospitals in the Local Government Areas within the state.

Participants

Intern pharmacists, who were recent pharmacy graduates selected purposefully from three pharmacy schools and commenced their internships at participating institutions, were the pilot participants. They were required to: 1) have graduated with a minimum Cumulative Grade Point Average of 2.5 out of a scale of 5.0, 2) performed above average during the internship placement interview, and 3) have high educational and professional self-efficacy.

Instruments for Training

The training curriculum was developed using the ADDIE model of instructional design. To assess the level of preparedness for the training, baseline data for learner analysis were collected with a 15-item questionnaire. The four categories of questions were: personal and social characteristics, motivation and attitudes, prior knowledge and skills, and previous experiential experience.

Ethical Consideration

The Institutional Research Ethical Committee of the Jos University Teaching Hospital approved the protocol for the training. After a detailed explanation of the training intent and process to the participants, written informed consent was sought and obtained before questionnaire administration and training participation.

Description of Training

The training involved intern pharmacists as the participants, facilitators from the United States and Nigeria for each module, and preceptors at the practice site who supervised the specific intern projects. The curriculum development was guided by the ADDIE model.

Analysis: Goal, learner, preceptor needs, and training site analyses were conducted. Analysis of an online platform was completed and training included platform navigation and threaded discussion/video conference etiquette.

Design: Meetings were scheduled with the facilitators and preceptors before project initiation to discuss expectations and develop learning objectives. The specific learning activities were determined by the facilitators but included: online PowerPoint presentations, assigned reading, scheduled group video conferences, journal article reviews, quizzes, written assignments, and threaded discussions. The project aimed to facilitate the development and implementation of clinical pharmacy practice including:

1. creating collaborative patient-centered programs with members of the health care team,
2. expanding the role of the pharmacist in the institution,
3. preparing the pharmacy department to embark on clinical pharmacy services, and
4. improving patients' access to clinical pharmacy services.

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Curriculum content: The curriculum was developed by facilitators who were lecturers from pharmacy schools and faculties from the Universities of Colorado, USA and Jos, Nigeria, board specialized pharmacists from the USA, a community and public health pharmacist, and a freelance scientific editor. The curriculum design included an introduction to the training program for two weeks.

Module 1 (four weeks) on Clinical Pharmacy Practice Advancement included:

a. Basic overview of the history and advances made in clinical pharmacy practice.
b. Identifying gaps in self-care that pharmacists can fill.
c. Physician-pharmacist collaboration.
d. Specialty areas for board certification.

Module 2 (six weeks) on Process and Quality Improvement
Required registration and completion of courses from the Institute of Health Improvement (IHI) to obtain a basic certificate in quality and safety. Ten courses (five from improvement capability and five from patient safety) were completed during this module.

Module 3 (four weeks) on Project Management Essentials
Involved completing the Alison Diploma in project management course developed by Mike Feerick, and available online at: https://alison.com/course/diploma-in-project-management-revised-2017. The interns were required to apply the System Development Life Cycle (SDLC) model that applies analysis, planning, design, and evaluation in their project planning.

Module 4 (four weeks) on Fundamentals of Leadership
Defined leadership in detail, including the characteristics of leaders and leadership, the difference between formal and informal leadership, and the traits and styles of effective leaders.

Module 5 (four weeks) on Personal Leadership Development
Discussed the importance of leadership for pharmacists, the core vision and values of an effective leader, habits required for effective leadership, and leadership behaviors for pharmacists. The module ended with the interns writing out a personal leadership development plan.

Module 6 (four weeks) on Interpersonal Leadership Development
Involved the interns diagnosing and analyzing their temperaments. They also applied concepts of intra- and inter-personal relationships, communication, and persuasive skills to leadership and clinical pharmacy practice.

Module 7 (three weeks) on Process and Quality Improvement
Involved the completion of the three additional courses from the IHI program. The interns were encouraged to use the Plan-Do-Study-Act cycle in planning and implementing their capstone projects.

At the end of module 7, the interns filled out a training survey about their leadership training experience. They were also required to submit a report of their projects, which included abstracts for conference presentations and manuscripts for peer-reviewed journal publications in the twelfth month of the training.

Development: Participating facilitators and preceptors received module planning tools, facilitator and preceptor guides, instructional strategies, expectations from facilitators and preceptors, training goal and objectives, materials/resources, training calendar, communication management tips, intern orientation manual, and module planning template.

Implementation: The training was delivered through online didactic and face-to-face interaction with the twelve interns, and lasting approximately one year beginning in November 2019.

Evaluation of the training was performed using three of the four levels of evaluation in Kirkpatrick's model: reaction, learning, and behavior.[7] Evaluation of participants' reactions was obtained through surveys of the learners' evaluation of the learning platform, the content of the didactic training, learning site, and the preceptors. A summary of the work breakdown structure of the training using the ADDIE model is shown in Figure 1.

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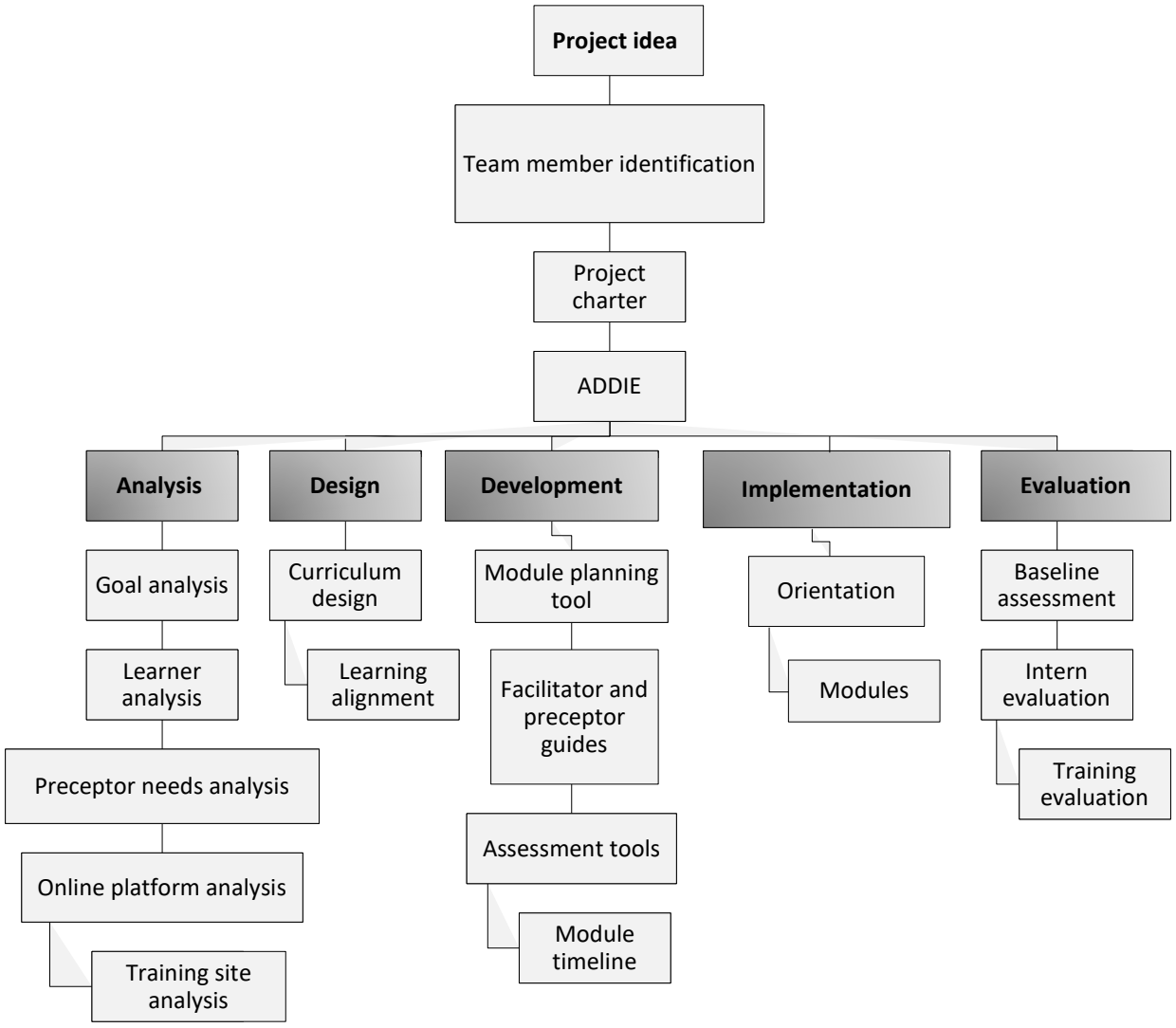

Figure 1: Structure for leadership and clinical pharmacy practice advancement training for intern pharmacists in Nigeria, using the ADDIE model

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Key Findings

A leadership and clinical advancement curriculum was designed and developed to train intern pharmacists. The year-long training program commenced with twelve participants. There were 7(58.3%) males and the average age was 23.4±1.9 years. Preliminary findings are shown in Figure 2.

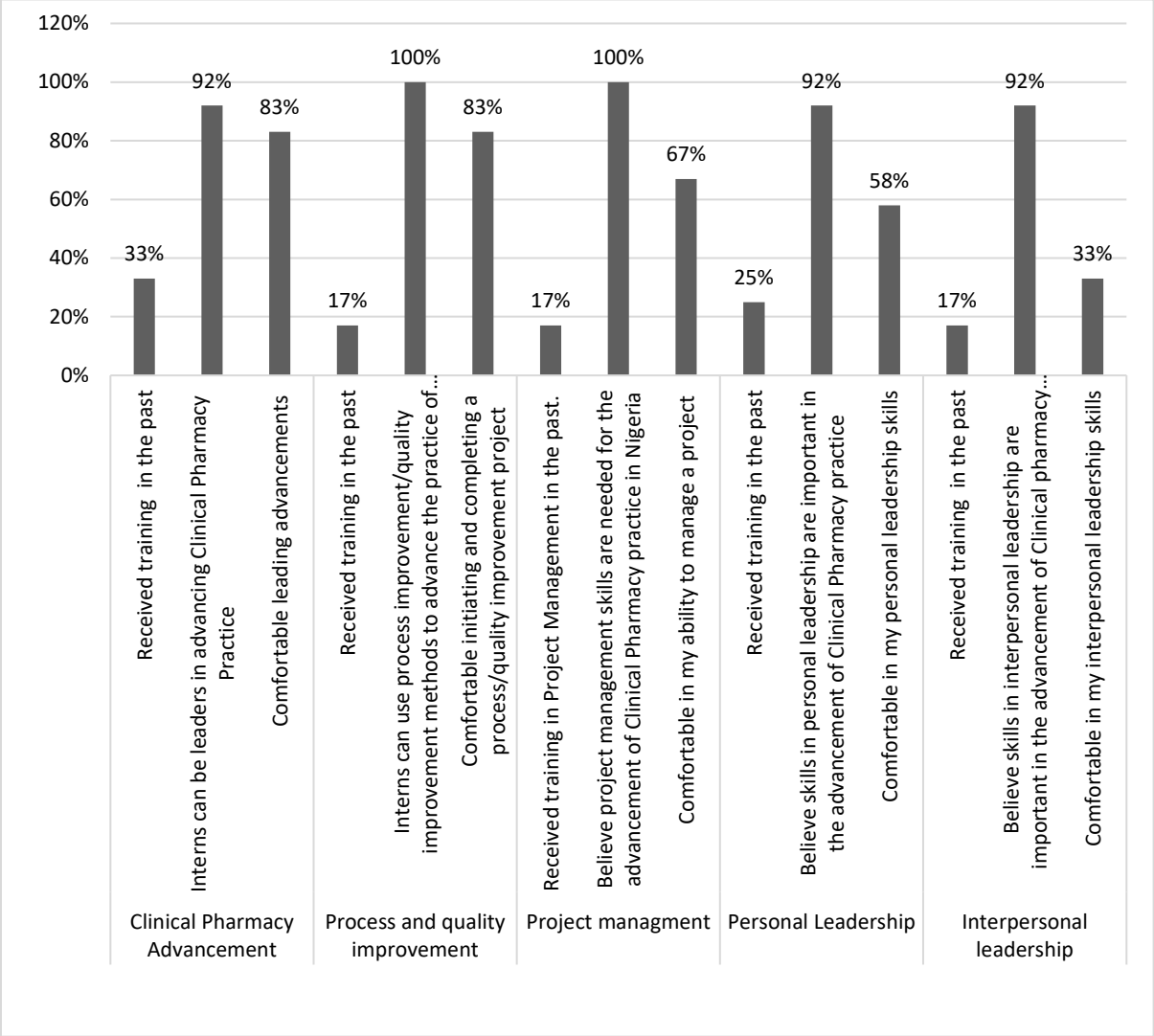

Figure 2: Baseline assessment of intern pharmacists n=12

CRITICAL ANALYSIS

Eleven out of the twelve interns completed the didactic modules. However, only five interns completed their projects. The project topics included reducing the number of missed antibiotics doses in the in-patient pediatric ward, reducing dispensing errors for IV infusions in the Emergency Unit, medication reconciliation in hospital patients, improving pharmacists' knowledge in antibiotic stewardship, and improving antibiotic stewardship practices.

The Covid-19 pandemic posed a major challenge in project completion, resulting in a two-month extension for submission of project reports. Other challenges included unstable availability of internet services and variability in local preceptor support.

NEXT STEPS

The implementation and evaluation of the training will be performed using Kirkpatrick's model. Intern pharmacists will be trained yearly so that there is a continuous representation of trained pharmacy leaders in Nigeria. As the program proceeds, near-peer assessment of performance can be implemented, allowing successfully trained interns to mentor newer interns in developing leadership skills needed to practice successfully.

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With the expanding roles of the pharmacist, especially in clinical pharmacy practice globally, this training will assist in bridging the gap between theory and practice, enabling the intern pharmacist to develop critical thinking skills and competencies to develop and implement projects that advance the practice of clinical pharmacy practice, as well as meet immediate and long-term societal needs.

CONCLUSION

Pharmacist interns had limited prior exposure to leadership, process/quality improvement and project management training. The leadership and clinical pharmacy practice advancement training curriculum was designed and developed to train Nigerian pharmacy interns in these areas and better enable continuous improvement of service delivery to optimize patient health outcomes.

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Conflict of Interest: None

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