

## Perceptions of Healthcare Providers about Pharmacists' Clinical Roles in Patient Care in Ghana

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### Abstract

**Background:** Clinical pharmacy practice is distinguishable from the dispensing model by its focus on direct patient care. To function effectively in this role, pharmacists need to have clinical competencies, hence the establishment of the Doctor of Pharmacy (PharmD) program. In Ghana, the PharmD program is in its early stages; graduating its first set of pharmacists in 2018. There is therefore need to understand how these recent PharmD graduates are engaging in clinical roles and the perceptions of other health professionals they need to work collaboratively with.

**Methods:** Four different focus group discussions (FGDs) were conducted with physicians, nurses and pharmacists in separate sessions. Questions explored perceptions of the clinical roles of pharmacists. The FGDs were audio-recorded and transcribed verbatim. A thematic analysis of the transcripts was conducted.

**Results:** Perceptions around the roles of clinical pharmacists were in two categories – (1.) Roles associated with the provision of direct patient care [(i.) assurance of appropriateness, and (ii.) optimization of pharmacotherapy; and (2.) Roles involving participation in inter-professional collaborative care with other healthcare professionals through their (i.) contribution of pharmacotherapy expertise, and (ii.) input in interprofessional education and practice.

**Conclusion:** Findings from the study highlight perceived contributions of pharmacists, and potential for more relevance to clinical care, while also drawing attention to the emergence of clinical roles of pharmacists in healthcare systems in a global context. There is continuing need for advocacy for the pharmacy profession and policy changes in healthcare delivery models to maximize potential benefits of clinical pharmacists to health outcomes.

**Keywords:** Clinical pharmacy, interprofessional care, pharmacy practice, pharmacists' roles, patient care

### INTRODUCTION

In 2008, the American College of Clinical Pharmacy (ACCP) Board of Regents, defined clinical pharmacy as “a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, wellness, and disease prevention.”<sup>1</sup> Clinical pharmacy services were developed in the United States in the 1960s and in subsequent decades, have been adopted globally.<sup>1,2</sup> Clinical pharmacy practice is distinguishable from the prescription dispensing model by the focus on direct patient care, which involves interaction with the patient and collaboration with other healthcare professionals in clinical decision-making to optimize treatment. To function effectively in this expanded role, pharmacists need to be equipped with additional competencies. Hence, the establishment of the Doctor of Pharmacy (PharmD) program in the U.S. in 1992; providing training which emphasizes clinical competencies. However, the PharmD program in Ghana started in 2012.

With the Bachelor of Pharmacy (BPharm) training, pharmacists had limited patient interaction and almost no expectation of involvement in team-based patient care.<sup>3</sup> The transition to the doctor of pharmacy degree is to equip pharmacists with relevant clinical knowledge and skills, and thus enable participation in direct patient care.<sup>3</sup> In a study that compared knowledge and attitudes about antibiotics resistance, and antibiotics self-practicing between BPharm and PharmD students, authors concluded that BPharm students did not have as accurate, and as much knowledge about antibiotics usage and resistance as PharmD students.<sup>4</sup> In developed countries like the United States, the PharmD program has replaced the BPharm training.<sup>3</sup> While there are distinct differences in practice globally, clinical pharmacy practice is well established as an integral part of team-based care.<sup>5</sup> Clinical pharmacy practice is only more recently gaining momentum in developing countries. In view of this, most PharmD pharmacists in Ghana are observed in their clinical roles within hospitals and clinics. Prior to the PharmD degree program, pharmacists in Ghana mostly worked in the communities with a few employed by hospitals and clinics to mainly manage the dispensing, advising on drug use and other pharmacists' responsibilities<sup>31</sup> without much direct patient care involvement.

In Ghana, the Kwame Nkrumah University of Science and Technology (KNUST) is the first institution to start the PharmD program. This six-year training replaced the BPharm program from the 2012-2013 academic year, with the first set of

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graduates in 2018. Pharmacists who have graduated from the program, mainly practice clinically in direct patient care roles within hospitals. There is therefore a need to understand how these recent PharmD graduates are engaging in their clinical roles, as well as the perceptions of other health professionals they collaborate with, to deliver team-based care.

The objective of the study was to explore the perception of practitioners (physicians, nurses and pharmacists) at Komfo Anokye Teaching Hospital in Ghana about the clinical roles of PharmD pharmacists in patient care.

The study was duly approved by the University of Minnesota Institutional Review Board and the Komfo Anokye Teaching Hospital Institutional Review Board.

## METHOD

### Setting

This study was conducted virtually (via zoom) with healthcare providers at the Komfo Anokye Teaching Hospital (KATH) in Kumasi-Ghana. KATH is one of two major teaching hospitals in Ghana and the second largest in the country. Located at the heart of Kumasi in the Ashanti Region, and the only teaching hospital in the region, KATH has thousand two hundred (1200) beds.<sup>6</sup> Due to its geographical location, KATH receives referrals from the northern regions (Northern, Upper East and Upper West), Brong Ahafo, Central, Western, Eastern and parts of the Volta Regions.<sup>6</sup>

### Participants

Twenty (n=20) participants were recruited to participate in four focus group discussions (FGDs). The FGDs were homogenous by practitioner type, consisting of two pharmacists in focus group I, six physicians in focus group II, eight pharmacists in focus group III, and four nurses in focus group IV. All the pharmacist participants in the study were PharmD graduates from the Kwame Nkrumah University of Science and Technology (KNUST).

### Recruitment

Invitation to participate was extended via text messages, emails and WhatsApp Messenger (by Meta in Menlo, California, United States) with purposeful sampling. Four volunteers offered to coordinate with other members in the group, enabling timely and effective communication. These volunteers assisted with organizing and scheduling of the FGD at dates and times mutually convenient for researcher and participants. Informed consent was obtained prior to the FGDs.

### Data Collection

All four FGDs were facilitated by the Co-PI using a semi-structured guide. The questions focused on participants' knowledge about clinical roles of pharmacists; perceptions of how clinical pharmacy practice affects patient care; description of how other practitioners work with clinical pharmacists; and

the benefits of working with clinical pharmacists in the delivery of patient care.

The FGDs were conducted within a one-month period (July 12 – August 05, 2020). With participants' consent, the FGDs were digitally recorded via zoom for 60 – 90minutes. The audio recordings were then transcribed verbatim by the Co-PI who conducted the FGDs. Transcripts were reviewed for accuracy and de-identified to meet ethical standards by researchers.

### Data Analysis

All transcribed data were entered into MS Word, and MS Word and MS Excel were utilized for data analysis. Each transcript was independently coded by two investigators (AAS; ONO). Thematic analysis of all the transcripts was conducted.<sup>30</sup> Following the coding of each transcript, the investigators met to ascertain mutual codes and reconcile any differences by going back to the data. Codes were refined and grouped into broad categories. The investigators used inductive and deductive approaches, which involved querying the data based on predetermined thematic areas, as well as identifying new themes emerging from the data relevant to the study aims.

## RESULTS

Themes related to perceptions of the roles of clinical pharmacists (specifically those with a PharmD degree) were in two categories – (A.) roles associated with the *provision of direct patient care*; and (B.) roles that involved participation in *inter-professional collaborative care* with other healthcare professionals. See figure (1) attached.

### A. Provision of direct patient care

In healthcare delivery, direct patient care is defined as “practice that involves the pharmacist’s direct observation of the patient and his or her [i.e., the pharmacist’s] contributions to the selection, modification, and monitoring of patient-specific drug therapy. This is often accomplished within an inter-professional team or through collaborative practice with another healthcare provider”<sup>7</sup> Under this category of roles, two themes emerged with sub-themes that explicate the nuances thereof.

#### **Theme A1. – Assurance of appropriateness of pharmacotherapy**

In all the FGDs (pharmacists, nurses, physicians), there were discussions of the clinical pharmacists' role in ensuring that pharmacologic treatment recommendations for patients during hospital stay were appropriate, consistent with current treatment guidelines and suitable for each individual patient, considering their status, clinically and otherwise. To accomplish this goal, the clinical pharmacists contributed to patient care in the following ways: (i.) medication review at bedside, (ii.) augmentation of patient information; and (iii.) patient advocacy.

*Medication review at bedside.* Physicians, pharmacists and nurses in their respective focus groups described the role of the clinical pharmacist in reviewing patient information from the patient paper charts (referred to as folders), and checking the prescription orders to determine whether the medication(s) prescribed, dose, regimen, administration, etc. adhered to current treatment guidelines. This role, they acknowledged had been beneficial in preventing medication errors.

*"They [pharmacists] are there to help, it's not bad and they're ready to help. Sometimes you're not used to a particular medication but then the patient is on that medication, so you want clarification on that, and sometimes the dosages and how to give it".* [Nurse]

*"...what I have observed is most of them join us for rounds and then when we're making decisions as to the drugs, the drug of choice, they kind of help us to know the various drug-drug interactions, the side effects, which ones we should go for and then most of them help us with calculations of certain corrections".* [Physician]

In the event of a problem with the prescription, the pharmacists reported that they made amendments to the prescriptions and communicated the changes to the physicians. However, some of the physicians expressed displeasure with the approach adopted by some of the clinical pharmacists.

*"Usually, it depends on the clinical pharmacist involved and probably the approach they use in conveying that information to the clinical team or doctors involved. Sometimes the way in which the communication may come across might sound as if maybe they're trying to "attack" the doctor..."* [Physician]

*Augmentation of patient information.* In addition to the review of patient charts and prescription orders, the clinical pharmacists shared that they often conducted patient interviews focused on medical history and medication experiences. They reported that patients generally felt more at ease with the pharmacist versus the physician, hence they elicited more information from patients that sometimes proved to be relevant to treatment.

*"So we go to the folder and see something like the doctor has seen the patient, the patient says he's ok or fine but when we go and see the patient, the patient complains that they have a little headache or have some difficulty swallowing then we're able to pick on these ones and then sometimes we go back to the doctors and then bring that up with them, that's one of the things we do."* [Pharmacist]

*Patient advocacy.* Related to the ease of engagement with patients, discussion among the clinical pharmacists pointed to the perception of their role in advocating for the patient with

the physician regarding treatment. For example, they would approach the physician to consider a change in treatment for a patient in light of new information they had received, like side effects a patient may not have mentioned to the physician.

#### **Theme A2. – Optimization of therapeutic treatment**

The second theme related to direct patient care was the clinical pharmacists' role in enhancing treatment. Discussion around these roles came mainly from the focus groups with nurses and pharmacists. There were two key tasks associated with this objective: *Therapeutic drug monitoring* and *patient education* (including medication counseling).

*Therapeutic drug monitoring.* Both nurses and pharmacists acknowledged the role of clinical pharmacists in monitoring drug therapy in hospitalized patients. The clinical pharmacists reportedly identified and addressed drug therapy-related issues such as overdose, appropriate adjustments of therapy in cases of co-morbidities, drug-drug interactions and drug-disease interactions.

*"...they get the very best of pharmaceutical care that the pharmacist can offer. So, you'll be doing things like drug monitoring, in the outpatient they'll come for refills... And in instances where people get into an issue of drug overdose, you're the one (clinical pharmacist) they call".* [Pharmacist]

The nurses in the focus group stressed that this clinical role contributed significantly to preventing adverse drug events as errors and potential adverse effects were often caught and addressed in a timely manner.

*"When I started working in ----- somewhere 2009, I encountered a lot of wrong prescriptions. You find doctors writing Amoxiclav IV and they write it like tablet dose, and I had to almost always go down to the pharmacist to rectify that."* [Nurse]

*Patient education and medication counseling.* These functions commonly performed by pharmacists for out-patients were reportedly done by clinical pharmacists in the in-patient setting. The clinical pharmacists met with hospitalized patients to educate them about their conditions and counsel them on the medications they were on. They spoke to patients about the anticipated therapeutic effects and side effects. They followed up with these patients, often clarifying instructions and addressing concerns. When available, these pharmacists dispensed and reviewed discharge medications with patients at the end of their hospital stay. They provided helpful information to enable effective self-administration at home and enhance treatment adherence.

*"Counseling on discharge medication is something that the first batch of pharmacists started. I remember Dr. X (Pharmacist) started that, so anytime the patient had to be discharged, he left a number that we should call him..."* [Nurse]

The pharmacists' availability to engage with patients at the time of discharge helped to reduce workload and associated stress for the nurses, who would otherwise have the task of dispensing the medications and providing the relevant information.

### B. Participation in interprofessional/collaborative care

From the data, three themes emerged under this category: – *contribution of pharmacotherapy expertise; interprofessional education and practice; and professional interdependence in patient care.* Several roles were associated with these themes respectively.

#### **Theme B1. – Contribution of pharmacotherapy expertise**

Pharmacists with PharmD degree were perceived as drug experts. Specific roles identified under this category were: (i.) participation in ward rounds, (ii.) medication review of physician prescribed orders, and (iii.) consultations for other medical professionals.

*Participation in ward rounds.* Participants described the clinical pharmacist's engagement in real time consultation with physicians on the wards. Pharmacists' clinical input included therapeutic recommendations, treatment protocol updates and alternate medications to optimize treatment.

*"For some time now, I realize that when doctors are on rounds, they (pharmacists) also come around. So, they're also involved in the patient care. They help in giving the correct doses to the patient".* [Nurse]

*"What I have observed is, most of them join us for rounds and then when we're making decisions as to the drugs, the drug of choice, they kind of help us to know the various drug-drug interactions, the side effects, which ones we should go for and then most of them help us with calculations . . .".* [Physician]

*Medication review of physician prescribed orders.* Similarly, participants described pharmacists' contributions in adjusting and recommending appropriate drug therapy including dosage, treatment, and drug administration. They acknowledged the pharmacist's role as a patient advocate in the care process, especially in cases of asynchronous communication with physicians and other providers.

*"they're also sort of audit for the medications that we write in terms of the dosage, even sometimes route of administration and then draw our attention about some of these things so that if it's intentional or if it's a genuine mistake we make the necessary corrections".* [Physician]

*Consultations for other medical professionals.* Besides routine engagement among the interprofessional team, participants reported benefits from consulting with pharmacists for

treatment recommendations and working on referrals resulting in treatment interventions.

*"I think clinical pharmacist are support to assist the doctors in making clinical judgment especially when it comes to the treatment and the line of action".* [Physician]

*"There are some clinicians that are really receptive...most of them, when they have an idea of who a PharmD is. They're willing to have us on the ward, they even want to move with us."* [Pharmacist]

However, the pharmacist participants pointed out that some providers were not familiar with pharmacists' clinical roles. For example:

*"Unfortunately, we're still new, a lot of the clinicians still don't know the role we're supposed to take. So some feel like we're infringing or we're trying to get into their space so there's a bit of friction"* [Pharmacist]

#### **Theme B2. – Interprofessional education and practice roles**

There was general consensus among participants that in working together as an interprofessional team, physicians, pharmacists and nurses learn from each other. In particular, they affirmed the clinical pharmacist's roles as (i.) educator and (ii.) information resource.

*Educator.* The physicians, but also nurses, acknowledged clinical pharmacists as educators in teaching about medications and providing insight on pharmacological and pharmacotherapy-related medical situations. Pharmacist participants in the discussions, also confirmed these perceptions.

*"...the little experience I had, I think it had something to do with 2 medications I prescribed to the pharmacy, and it had something to do with drug-drug interaction. So, the clinical pharmacist wrote something in the folder. So, I actually read it and then I went to him and he was just trying to tell me these 2 medications am trying to give to these patients are not supposed to be done"* [Physician]

*Information resource.* Physicians and nurses reiterated in many ways how pharmacists are dependable and reliable information sources for anything medication-related. There was also mention of pharmacists' role in providing literature to support evidence-based practice.

*"pharmacists... going through the patients drug administration, pointing out some of these things identified by the nurse...you have to ask somebody and if you have the clinical pharmacist around....I think their presence at the ward has been positive to me as a nurse and probably generally to other nurses".* [Nurse]

Most of the nurse participants highlighted the essential role of pharmacists in addressing medication-related challenges. These were inclusive of, but not limited to pharmaceutical preparations, dosage calculations, dose administration, and dosage conversations and clarification. Similarly, some of the pharmacist participants' responses resonated with the nurses on their contribution through consultations to enhance patient care.

*"I've had pharmacists on our team. They're also part of the team so most times when we have student nurses and rotation nurses, they just come around to help in the training. And then on the wards too when we have difficulty in any of the treatments, we do call on them to assist us". [Nurse]*

Participants in each of the FGDs acknowledged the significant impact of pharmacists' clinical roles based on the various skills and knowledge pharmacists bring to the interdisciplinary care team. Each category of healthcare professionals affirmed that they all depend on each other's expertise and appreciated the shared learning opportunities.

## DISCUSSION

The roles of the clinical pharmacists in patient care can only be effectively carried out in collaboration with other healthcare professionals. Being a relatively new area of focus in pharmacy practice in Ghana, one of the objectives of the current study was to explore the perceptions of pharmacists, nurses and physicians regarding these emerging roles. Findings highlight how clinical pharmacy roles are perceived by pharmacists, and others healthcare professionals with regards to their clinical contribution to direct patient care and their participation in the care team.

### *Pharmacotherapy expertise in direct patient care.*

Ensuring the appropriateness and accuracy of therapeutic treatment and making recommendations to optimize treatment outcomes are at the core of the competencies required of clinical pharmacists. The *American College of Clinical Pharmacy (ACCP)*, summarizes the primary role of clinical pharmacists as working "directly with physicians, other health professionals, and patients to ensure that the medications prescribed for patients contribute to the best possible health outcomes."<sup>8</sup> The perceptions of the various healthcare providers in the current study demonstrates considerable insight regarding the primary function of clinical pharmacists, and align very well with the above description of pharmacists' clinical roles.

The processes reported in achieving these pharmacotherapy-related objectives are also congruent with those set forth by the ACCP in the *Standards of Practice for Clinical Pharmacists* under standard II (Process of care). For example, the processes reported in the provision of direct patient care lines up well with the tasks listed under the "Assessment of the patient".

These include reviewing medical records; meeting with patient and caregivers; obtaining, organizing, and interpreting patient data; and prioritizing patient problems and medication-related needs.<sup>9</sup>

The findings also highlight the pharmacist's advocacy role for patients, demonstrated by their recommendations to physicians about treatment options based on additional information from patient interactions at bedside. The patient advocacy role shows the prioritization of patient needs and medication-related issues by the clinical pharmacist. Pharmacists have a responsibility to advocate on behalf of their patients for safe and effective medication.<sup>10</sup> Pharmacy training should therefore ensure that pharmacists are well-equipped for this advocacy role.

### *Interprofessional collaboration and professional interdependence*

Regarding the optimization of treatment outcomes, findings in the current study also align with some of the tasks listed in the ACCP document such as evaluating effectiveness, assessing medication-taking behaviors and adherence, and identifying medication-related problems (MRPs) in order to address them.<sup>9</sup> However, a key aspect that appears to be inconsistent in the current practice of clinical pharmacy in Ghana is the collaboration needed in working with other providers. The clinical pharmacist must work collaboratively with the physicians specifically to make initial patient assessments, establish the treatment plan, and/or evaluate the treatment to determine further intervention when needed. Healthcare providers in other disciplines often do not have sufficient knowledge about pharmacists' clinical roles and lack understanding of what clinical pharmacists do<sup>11,12</sup>. This results in under-utilization of the pharmacist's expertise, and consequently potential for less than optimal care for patients.

The nurses who participated in this research acknowledged the critical impact of pharmacists' clinical roles in working side-by-side with them to assist with therapeutic monitoring and taking up medication counseling at discharge. The positive outcomes of these roles on patient care and the support in easing workload for other providers are beneficial in enhancing patient outcomes and minimizing healthcare costs.<sup>13</sup> In contrast, pharmacists' clinical roles in therapeutic monitoring as reported by some physicians may need stakeholder engagement to develop better cooperation. Some of the physicians reported noticing changes in patient therapeutic regimens without appropriate consultation. This could be because there is currently no standard protocol establishing how clinical pharmacists and physicians should work together. However, the physician participants admitted that more pharmacist engagement in clinical roles in the wards would help to reduce stress, improve patient outcomes and reduce workload for physicians. The literature provides evidence showing that these outcomes are more likely when clinical

pharmacists are an integral part of patient care<sup>11,14,16</sup>. In developing countries, participation of clinical pharmacists in patient care has been shown to be beneficial, particularly in reducing adverse drug events and addressing medication therapy problems.<sup>17, -19</sup>

While the competencies of clinical pharmacists related to direct patient care is largely acknowledged as beneficial, establishing their integral role in the care team as the standard of patient care is yet to be achieved in Ghana. There are similar findings in other studies where clinical pharmacists, especially at the early stages of the profession, were largely perceived by other healthcare providers as auxiliary versus integral to the provision of care<sup>20, 22</sup>. Over time, these attitudes and perceptions have also changed as the value of clinical pharmacists in patient care and therapeutic outcomes have become more apparent<sup>23,27</sup>. To increase acceptability, there is need for professional advocacy to expand the patient care roles of clinical pharmacists and accommodate the suite of skills and competencies they have, which have potential to significantly improve patient outcome.<sup>28</sup>

#### LIMITATIONS

There are some limitations to this study. The lead researcher's professional background as a clinical pharmacist and presence as a facilitator in the FGDs, while inevitable, had potential to influence participants' responses.<sup>29</sup> Only healthcare professionals in one healthcare system – KATH, were involved in the study. The single site and the specificity of its context could have affected the data, but the richness of the data can lead to transferable knowledge to other settings. There is further interest to extend the study to other sites including private facilities, clinics and hospitals in different locations to add value to future data collection. Clinical pharmacy as a terminology is not well understood and it was new to most of the participants. It is possible that there could be conflation of the meanings of clinical pharmacy practice and clinic-related roles of pharmacists in general. Due to the unexpected effects of the COVID pandemic, the FGDs were hosted via zoom and the impact on participants ease to interact and respond through that medium was not assessed. Even with these limitations, this exploratory study provides some insight into the perceptions of healthcare professionals regarding pharmacists' clinical roles in Ghana.

#### CONCLUSION

This study explored the perceptions of healthcare professionals regarding clinical pharmacists and how their clinical roles impact patient care within a healthcare system. With limited data on clinical pharmacy practice in developing countries, getting the perspectives of healthcare providers who work collaboratively with newly trained clinical pharmacists is important for enhancing the intended team-based care model. Findings from the study highlight the value that pharmacists' active involvement in clinical care brings to patient care, while

also drawing attention to how the clinical roles of pharmacists are still emerging in healthcare systems in a global context. There is need for continuing advocacy for the pharmacy profession and policy changes in healthcare delivery models to maximize the potential benefits of clinical pharmacists to health outcomes.

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Any underlying research materials related to this paper can be accessed by contacting the corresponding author for copies following appropriate and ethical guidelines.

The opinions expressed in this paper are those of the authors.

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**Figure 1.** Thematic map representing pharmacists' clinical roles

