





## Original Research

# Challenges and opportunities of clinical pharmacy services in Ethiopia: A qualitative study from healthcare practitioners' perspective

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### Abstract

**Background:** Currently, clinical pharmacists have in-depth therapeutic knowledge and scientific skills to act as drug therapy experts in healthcare settings.

**Objective:** The aim of this study was to assess the opportunities and challenges of clinical pharmacy services from the health practitioners' perspective in University of Gondar (UOG) hospital Ethiopia.

**Methods:** A qualitative study was performed using face-to-face in-depth interviews with health practitioners who were directly involved in clinical pharmacy services (clinical pharmacists, physicians, and nurses) in UOG hospital.

**Results:** A total of 15 health professionals from various specialties were interviewed to express their views towards clinical pharmacists' competencies and identified challenges and opportunities regarding their clinical services. Based on interviewees report, the opportunities for clinical pharmacists includes acceptance of their clinical services among health specialties, new government policy and high patient load in hospital. However, inadequacy of service promotions, lack of continuity of clinical pharmacy services in wards, poor drug information services, lack of commitment, lack of confidence among clinical pharmacists, conflict of interest due to unclear scope of practice, and absence of cooperation with health workers were some of the challenges identified by the interviewees.

**Conclusion:** We identified health professionals working in UOG hospital are receptive towards clinical pharmacy services, but identified some of the potential challenges that needed to be focused to strengthen and promote clinical pharmacy services. Further, the opportunities at hand also need to be utilized astutely to boost the services.

### Keywords

Pharmaceutical Services; Professional Practice; Pharmacy Service, Hospital; Pharmacists; Attitude of Health Personnel; Qualitative Research; Ethiopia

## INTRODUCTION

The philosophy of pharmaceutical care (PC) is the sum of responsibilities of the pharmacist to meet all of the patient's drug-related needs through direct patient care and cooperation with other facets of the health care system. Clinical pharmacists possess in-depth therapeutic knowledge and scientific skills that allow them to act as drug therapy experts in healthcare setting.<sup>1</sup> The American College of Clinical Pharmacy (ACCP) defined clinical pharmacy as a discipline with specialized pharmacists concerned with the science and practice of rational drug therapy.<sup>2</sup> Clinical pharmacists apply scientific evidence to

ensure and advice on best use of medications for optimal drug therapy. Further, they also engage in various research activities to generate new knowledge and practical skills that furthermore can improve patients' health and quality of life.<sup>3</sup> Over the years pharmacists' roles have evolved to include participation in bedside rounds as part of a multidisciplinary health care team, and in patient profile review aimed at the identification and resolution of any drug-related problems. Pharmacist interventions, such as counseling the patient to improve their adherence and compliance, have contributed to a consistent development of clinical pharmacy services all over the world.<sup>4</sup> Despite the importance of these receptive services to the improvement of patient outcomes, clinical pharmacists face many challenges such as poor awareness among general public, lack of specific legislation and recognition from other health care providers. Possible reasons may be unacceptance of pharmacists' professional standing by other health practitioners, lack of leadership qualities, patients' perceptions, and existence of communication gaps between pharmacists and doctors.<sup>5-8</sup> In particular, these challenges are highly noted in developing countries like Ethiopia.<sup>8,9</sup> Physicians' expectations and perceptions towards the pharmacists' roles and responsibilities are the main factor influencing the advancement of clinical pharmacy service in hospitals.<sup>10,11</sup>

In Ethiopia, recent reforms in hospital implementation guidelines state that pharmacists should be assigned to

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hospitals for the benefit of the patients.<sup>12</sup> Prioritizing the national guidelines, the undergraduate pharmacy curriculum shifted towards patient-focused practice by including a mandatory 1-year clerkship program as part of the academic training. At University of Gondar (UOG) hospital, clinical pharmacists began to work as integral parts of the health care teams since September 2013. During these years, around 25 full-time clinical pharmacists sporadically provided various patient care services. This includes medication therapy management, dosage adjustments, interventions to optimize drug therapy, and provided drug information to health professionals and patients. Recently, the UOG has launched the postgraduate program of clinical pharmacy (MSc) to improve and advance the work force in UOG hospital. A better understanding of health professionals' perspectives regarding clinical pharmacy services can provide a greater opportunity to identify the challenges and future opportunities of clinical pharmacists in UOG hospital. Thus, the present qualitative study aimed to explore challenges and opportunities of clinical pharmacy services offered in UOG hospital through health practitioners' perspectives.

## METHODS

### Study design

Qualitative in-depth interviews were conducted from September 16 to October 1, 2016 in UOGRTH. This hospital is one of the oldest pioneer teaching hospitals located in Northwest Ethiopia. University of Gondar Referral and Teaching Hospital (UOGRTH) is equipped with 550 beds to provide both inpatient and outpatient services for a population of 500,000 living in Northwest Ethiopia. It has a range of specialties and a teaching center including pediatrics, surgery, gynecology, psychiatry, HIV (human immunodeficiency virus) care, oncology, and outpatient clinics. Recently, clinical pharmacy services were launched in various clinical sites such as ambulatory, psychiatry, internal medicine, surgery, pediatrics, emergency medicine, and the drug information center.

Participants were recruited through personal contacts and convenience sampling technique. The identified participants were contacted in person or by phone to fix interview appointments. A total of 15 health care professionals (an equal number of five participants from physicians, pharmacists and nurses) working in UOGRTH were selected for the interview and attempts were made to ensure representation of each ward where clinical pharmacy services are provided.

### Data collection

In-depth interviews were used for data collection. The in-depth interview guide was adopted from existing literature with similar topic<sup>13,14</sup> and open-ended questions were used to explore the challenges and opportunities of clinical pharmacy services.

The content validity of the interview guide was confirmed by a team of experts including a senior clinical pharmacist, internal medicine specialist and senior nurse professionals. The selected health care professionals were interviewed in

Table 1. Identified themes among health care practitioners interviewed (coding scheme)

Codes	Themes
Code-1	General Overview over the newly established clinical pharmacy services in GUH
Code-2	Scope of CPS Competencies as perceived by health practitioners
Code-3	Opportunities of clinical pharmacy service
Code-4	Challenges of clinical pharmacy service

depth based on the structured interview and data were both noted and audio recorded. To ensure the quality of interviews, all the participants were interviewed by a single researcher (the principal investigator). Confidentiality of the information was maintained throughout the study in order to obtain honest and accurate responses from each health practitioner. The interview took approximately 15-30 minutes. All interviews took place in a private setting at the respondent's office during working hours where the process was unlikely to be interrupted or overheard. Data were collected until a point of saturation was reached. Responses were recorded by both note-taking and audio taping.

### Data management and analysis

Audio recorded Amharic versions of the interviews were translated to English and complete transcripts of all interviews were prepared. After reading and annotating the transcripts, themes and subthemes were identified. These initial themes were assembled in order to develop a coding scheme that was subsequently used for identification of theme patterns (Table 1). The patterns and relationships found under the themes were used to build the result. Quotes for the content of the theme were given. Quotes were designated as 'Cpharm' for clinical pharmacists, 'NUR' for nurses and 'MD' for medical doctors. In reporting the findings, codes were used to maintain anonymity of participants to ensure confidentiality. Four major themes were identified: General overview and personal experiences of the newly-established clinical pharmacy services; Scope of clinical pharmacy services; Challenges of clinical pharmacy service; and Opportunities of clinical pharmacy service. The analysis was assisted by OpenCode 3.6 software.

### Ethical considerations

Ethical clearance was obtained from Ethical Review committee of School of Pharmacy, University of Gondar and a signed written informed consent was obtained from each respondent.

## RESULTS

Study presented here depicts an in-depth analysis of the challenges and opportunities of clinical pharmacy services from the health care professionals' perspective. A total of 15 health practitioners (nurses, medical doctors and clinical pharmacists) were interviewed, 2 of which were women (a senior staff nurse and a medical doctor). Three of the medical doctors were senior (residents); two of the nurses were senior staff nurses (MSc) and five clinical pharmacists interviewed all held MSc degrees. Four main themes identified are described as follows.

Code 1	General Overview over the newly established clinical pharmacy services in GUH
NUR 3	Clinical pharmacists have played a great role in avoiding medication errors. I have seen some changes in patient care so far e.g. changing drug regimen by communicating with medical interns; deciding when to stop medication, monitoring of side effects and identifying drug-drug interactions...
MD 2	In internist noticed that clinical pharmacists were involved in ward rounds, and actively participated in morning sessions. They have given some drug-related suggestions such as dosing and regimen adjustments...
Cpharm 3	Clinical pharmacy is now in a good rate of progress from the time of its implementation. It's quite better today than yesterday...
NUR 5	Previously pharmacists were not following-up on medications in wards. Recently, they have been observing patient's charts and checking the prescribed drugs ...
MD 1	It is seldom practiced here as far as my experience is concerned especially in Pediatrics and ICU where I am working, even though the services are thought to be very important and helpful...
MD 4	In my opinion these services are not helping at this time. I see some clinical pharmacists while rounding but they are not participating regularly...
NUR 2	It (the services) lacks continuity, I see them practicing one time and they disappear later on...
MD 2	When I have been in internal medicine ward attachments, there was involvement of clinical pharmacists but after that I never see them in other wards for example in surgery and OPD wards...

Key: NUR-Nurse, MD-Physician, Cpharm-Clinical pharmacist

### Theme 1: General overview and personal experiences of the newly-established clinical pharmacy services

A wide range of views from interviewees' were reflected ranging from attitude towards the importance of the service to the level of satisfaction of the service being provided. A list of responses is provided in Table 2.

The majority of the respondents stated that the clinical pharmacy services are continually and noticeably improving. They have also stated that clinical pharmacy services are very helpful and important. Nonetheless, they are not satisfied with the services currently given at GUH. They expressed a need to overcome some problems including shortage of professionals to fulfill the needs of various wards in the hospital sooner rather than later, and were concerned that it will not be easy to render quality clinical pharmacy services in various wards with the limited number of clinical pharmacists currently available (Cpharm 3, NUR 5, MD 1, and MD 2).

The majority of the interviewees observed that the services are not being delivered continuously and that clinical pharmacists should work hard to deliver pharmaceutical care regularly without interruptions (NUR 2, MD 2).

### Theme 2: Scope of clinical pharmacy competencies as perceived by health practitioners

All of the interviewed respondents described the role, responsibilities, and scope of clinical pharmacy services based on their perception regardless of the established job description (Table 3). The respondents explained the scope of practice broadly in which clinical pharmacists can serve patients, health practitioners and the community at large. Regarding patient care, some respondents described that the scope of clinical pharmacy services can encompass both diagnosis of illnesses and prescribing of drugs (NUR 1, MD 1).

Most of the respondents emphasized the need for pharmacy services in the area of drug therapy which, they believe, is the most neglected and not addressed by other health practitioners. Thus, their notion was that the scope of practice should be confined to drug therapy (MD 2, Cpharm 1, and Cpharm 3).

Some viewed the role of clinical pharmacists more broadly from the patient's perspective. They described that clinical pharmacists should focus on cost effective approaches of illness management and should understand patient's

Code 2	Scope of clinical pharmacy competencies as perceived by health care practitioners
NUR 1	It suits me if clinical pharmacists do prescribe as specialty pharmacists are much better updated with latest drug information...
MD 1	Clinical Pharmacists' role can range from the diagnosis to treatment as long as there is a smooth and a friendly relationship with physicians without conflict of interest. Our ultimate target is the patient...
MD 2	Physicians may tell the patient not to discontinue the drugs but clinical pharmacists can provide patient counseling more pertaining to their medications such as the consequence of drug discontinuation like drugs resistance, and drug ineffectiveness if alcohol is taken...
Cpharm 1	If someone (patient) took medicine and face problem associated with it, then assessing what is wrong behind is not common. Even patients do not know about their medicines other than when to take it...
Cpharm 3	There are the four ultimate goals clinical pharmacists need to achieve. Those are ensuring appropriateness, efficacy, safety and convenience of the medication...
NUR 3	They (clinical pharmacists) have to consider other things like psychology of a patient, affordability of drugs, its impact on social interaction as some drugs causes change to mouth odor "bad one"; changes to urine color, as this may cause psychological problem...
Cpharm 2	Especially developing countries like Ethiopia in a resource limited setting, the role of clinical pharmacist need to be aimed at reducing drug cost associated problems ...
NUR 3	They (clinical pharmacists) have a great role in preventing antibiotics drug resistance ....
NUR 5	I believe they (clinical pharmacists) can provide health practitioners including nurses with updated drug information and can be a source of information regarding drug administration, particularly on how to prepare IV drugs prior to administration...

Scope is defined as: The extent of the area in which clinical pharmacists can do professional responsibility.  
Key: NUR-Nurse, MD- Physician , Cpharm-Clinical pharmacist

Table 4. Opportunities of clinical pharmacy services in UOGRTH	
Code 3	Opportunities of clinical pharmacy services
MD 1	There is no any doubt that clinical pharmacy is so much important...
MD 3	In my opinion clinical pharmacy services are very necessary because it add something for patients on drug related issues like drug-drug interaction, side effects...
NUR 3	I believe it will bring lots of changes especially in our ward "internal medicine" ...
MD 1	Conflict of interest will not arise as long as all health practitioners act according to their job descriptions. ...
NUR 3	GUH has welcomed the implementation of the services unlike before... they (clinical pharmacists) are cooperatively working as a team with other clinicians in wards and morning sessions ...
NUR 5	We all staffs welcome clinical pharmacy services. These services also got consent from the hospital management ...
MD 5	I hope some physicians are benefiting a bit more from these service. Previously physicians used to prescribe drugs by referring from books. It was not patient oriented...
Cpharm 4	The curriculum is clinically oriented unlike before. It also enabled students to practice in the community...
Cpharm 5	Physicians pay more attention to the disease status. As a result there is a gap about medications. Thus, Pharmacists are best suited to work in this area as some profession must fill this gap. Moreover, Nurses are the one who are administering drugs to the patient though their knowledge about drugs is apparently not adequate enough. So it's essential to put one health professional in charge of such medication related stuffs...
MD1	The high patient burden is a good opportunity for clinical pharmacists to enrich their skills and lessen the burden of physicians for the better outcome of the patient care...
MD 3	I think drug related problem is higher in oncology than any other wards. This ward needs clinical pharmacists' involvement since chemotherapies need high level of drug therapy knowledge...
Cpharm 3	The presence of well-equipped DIC with materials and database; Adequacy of stuffs; and presence of clinical pharmacy department all these are also considered as an opportunity...
Cpharm 3	Luckily the current hospital reform guidelines encourages these services.....When we see it from the national level, the policy is receptive...We used to have our own local job descriptions in the hospital which was not national. But now the scope of practice has already been prepared by: food medicine and health authority control agency (FMHACA) and there will not be any confusion....
Cpharm 4	Currently, the government is also recruiting and employing clinical pharmacists in all hospitals unlike before when the government used to hesitate to implement any new services...
Opportunity is defined as: A set of circumstances that makes clinical pharmacists exercise their professional work. Key: NUR-Nurse, MD- Physician , Cpharm-Clinical pharmacist	

psychology during counseling for best patient care outcome (NUR 3, Cpharm 2).

Another area of scope of practice mentioned by most of the respondents is the role of clinical pharmacists as supporters of other health practitioners and of the community. The participants described that the services also benefit the health workers and community at large in addition to direct patient care through holistic and collaborative services (NUR 3, NUR 5).

### Theme 3: Opportunities for clinical pharmacy services

The interviewees were asked to describe the potential opportunities that can enable clinical pharmacy services to carry on successfully (Table 4). One of the opportunities most frequently described by the respondents reflects the presence of good attitude towards clinical pharmacy services (MD 1, MD 3, NUR 3).

Other health practitioners (nurses and physicians) mentioned that willingness and acceptance of the services by health practitioners, the management and high patient burden for healthcare providers are good opportunities. Moreover, they also stressed that cooperation among health practitioners helps team work and prevent unnecessary conflicts among health care providers with respect to job overlap (MD 1, NUR 3, NUR 5).

Respondents also expressed that there were preexisting problems in which health practitioners used to engage in wide range of responsibilities. Clinical pharmacists can then intervene this to lessen unnecessary health practitioners' burden (MD 5, Cpharm 4, Cpharm 5).

Most respondents mentioned the high patient burden as a unique opportunity since clinical pharmacists can encounter many cases and rare medical conditions which

they may not find anywhere else. Therefore, this enables the clinical pharmacists to be exposed to a variety of diseases and thus broaden their competency with better experiences (MD 1).

The respondents mentioned that the presence of some infrastructure, such as Drug Information Centre (DIC), human resources and the initiation of new programs, has offered a better chance to practically involve and to render clinical pharmacy services (MD 3, Cpharm3).

Some of the respondents described that the government policy and presence of national guidelines play a profound role, not only in the implementation but also on the sustainability of the program, which enabled the services to be implemented (Cpharm 3, Cpharm 4).

### Theme 4: Challenges of clinical pharmacy services

All interviewees were asked if there are potential barriers which hinder provision of the services and they tried to list all the perceived challenges (Table 5). The challenges described by most of the respondents emanate from the pharmacist, other health practitioners, hospital's administration issues and its infrastructure, academic policies and availability of working guidelines.

The challenges related to the pharmacist include, inadequacy of service promotion, absence of service continuity, poor DIC service and lack of commitment, communication and confidence among clinical pharmacists (MD1, NUR 5, Cpharm 3)

Most respondents declared that poor attitude towards the services, conflict of interest due to unclear scope of practice and absence of cooperation are the challenges which radiate from health practitioners such as nurses and physicians (MD 3, NUR 4, NUR 5).

Table 5. Challenges of clinical pharmacy services in UOGRTH	
Code 4	Challenges of clinical pharmacy services
MD 1	They (clinical pharmacists) are not promoting DIC well to other health practitioners. I was trying to see what they posted inside wards but it' not enough. Moreover the service lacks continuity. Honestly speaking, I see them practicing one time and they disappear afterward...
NUR 5	It is not common to see clinical pharmacist working as a regularly staff. They come to hospital ward only to precept students during their ward attachment...
Cpharm 3	Though we (clinical pharmacists) tried to introduce and promote DIC service, health practitioners are reluctant to use the service. The first reason is fear of bureaucracy. So free call service should be there. The other reason is they do not focus on evidence based medicine practice rather they tend to rely on their personal experiences...
MD 3	Sometimes, the enthusiasm of physicians to work with clinical pharmacists is under question...
NUR 4	In my opinion the primary challenge in having this service is the matter of autonomy. In our setup prescribing is the power of physicians and if the clinical pharmacist thinks the drug should be changed, there might not be acceptance by the physicians....
NUR 5	They (Physicians) may hesitate to accept pharmacist's drug therapy recommendation as most physicians believe pharmacist role is only confined to dispensing of the prescription...
NUR 2	The main pharmacy is always closed at weekends. Patients are then forced to buy drugs outside from private pharmacy...
Cpharm 1	No trainings have been given so far targeting clinical pharmacy despite upon iterative request. There is also shortage of hospital clinical pharmacists...
Cpharm 3	We have got a problem in integrating the academic and hospital clinical pharmacists. Lack of infrastructure for clinical pharmacists such as room inside wards to have a rest and to prepare and place documentations; and lack of incentives are the major challenges...
MD 3	the curriculum of clinical pharmacy does not consider the ward practice courses ...
Cpharm 2	Clinical pharmacists are exposed to ward activities only when they reach graduating class. There is no prior exposure and absence of manual on how to perform our task is also a challenge. ...
Cpharm 3	In my opinion absence of documentation was the biggest challenge for us. We got a problem in deciding what type of document model should be there...
Challenges is defined as: any situation that hinders the effective implementation of clinical pharmacy. Key: NUR-Nurse, MD-Doctor, Cpharm-Clinical pharmacist	

Some respondents also described challenges that are arise from the hospital management and its' set-up. The challenges they mentioned include lack of training, shortage of skilled man power, lack of incentives, absence of facilities in the ward for clinical pharmacists and collaboration between academics and hospital clinical pharmacists (NUR 2, Cpharm 1, Cpharm 3).

The other challenges stated by the respondents were due to the academic policy and the curriculum itself. This encompasses some gaps of the curriculum; absence of clear job description and working guidelines; and documentation system (MD 3, Cpharm 2, Cpharm 3)

## DISCUSSION

This study describes the personal experiences of health practitioners towards clinical pharmacy services provided in UOGRTH, thereby extracting opportunities and challenges which will be used as a means to strengthen the services. In addition, participants were also asked to describe how they perceive the scope of practice in clinical pharmacy services from which challenges and opportunities were also identified. The perception of scope of pharmacy practice among health practitioners reflects whether there is conflict of interest and resistance to cooperation. Interviewees also suggested possible solutions for utilization of potential opportunities and tackling of challenges by the responsible parties.

One of our key findings was that health practitioners believed the services are very important and have already brought some changes to the usual patient care, they believed it will inevitably have a positive impact on patient health outcomes. Several studies have shown that clinical pharmacy services have contributed to good clinical, economic and humanistic outcomes.<sup>15-18</sup> The interviewees also indicated that the service is improving as compared to

the time of implementation but has not yet reached the level of health practitioners' expectation. The respondents attributed the poor health practitioners' satisfaction to the lack of continuity of the services.

The scope of practice varies between countries as determined by the governing board of pharmacy.<sup>19</sup> Many countries allow the pharmacist to play a part only within certain areas of the medication use process, while in other countries the scope of practice is so wide-ranging and inclusive that, it encompasses the entire medication use process. Some of the respondents in this study thought that the scope of practice should be limited to drug therapy. However, others suggested that the scope can range from diagnosis to prescribing of drugs. The respondents explained that this can be achievable only if we get rid of conflict with other practitioners as their job description and authorities are not well delineated.

As clinical pharmacy services are at their infancy, the respondents suggested that services should focus more on key areas that are less considered by other practitioners. They believed this would increase acceptability of clinical pharmacy services by other health providers. One study reported that clinical pharmacists are experts in therapeutic knowledge, experience and skills which are used to ensure desired patient outcomes utilizing the best available clinical evidence and intervention in collaboration with the health care team.<sup>20</sup>

Available opportunities help to integrate clinical pharmacy services into the hospital. We conducted our study after the hospital staff had some time to experience clinical pharmacy services, in the hope that it will help to collect important information to utilize and tailor opportunities for service improvement. The respondents interviewed identified some of the key opportunities for services improvement. Previous studies, conducted in other health

care centers, have also identified similar opportunities for clinical pharmacy services. For instance, Kherin *et al.*<sup>21</sup> showed that for the development of hospital pharmacy services, the curriculum and national strategy for health plans and leadership are considered as good opportunities. Eman *et al.*<sup>22</sup> identified very good medical students' perception towards clinical pharmacy services as an opportunity. A qualitative study performed in Canada also concluded that positive patient outcomes, better team decision making around drug therapy, improved continuity of care and improved patient safety were achieved through the integration of pharmacists into core health care teams.<sup>23</sup> Another study performed in Ethiopia revealed that there is a high demand for clinical pharmacy service among health-care workers.<sup>24</sup>

Some of the opportunities listed in this study also have some drawbacks which may be a source of challenge unless they are improved. For instance, the new clinically-oriented curriculum is much better than the previous product-oriented one, but still the curriculum is not as competent as a Pharm.D program.<sup>25</sup> In addition, poor DIC service is another area of practice in need of improvement to satisfy the health practitioners.

Clinical pharmacy services in hospitals face different challenges which may arise from other health practitioners' willingness, practice setups, and clinical pharmacists' attitudes. In Qatar, a qualitative study highlighted work load, low salary and lack of interest of pharmacists as main challenges for clinical pharmacy services.<sup>21</sup> Further, another study conducted in Nigeria revealed sets of challenges that limit pharmaceutical care practice, such as lack of time and need of effort, insufficient remuneration, no team work among health care workers and deficiency in staff strengths.<sup>26</sup> Our finding reflect that challenges may originate from the pharmacists themselves, other health practitioners, hospital's administration issues and its infrastructure, academic policies and availability of working guidelines. The interviewees listed many potential and actual challenges. One major challenge emphasised by the interviewees was the lack of continuity of services. Although the academic staff providing indirect services through tutoring students, it is also important to note that the number of hospital clinical pharmacists included in clinical settings is very minimal and that may be a reason

for absence of service continuity. However, The School of Pharmacy and the UOGRTH should take the initiative to integrate, empower and employ hospital clinical pharmacists or provide incentives for the academic staff to improve the continuity of services.

#### Limitations of the study

This qualitative study explored the service at one of the oldest hospital in Ethiopia where there is lack of documented data. Yet, the present study has some limitations that should be noted while interpreting the results. Since the study was conducted in a single Hospital, caution should be noted when generalizing to other Hospitals and healthcare settings in Ethiopia.

#### CONCLUSIONS

This study has revealed potential barriers in the delivery of clinical pharmacy services, and opportunities available to foster their provision. Although health practitioners are receptive to clinical pharmacy services, there have been potential challenges identified to tackle so that the clinical pharmacy services can be strengthened and promoted further. Appropriate measures should be taken considering the finding of the study as an input to astutely boost the service.

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#### CONFLICT OF INTEREST

None.

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## References

1. Saseen JJ, Ripley TL, Bondi D, Burke JM, Cohen LJ, McBane S, McConnell KJ, Sackey B, Sanoski C, Simonyan A, Taylor J, Vande Griend JP. ACCP clinical pharmacist competencies. *Pharmacotherapy*. 2017 May;37(5):630-636. doi: [10.1002/phar.1923](https://doi.org/10.1002/phar.1923)
2. The definition of clinical pharmacy. American college of clinical pharmacy (ACCP). *Pharmacother*. 2008;28(6):816-817.
3. Gubbins PO, Micek ST, Badowski M, Cheng J, Gallagher J, Johnson SG, Karnes JH, Lyons K, Moore KG, Strnad K. Innovation in Clinical Pharmacy Practice and Opportunities for Academic-Practice Partnership. *Pharmacotherapy*. 2014;34(5):e45-e54.
4. Martinez J, Laswell E, Cailor S, Ballentine J. Frequency and impact of pharmacist interventions in clinical trial patients with diabetes. *Clin Ther*. 2017;39(4):714-722. doi: [10.1016/j.clinthera.2017.02.006](https://doi.org/10.1016/j.clinthera.2017.02.006)
5. McCullough MB, Solomon JL, Petrakis BA, Park AM, Ourth H, Morreale AP, Rose AJ. Balancing collaborative and independent practice roles in clinical pharmacy: a qualitative research study. *Ann Pharmacother*. 2015;49(2):189-195. doi: [10.1177/1060028014561473](https://doi.org/10.1177/1060028014561473)
6. McCullough MB, Petrakis BA, Gillespie C, Solomon JL, Park AM, Ourth H, Morreale A, Rose AJ.. Knowing the patient: A qualitative study on care-taking and the clinical pharmacist-patient relationship. *Res Social Adm Pharm*. 2016 Jan-Feb;12(1):78-90. doi: [10.1016/j.sapharm.2015.04.005](https://doi.org/10.1016/j.sapharm.2015.04.005)

7. Denvir P, Brewer J. "How dare you question what I use to treat this patient?": Student pharmacists' reflections on the challenges of communicating recommendations to physicians in interdisciplinary health care settings. *Health Commun.* 2015;30(5):504-512. doi: [10.1080/10410236.2013.868858](https://doi.org/10.1080/10410236.2013.868858)
8. Aljadhey H, Mahmoud MA, Hassali MA, Alrasheedy A, Alahmad A, Saleem F, Sheikh A, Murray M, Bates DW. Challenges to and the future of medication safety in Saudi Arabia. *Saudi Pharm J.* 2014;22(4):326-332. doi: [10.1016/j.jsps.2013.08.001](https://doi.org/10.1016/j.jsps.2013.08.001)
9. Bhagavathula A, Sarkar BR, Patel I. Clinical pharmacy practice in developing countries: focus on India and Pakistan. *Arch Pharm Prac* 2014; 2(5):88-91.
10. Lo UM, Hu H, Ung COL. Physicians and Pharmacists' experiences and expectations of the roles of pharmacists: Insights into hospital setting in Macau. *Trop J Pharm Res* 2014;12(6):1077-1085.
11. Khan N, Abbas A, McGarry K, Shahid S. Perceptions and experiences regarding integration of clinical pharmacists in health practitioners: A survey of hospitals of Karachi. *Int J Allied Med SciClin Res* 2014;2(3):222-234.
12. Elias G, Fikru W, Hailu T, Edmealem E, Negussu M. Building Local Capacity for Clinical Pharmacy Service in Ethiopia through a Holistic In-Service Training Approach. Arlington, VA: Management Sciences for Health; 2014. Available at <http://who.int/medicinedocs/en/d/Js21810en> (accessed July 21, 2015)
13. Mekonnen AB, Yesuf EA, Odegard PS, Wega SS. Implementing ward based clinical pharmacy services in an Ethiopian University Hospital. *Pharm Pract (Granada).* 2013;11(1):51-57. doi: [10.4321/s1886-36552013000100009](https://doi.org/10.4321/s1886-36552013000100009)
14. Mekonnen AB, Yesuf EA, Odegard PS, Wega SS. Pharmacists' journey to clinical pharmacy practice in Ethiopia: Key informants' perspective. *SAGE Open Med.* 2013;1:2050312113502959. doi: [10.1177/2050312113502959](https://doi.org/10.1177/2050312113502959)
15. Chisholm-Burns MA, Graff Zivin JS, Lee JK, Spivey CA, Slack M, Herrier RN, Hall-Lipsy E, Abraham I, Palmer J. Economic effects of pharmacists on health outcomes in the United States: a systematic review. *Am J Health Syst Pharm.* 2010;67(19):1624-1634. doi: [10.2146/ajhp100077](https://doi.org/10.2146/ajhp100077)
16. Matsoso MP. Future vision and challenges for hospital pharmacy. *Am J Health Syst Pharm.* 2009;66(5 Suppl 3):S9-S12. doi: [10.2146/ajhp080628](https://doi.org/10.2146/ajhp080628)
17. Touchette DR, Doloresco F, Suda KJ, Perez A, Turner S, Jalundhwala Y, Tangonan MC, Hoffman JM. Economic evaluations of clinical pharmacy services: 2006-2010. *Pharmacotherapy.* 2014;34(8):771-793. doi: 10.1002/phar.1414
18. Child D, Camtro JA, Cooke J. Effectiveness of hospital pharmacy: where is the evidence? *Guild of Health care pharmacists*, 2001. Available at: <http://www.ghp.org.uk/login.aspx?reason=notauthenticated> (accessed March 23, 2012).
19. Advit S. Pharmacy intervention in the medication use process. Netherlands, Den Haag:International pharmaceutical federation; 2009. Available at <https://www.fip.org/files/fip/.../PatientSafetyAdvidShah.pdf> (accessed August 10, 2015)
20. Bayew T, Bhagavathula AS, Sarkar BR, Melaku T, Shewamene Z. Impact of clerkship attachments on students' attitude towards pharmaceutical care in Ethiopia. *Adv Med Educ Pract.* 2015;6:385-391. doi: [10.2147/AMEP.S80802](https://doi.org/10.2147/AMEP.S80802)
21. Kherin N, Fahey M. Pharmacy practice in Qatar: Challenges and opportunity. *Southern Med Rev* 2011;4(2):45-49.
22. Eman AB, Sahar FA, Bezigha AB, Abduelmula AB, Lman BA. Attitude and Perception of health care providers and medical students toward clinical pharmacy service in United Arab Emirates. *Trop J Pharm Res.* 2010;9(5):421-428.
23. Makowsky MJ, Schindel TJ, Rosenthal M, Campbell K, Tsuyuki RT, Madill HM. Collaboration between pharmacists, physicians and nurse practitioners: a qualitative investigation of working relationships in the inpatient medical setting. *J Interprof Care.* 2009;23(2):169-184. doi: [10.1080/13561820802602552](https://doi.org/10.1080/13561820802602552)
24. Alemayehu BR, Mekonnen EL, Yusuf PE, Sultan SW. Pharmacists journey to clinical pharmacy practice in Ethiopia. *Sage Open Med* 2013;1:1-6. doi: [10.1177/2050312113502959](https://doi.org/10.1177/2050312113502959)
25. Jamshed S, Babar ZU, Masood I. The PharmD degree in developing countries. *Am J Pharm Educ.* 2007;71(6):125.
26. Chijioko CM, Chidume O, Muoghalu G, OnyekaCG. Challenges in the practice of pharmaceutical care in national orthopaedic hospital Enugu (Nohe). *Int J Pharm SciLett* 2013;3(3):207-212.