Original Article

# Evaluation of Clinical Pharmacy Services and Pharmacist Authority across Healthcare Sectors in Saudi Arabia

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## Abstract

**Background:** Clinical pharmacists contribute to safer and more effective medication use, yet their roles and authority vary across healthcare settings. This study evaluates the clinical functions, scope of authority, and challenges faced by pharmacists in Saudi Arabia. **Methods:** A cross-sectional survey was conducted among pharmacy care departments in Ministry of Health (MOH) hospitals, military hospitals, private hospitals, medical cities, university hospitals, health clusters, and King Faisal Specialist Hospital and Research Centre. Institutions with 50 or more beds were targeted. The data were collected through structured questionnaires. **Results:** A total of 26 pharmacists responded. Most worked in MOH hospitals (26.9%), private hospitals (19.2%), or military hospitals (19.2%). Participation in morning rounds (61.5%), developing medication plans (65.4%), and monitoring drug concentrations (61.5%) were reported. Authority to change medication plans (50%) and request lab tests (53.8%) varied. Only 57.7% monitored side effects. Barriers included organizational (23.1%), legislative (11.5%), and cultural factors (11.5%). Nearly all participants (96.2%) agreed that overcoming these barriers improves care. **Conclusion:** While clinical pharmacists actively contribute to care, inconsistencies in their authority and institutional integration limit their impact. Expanding authority and standardizing roles are necessary to optimize pharmaceutical care.

**Keywords:** Clinical pharmacy, healthcare institutions, pharmaceutical care services, pharmacist roles, Saudi Arabia

## Introduction

### Background

Clinical pharmacists enhance medication safety, reduce adverse drug events, and improve patient outcomes through direct patient interaction and interdisciplinary collaboration.[1,2] Their pharmaceutical interventions focus on optimizing medication therapy and preventing medication-related problems.[3] International evidence shows their involvement reduces costs, hospital stays, and readmissions.[4-9]

### Global Trends

In countries like Australia, Canada, and New Zealand, pharmacists have been integrated into general practices. General practitioners acknowledge that pharmacists decrease clinical workload and provide expert medication guidance. The Royal Pharmaceutical Society in 2015 advocated for similar integration.

This cross-sectional online survey ($n$=137) revealed that ~28.5% of hospital pharmacists self-reported prescribing

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activities, collaborative or independent, despite the absence of formal legislation. Barriers included a lack of training, absence of formal frameworks, and cultural resistance to role expansion.[14]

A survey of 48 hospitals in Riyadh revealed that while 79% of institutions had medication-monitoring pharmacists, only 27% had authority to order laboratory tests, and 40% could adjust medication dosages, highlighting variations in pharmacist clinical authority and integration.[15]

In one of the studies, focus group interviews ($n$=27) demonstrated strong support among healthcare professionals for clinical pharmacy services. However, misperceptions about pharmacist roles and poor interprofessional collaboration emerged as significant challenges.[16]

From 43 Ministry of Health (MOH) hospitals, strong positive attitudes toward pharmacokinetic monitoring services were reported, but 64.5% cited lack of training and specialized personnel as key barriers to wider implementation.[18]

### Local Studies and Gaps

Saudi studies have demonstrated the value of clinical pharmacists in ICUs and cardiac units.[10-12] For example, pharmacists were consulted to prevent fatal drug-related outcomes. However, there's limited research assessing their role across varied hospital types or examining institutional challenges.

This regional study identified time constraints, lack of private counseling areas, and cultural/gender-related issues as major obstacles hindering pharmacists' ability to provide effective patient education in both hospital and retail settings.[17] The cohort study across three major MOH hospitals assessed the impact of clinical pharmacist-led consultation visits focusing on IV admixture services and total quality management initiatives. The findings showed significant improvements in medication safety, process quality, and regulatory compliance following systematic pharmacist interventions.[19] This national cross-sectional survey involving 185 hospital pharmacy directors highlighted the status of clinical pharmacy services in MOH institutions. Domains covered included clinical services availability, drug monitoring, patient education, and quality management. Key gaps identified were limited interprofessional collaboration and inconsistent clinical pharmacist integration.[20]

### Rationale and Aim

Rural areas and understaffed hospitals often depend heavily on pharmacists. Despite recognition of their importance, there is little data on how clinical pharmacist roles differ across institutional settings in Saudi Arabia or what barriers restrict their full engagement. This study aims to assess clinical pharmacist roles, authority, and challenges across different healthcare institutions in Saudi Arabia.

## Methods

Study design: A cross-sectional survey design was employed.

Setting: The study included various health institutions across Saudi Arabia.

Population and sampling: Pharmacy care departments in institutions with at least 50 beds were included. Clinical pharmacists or pharmacy care managers provided responses.

Data collection: Structured questionnaires were sent electronically or filled in by direct contact with the pharmacist responsible. A follow-up was done to ensure completion.

## Results

### Demographic Characteristics

#### *Work Setting*

Respondents were employed across a range of healthcare institutions. The largest proportion (26.9%) worked in the MOH hospitals. Private and military hospitals each represented 19.2% of the sample. Health clusters followed at 15.4%, and medical cities or university-affiliated hospitals accounted for 11.5%. King Faisal Specialist Hospital and Research Centre and other unspecified institutions each comprised 3.8%.

### Region

Participants represented various regions of Saudi Arabia. Riyadh and Qassim each contributed 26.9% of the responses. Jazan made up 11.5%, followed by Al-Medina and Makkah with 7.7% each. Al-Baha, Al-Jouf, Eastern Region, Aseer, and Hail each accounted for 3.8%.

### Clinical Pharmacy Activities

#### *Participation in Morning Rounds*

Respondents were asked whether the pharmacy department had a representative involved in daily morning rounds with the medical team. The majority (61.5%) confirmed participation, while 38.5% reported no such involvement.

#### *Involvement in Developing Medication Plans for Hospitalized Patients*

When asked about involvement in creating medication plans for hospitalized patients, 65.4% of pharmacists reported active participation. The remaining 34.6% were not involved in this process.

#### *Authority to Modify Medication Plans*

Regarding authority to independently adjust patient medication plans, on an individual basis, responses were evenly split. Half of the pharmacists (50%) reported having this authority, while the other half did not.

### *Monitoring Drug Concentrations*

Participants were queried on their role in therapeutic drug monitoring. A total of 61.5% confirmed that they monitor drug concentrations and adjust doses based on test results. The remaining 38.5% did not provide this service.

### *Authority to Request Laboratory Tests*

A slight majority (53.8%) had the authority to request necessary laboratory tests to ensure medication safety. The remaining 46.2% lacked this authority.

### *Monitoring Medication Side Effects*

Among respondents, 57.7% stated that they do monitor and adjust medications in response to patient side effects. The rest (42.3%) were not engaged in this responsibility.

### *Assessment of Preoperation Antibiotics*

Most pharmacists (73.1%) reported evaluating the appropriateness of prescribed preoperative antibiotics based on hospital protocols. The remaining 26.9% did not perform this function.

### *Authority to Modify Preoperation Antibiotics*

Just over half (57.7%) stated they had the authority to adjust preoperative antibiotics or doses to align with hospital guidelines. The other 42.3% lacked this authority.

### *Restricted Medication Systems*

Pharmacists were also asked whether they manage a system for restricting certain medications, such as antibiotics, requiring specific conditions, like lab results, before dispensing. A restriction system was present in 69.2% of institutions. In contrast, 30.8% reported no such policy.

### *Total Parenteral Nutrition (TPN) and Intravenous (IV) Preparation Services*

More than half of the institutions (57.7%) offered TPN and/or IV preparation services through the pharmacy departments. The remaining 42.3% did not provide these services.

## Medication Reconciliation and Documentation

### *Existence of Reconciliation Team*

Respondents were asked about the presence of a medication reconciliation team in their hospitals. Most (53.8%) indicated that the task was handled only by doctors. About 19.2% reported having a dedicated reconciliation team, while 26.9% said there was no reconciliation process in place.

### *Pharmacy Involvement in Reconciliation Documentation*

When asked whether the pharmacy department was involved in documenting reconciliations, 53.8% confirmed such involvement. Another 26.9% said documentation was done only by doctors, and 19.2% stated the pharmacy was not involved at all.

## Clinical Pharmacy Infrastructure

### *Pharmacy-Managed Clinics*

A slight majority (53.8%) reported the presence of pharmacy-managed clinics, such as medication consultation clinics. The rest (46.2%) indicated their institutions did not have these services.

### *Drug Information Center*

Drug information centers, which serve to answer patient and healthcare provider inquiries about drug interactions, side effects, and alternatives, were available in 69.2% of the institutions. They were absent in 30.8%.

## Pharmacy Engagement in Institutional Policies

### *Participation in Guideline Development*

In 69.2% of institutions, pharmacists were part of the team responsible for preparing and approving clinical guidelines. About 19.2% reported no such team existed, while 11.5% noted that pharmacists were not involved in the process.

### *Receiving Drug Representatives*

Pharmacy departments in 76.9% of institutions engaged in receiving drug representatives and in decisions about new medication additions. In 23.1% of institutions, pharmacists had no such involvement.

## Prescription Volume and Documentation

### *Monthly Prescriptions Dispensed*

Reported monthly prescription volumes varied significantly. Responses ranged from specific counts like 15,000, 5000, and 52,000 to vague or estimated figures such as "Maybe 587" or ">30,000." Several respondents indicated they were unaware, or the data was unavailable.

### *Number of Prescriptions Stopped or Corrected Out of the Total Number of Prescriptions*

Responses about the number of prescriptions that were stopped or corrected also showed wide variation. Some provided exact numbers (e.g., 4, 5, 10, 67, 150, 5000), while others used ranges (e.g., 300–400), percentages (e.g., 10, 30%), or estimates (e.g., "About 50", "+/– 5%"). Others responded with "I do not know," or "not available," indicating inconsistent documentation practices or limited access to such metrics.

## Perceived Impact and Barriers

### *Difficulties in Clinical Pharmacy Service Delivery*

Most respondents (65.4%) reported barriers that limited the implementation of full clinical pharmacy services. A smaller portion (34.6%) did not identify such issues.

### *Impact of Difficulties on Service Delivery*

A large majority (73.1%) stated that these difficulties or challenges that they are facing directly affected the

delivery of clinical pharmacy services to patients. In contrast, 26.9% believed these difficulties did not interfere with patient care or the delivery of clinical pharmacy services to patients.

### *Nature of Reported Challenges*

Participants cited a variety of challenges. Organizational barriers were the most frequently reported (23.1%), followed by legislative, cultural misunderstandings about the pharmacist's role, and authority-related issues (i.e., lack of authority or need for external approvals to perform their work) (each 11.5%). Some respondents described overlapping issues, while others listed all four categories of challenges as contributing factors.

### *Impact of Solving Clinical Challenges*

Almost all respondents (96.2%) agreed that addressing these barriers would improve the quality of clinical pharmacy services provided to patients. Only one respondent disagreed.

## Discussion

This study reinforces global evidence that clinical pharmacists contribute significantly to patient care by improving medication management and reducing risks.[4-6] The high involvement of pharmacists in developing medication plans (65.4%) and participating in morning rounds (61.5%) supports their growing role in interdisciplinary care. Yet, only 50% reported authority to modify medication plans, reflecting uneven integration across settings.

Notably, only 53.8% of respondents had the authority to request lab tests, and 57.7% could monitor medication side effects, indicating that pharmacists' clinical autonomy remains limited in many institutions. This aligns with findings from global studies that show administrative and policy barriers limit pharmacist effectiveness.[8,9]

Infrastructure gaps such as the absence of pharmacy-managed clinics (reported by 46.2%) and the lack of drug information centers (30.8%) highlight disparities in support systems that enable effective pharmaceutical care. Further, the inconsistent reporting of stopped or corrected prescriptions underscores a need for standardized documentation and performance tracking.

The identification of organizational (23.1%), legislative (11.5%), and cultural barriers (11.5%) suggests multidimensional challenges. These align with previous research indicating that institutional policy and interprofessional dynamics heavily influence pharmacists' roles.[7,13] Nearly all respondents (96.2%) believed that addressing these challenges would improve patient care, emphasizing a clear demand for reform.

## Conclusion

This study highlights the active yet inconsistent role of clinical pharmacists across Saudi Arabia. While pharmacists are contributing meaningfully to clinical care, their level of authority, infrastructure support, and integration into institutional workflows vary widely. To improve outcomes, national policy and institutional leadership must focus on expanding pharmacist roles, granting greater autonomy, and fostering collaborative environments.

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