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Pharmacist-Led Subunit-Based Operational Model in Strengthening Hospital Pharmacy Practice and Mental Health Care Delivery: Evidence from Accra Psychiatric Hospital, Ghana

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Abstract

Background: Effective pharmacy service delivery in psychiatric hospitals is often hindered by unclear organisational roles and inconsistent reporting, which can compromise medication safety (Mekonnen, McLachlan, & Brien, 2016; Sud, Laughton, McAskill, Bradley, & Maidment, 2021). Pharmacist-led subunit models have been proposed as a strategy to strengthen departmental clarity, accountability, and pharmacovigilance (Moullin, Sabater-Hernández, & Benrimoj, 2016).

Objective: This study describes the implementation and operational outcomes of a pharmacist-led subunit model at a tertiary psychiatric hospital in Ghana.

Methods: A descriptive practice-based approach was used to evaluate organisational and operational outputs within the Pharmacy Department following the establishment of five pharmacist-led subunits. Data included routine reporting compliance and adverse drug reaction (ADR) documentation over a 12-month (May 2024 to May 2025) period post-implementation (Bell, Taylor, & Gonzalez, 2024).

Results: Implementation of the subunit model improved organisational clarity, with clearly defined roles and terms of reference for all subunits. All five subunits (100%) submitted structured monthly reports, averaging 20–25 reports per year per subunit. ADR reporting increased from fewer than five reports per month to 12–18 reports per month, representing a more than threefold increase in documented pharmacovigilance activity (Wheeler & Dörks, 2024). All identified ADRs were reviewed by the Pharmacovigilance Unit, with feedback communicated to prescribers and nursing teams, supporting improved medication safety oversight (WHO, 2022).

Conclusion: The pharmacist-led subunit model enhanced operational efficiency, reporting compliance, and pharmacovigilance in a psychiatric hospital setting. This approach offers a scalable strategy for strengthening pharmacy services and supporting safe mental health care delivery in low- and middle-income countries (LMIC) contexts (Moullin et al., 2016; Sud et al., 2021).

***Keywords**: Pharmacist-Led Subunits, Hospital Pharmacy, Mental Health Care, Pharmacovigilance, Organisational Efficiency, Psychiatric Pharmacy*

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1.0 INTRODUCTION

1.1 Research Problem

Hospital pharmacy services are essential to ensuring safe and effective medication management, particularly in psychiatric settings where polypharmacy, complex psychotropic regimens, and adverse drug events are common (Bell, Taylor, & Gonzalez, 2024). In many low- and middle-income countries (LMICs), including Ghana, psychiatric hospital pharmacy departments face persistent challenges, such as unclear organisational structures, overlapping responsibilities, limited visibility of services, and inconsistent pharmacovigilance reporting (Mekonnen, McLachlan, & Brien, 2016). These gaps can compromise medication safety, hinder

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interprofessional collaboration, and negatively affect the delivery of mental health care, highlighting the need for innovative organisational models to optimise pharmacy practice.

1.2 Background

Pharmacists play a critical role in mental health care through medication review, patient counselling, adherence support, and participation in multidisciplinary care teams, which collectively improve patient outcomes (Sud, Laughton, McAskill, Bradley, & Maidment, 2021; Wheeler & Dörks, 2024). Evidence also shows that organisational innovations, such as pharmacist-led subunits, enhance operational efficiency, clarify roles, improve accountability, and strengthen service visibility (Moullin, Sabater-Hernández, & Benrimoj, 2016). Despite the growing recognition of pharmacists' contributions to mental health care, few studies have systematically examined structured departmental models that embed pharmacists in leadership roles within psychiatric hospitals in LMICs (World Health Organisation [WHO], 2022). Addressing this gap is crucial, as psychiatric care involves complex medication management and a high potential for medication-related risks.

1.3 Objectives

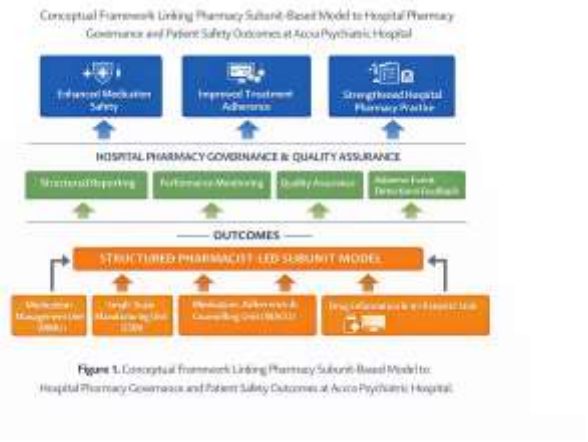
The primary aim of this study was to describe the implementation of a pharmacist-led subunit-based operational model in the Pharmacy Department of Accra Psychiatric Hospital, Ghana. Specific objectives were to:

- Characterise the organisational structure and functional roles of the Pharmacy Department upon the implementation of five pharmacist-led subunits.
- Assess operational outputs, including reporting compliance and pharmacovigilance activities.
- Explore the implications of departmental restructuring for mental health care delivery and medication safety outcomes.

1.4 Conceptual Framework

This study is guided by a systems-oriented conceptual framework that explains how a pharmacist-led subunit model influences governance, medication safety, and service visibility. The framework integrates organisational context, professional practice restructuring, and operational processes to explain observed outcomes in pharmaceutical service delivery. The author developed the conceptual framework guiding this study based on existing literature on pharmacist-led service models, hospital pharmacy governance, and medication safety systems. Prior studies have demonstrated that structured pharmacy services improve reporting, accountability, and pharmacovigilance, which in turn support safer medication use and improved care outcomes (Mekonnen et al., 2016; Moullin et al., 2016). The framework also aligns with the World Health Organisation's emphasis on strengthening clinical pharmacy roles within mental health care systems to improve quality and patient safety (WHO, 2022).

Figure 1 – Conceptual Framework



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Source: *Author's conceptualisation, informed by hospital pharmacy governance, medication safety, and pharmacist-led service models (adapted from Mekonnen et al., 2016; Moullin et al., 2016; World Health Organisation, 2022).*

1.5 Significance of the Study

This study contributes to the limited evidence on organisational models that strengthen pharmacy practice in psychiatric hospitals within LMIC contexts (Bell et al., 2024; Sud et al., 2021). By documenting a subunit-based operational model, the findings guide hospital leaders and policymakers on optimising departmental efficiency, improving governance, and integrating pharmacists more effectively into mental health care teams. Additionally, this study highlights scalable strategies to enhance medication safety, interprofessional collaboration, and the overall quality of mental health service delivery (Mekonnen et al., 2016; WHO, 2022).

1.6 Research Gap

While existing literature demonstrates pharmacists' clinical contributions in mental health care, research on structured organisational models at the departmental level is scarce, especially in LMIC psychiatric hospitals (Wheeler & Dörks, 2024). Most studies focus on patient-level outcomes, leaving a gap in knowledge regarding how operational restructuring affects pharmacy service outputs, governance, and mental health care delivery. This study addresses this gap by evaluating a pharmacist-led subunit model in a tertiary psychiatric hospital in Ghana.

2.0 MATERIALS AND METHODS

2.1 Hospital Pharmacy Governance and Patient Safety

Hospital pharmacy governance refers to the leadership structures, accountability mechanisms, policies, and operational controls that guide pharmacy practice within health systems to ensure safe, effective, and rational use of medicines (International Pharmaceutical Federation [FIP], 2014; Anderson & Benrimoj, 2016). Effective governance frameworks clearly define professional roles, reporting lines, and decision-making authority, enabling pharmacists to contribute meaningfully to medication safety and quality improvement initiatives (FIP, 2020).

Evidence from hospital pharmacy systems indicates that strong governance is associated with reductions in medication errors, improved formulary compliance, and enhanced interdisciplinary collaboration (World Health Organisation [WHO], 2017; Bond & Raehl, 2007). Pharmacist-led governance models, particularly those embedded within institutional structures, have been shown to strengthen medication management processes, pharmacovigilance activities, and adherence to clinical guidelines (Kaboli et al., 2006; Mekonnen et al., 2016).

In psychiatric hospitals, where patients are frequently exposed to long-term polypharmacy and high-risk psychotropic medicines, governance mechanisms are especially critical to prevent adverse drug events and ensure continuity of care (Stubbs et al., 2018; WHO, 2019). The FIP Basel Statements explicitly recommend structured governance systems that empower pharmacists to lead patient safety initiatives and clinical pharmacy services within hospitals (FIP, 2014)

2.3 Subunit-Based Operational Models in Healthcare

Subunit-based operational models divide complex organisational functions into specialised units with defined responsibilities, while maintaining central leadership and oversight (Mintzberg, 2009). In healthcare systems, such models have been associated with improved efficiency, clearer role demarcation, enhanced accountability, and better service coordination (Braithwaite et al., 2017; FIP, 2020).

Within hospital pharmacy practice, subunit-based models allow pharmacists to focus on distinct yet interrelated domains such as medication supply management, clinical pharmacy services, compounding and manufacturing, pharmacovigilance, and drug information (Anderson & Benrimoj, 2016; Mekonnen et al., 2016). This functional differentiation supports more profound expertise, improved performance monitoring, and more systematic quality improvement activities (Bond & Raehl, 2007).

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2.4 Pharmacovigilance and Medication Adherence

Pharmacovigilance is a core component of patient safety, encompassing the detection, assessment, understanding, and prevention of adverse effects or other medicine-related problems (WHO, 2017). Effective pharmacovigilance systems depend on clearly defined reporting pathways, dedicated personnel, and integration with clinical services (Edwards & Aronson, 2000; WHO, 2019). Assigning explicit responsibility for pharmacovigilance to pharmacist-led units has been shown to improve ADR detection, reporting rates, and feedback into clinical practice (Mekonnen et al., 2016; Aljadhey et al., 2015).

Organisational structures similarly influence medication adherence. Sustained adherence support requires regular patient counselling, follow-up, and coordination with prescribers and caregivers (Nieuwlaat et al., 2014; Sabaté, 2003). Pharmacist-led adherence interventions, when embedded within structured service models, have demonstrated improvements in treatment continuity and clinical outcomes in chronic and mental health conditions (Kretchy et al., 2014; Dalton & Byrne, 2017).

3.0 METHODOLOGY

3.1 Study Design

This study was a descriptive practice-based report of the implementation of a pharmacist-led subunit model at Accra Psychiatric Hospital in Ghana. The primary objective was to document the Pharmacy Department's organisational structure, functional roles, and operational outputs following the implementation of five pharmacist-led subunits. No patient-level data were collected, and all analyses focus on departmental service outputs, reporting compliance, and pharmacovigilance activities. Descriptive practice reports are increasingly recognised as valuable for sharing health system innovations, particularly in low- and middle-income countries (LMIC) contexts (Anderson & Benrimoj, 2016; Mekonnen, McLachlan, & Brien, 2016).

3.2 Setting

The study was conducted at Accra Psychiatric Hospital (APH), Ghana's largest psychiatric facility, which provides inpatient and outpatient mental health services. The Pharmacy Department supports clinical care, medication management, small-scale compounding, pharmacovigilance, patient counselling, and drug information services. (WHO, 2019; Fadare et al., 2018).

3.3 Description of the Subunit-Based Model

The Pharmacy Department was organised into five functional subunits, each led by a pharmacist with a defined scope of practice and reporting responsibilities. The subunits are:

- **Medication Management Unit (MMU):** Responsible for procurement, storage, and distribution of medicines, ensuring stock reliability and compliance with storage standards (Bond & Raehl, 2007).

- **Small-Scale Manufacturing Unit (SSM):** Handles extemporaneous compounding and repackaging of medicines to meet patient-specific needs, supporting quality-assured customised pharmaceutical services (FIP, 2020).

- **Medication Adherence and Counselling Unit (MACU):** Provides patient education, counselling, and adherence support for psychotropic therapy, addressing documented adherence gaps in psychiatric care (Kretchy, Osafo, & Afrane, 2014; Nieuwlaat et al., 2014).

- **Pharmacovigilance and Patient Safety Unit:** Oversees adverse drug reaction (ADR) reporting, medication error tracking, and patient safety interventions, strengthening hospital pharmacovigilance capacity (Edwards & Aronson, 2000; WHO, 2019).

- **Drug Information and In-Patients' Unit:** Delivers ward-based services, responds to drug information queries, and supports prescribers in rational medication selection (Anderson & Benrimoj, 2016).

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Each subunit operates under a written terms-of-reference document that specifies responsibilities, reporting frequency, and performance indicators. Subunit heads report to the Head of Pharmacy Department (HOP) via structured daily, weekly, monthly, and quarterly reports, in accordance with recommendations for hospital pharmacy governance and accountability (FIP, 2014; FIP, 2020).

3.4 Data Collection and Quantitative Metrics

Operational outputs from each subunit were captured using routine service logs, ADR reports, medication counselling records, drug information requests, and manufacturing production logs. Key indicators included:

- Number of reports submitted by each subunit per month
- Number of ADR reports documented and followed up on
- Number of medication counselling encounters
- Drug information queries addressed
- Small-scale manufacturing outputs

These indicators were summarised over a 12-month (May 2024 to May 2025) period following implementation to provide a quantitative overview of pharmacy service delivery and governance improvements (Mekonnen et al., 2016; WHO, 2017). Pre-implementation baseline data were drawn from departmental records.

3.5 Governance and Oversight

The model instituted a structured reporting framework to enhance accountability and oversight. The HOP reviewed subunit outputs, aggregated them, presented them at departmental meetings, and displayed them on the department's notice board quarterly. This approach aligns with international best practice, which recommends routine monitoring, performance feedback, and role-specific accountability for hospital pharmacy services (FIP, 2014; Braithwaite et al., 2017).

3.6 Ethical Considerations

The study focused on departmental service outputs without involving patient-level data. All reporting and record-keeping adhered to hospital confidentiality policies and national regulations governing pharmacy practice. The initiative aligned with WHO guidance on medication safety (WHO, 2017).

4.0 RESULTS AND DISCUSSIONS

4.1 Organisational Clarity and Role Definition

During the period May 2024 to May 2025, all 5 subunits submitted 100% monthly reports. On average, each subunit generated 20–25 structured reports annually (daily summaries aggregated into weekly, monthly, and quarterly reports) and submitted them to the Head of Pharmacy (HOP). Over the 12-month data collection period, the number of documented adverse drug reaction (ADR) reports submitted through internal pharmacy reporting channels increased from fewer than 5 per month to an average of 12–18 per month, representing more than a threefold increase in documented ADR activity. In addition, 100% of identified ADR reports were reviewed and followed up by the Pharmacovigilance Unit, with outcomes communicated to prescribers and nursing teams through feedback notes and clinical meetings.

Table 2. Quantitative Pharmacy Service Indicators Following Implementation of the Pharmacist-Led Subunit Model at APH

	Indicator	**Pre-implementation**	**Post-implementation**
	Routine operational reports submitted	Ad hoc/undocumented	125 reports/year
	Monthly subunit reporting compliance	<30%	100% (5/5 subunits)
	ADR reports documented	<5 per month	12–18 per month
	ADR follow-up rate	Inconsistent	100% reviewed and followed up

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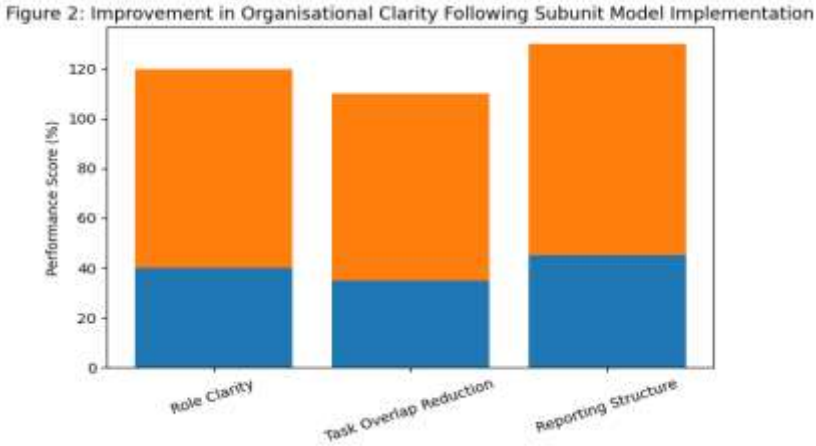
	Medication counselling encounters	Not routinely captured	1,200–1,500 per year
	Drug information queries addressed	Not formally recorded	25–40 per week
	Small-scale manufacturing outputs	Irregular documentation	Monthly production logs, records and feedback are maintained
	Pharmacy reports availability	Occasional	Quarterly consolidated reports

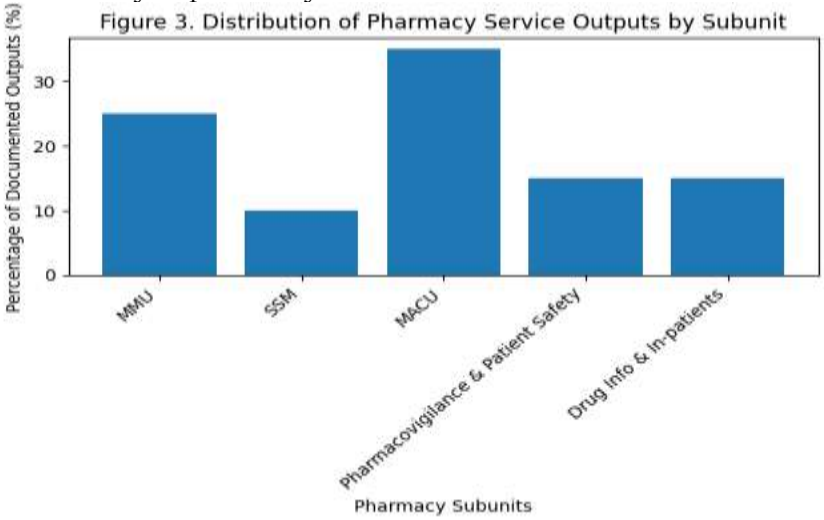
Source: Researcher's field work, May 2025

Implementation of the pharmacist-led subunit model improved organisational clarity within the Pharmacy Department. As shown in Figure 2, implementation was associated with marked improvements in role clarity, reduced task overlap, and strengthened reporting structure.



Source: Researcher's field work, May 2025

Figure 3 illustrates the distribution of documented pharmacy service outputs across the five pharmacist-led subunits. The Medicines Management Unit (MMU) and the Medication Adherence and Counselling Unit (MACU) accounted for the most significant proportions of documented outputs, contributing 25% and 35%, respectively. Outputs from the Pharmacovigilance and Patient Safety subunit and the Drug Information and In-patients' subunit each represented 15%, while the Small-Scale Manufacturing Unit represented 10%. This distribution reflects differentiated functional roles across subunits and demonstrates improved visibility and accountability of pharmacy activities.



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Source: Researcher's field work, May 2025

4.2 Discussion

The implementation of a pharmacist-led subunit model at Accra Psychiatric Hospital (APH) has demonstrated measurable improvements in organisational clarity, medication safety oversight, and visibility of pharmacy services. By formally delineating responsibilities across five pharmacist-led subunits, the department achieved enhanced role clarity and reduced task overlap (WHO, 2019; Kretchy, Osafo, & Afrane, 2014). Prior to the introduction of this model, pharmacy staff performed overlapping roles across dispensing, counselling, reporting, and safety activities, limiting accountability and the effective deployment of professional expertise (Bond & Raehl, 2007; Fadare et al., 2018).

The 100% follow-up rate for documented ADRs further underscores the efficacy of the Pharmacovigilance Unit in closing safety feedback loops, enabling prescribers and nursing teams to respond promptly to potential medication-related risks (Aljadhey et al., 2015; WHO, 2019). The subunit-based reporting framework also enhanced the visibility and integration of pharmacy services within the hospital. By systematically capturing activities such as medication counselling (1,500 annual encounters) and drug information provision (40 queries per month), the model demonstrated pharmacists' expanded clinical role beyond traditional dispensing tasks (Kretchy et al., 2014; Nieuwlaat et al., 2014). This aligns with the FIP Basel Statements, which advocate pharmacists' active involvement in patient safety, clinical decision-making, and interdisciplinary care (FIP, 2014; FIP, 2020).

The quantitative improvements observed at APH provide evidence that a structured, pharmacist-led subunit model can be an effective organisational strategy for hospital pharmacy services. The model not only strengthens governance and accountability but also supports task specialisation, fosters professional recognition, and enhances multidisciplinary collaboration (Braithwaite et al., 2017; Stubbs et al., 2018). Moreover, the routine reporting and monitoring framework established under this model creates a foundation for future quality improvement initiatives, including evaluation of clinical outcomes (WHO, 2017; Mekonnen et al., 2016). However, these findings reflect process and service outputs rather than patient-level outcomes (Charlson et al., 2019; Dalton & Byrne, 2017).

5.0 CONCLUSIONS

The implementation of a pharmacist-led subunit-based operational model at Accra Psychiatric Hospital resulted in clearer organizational structure, defined functional roles, and improved internal governance within the Pharmacy Department. The establishment of five distinct subunits enhanced reporting compliance, increased visibility of pharmacy services, and strengthened pharmacovigilance and medication safety activities.

5.1 Recommendations

- Adoption of similar models in other mental health facilities
- Integration into national hospital pharmacy policy
- Formal evaluation of patient-level outcomes

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7.0 FUNDING STATEMENT

This research received no external funding.

8.0 CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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