

ASSESSMENT OF CLINICAL PHARMACIST ROLE IN DRUG SAFETY IN A TERTIARY CARE HOSPITAL: AN OBSERVATIONAL STUDY

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ABSTRACT

Background: Drug Safety is a crucial part of healthcare delivery., as medication errors and inappropriate prescribing significantly affect patient outcomes. Drug-related problems (DRPs), including drug interactions, dosing errors contraindications, and untreated conditions, are common in hospital settings, especially people with polypharmacy. several comorbidities. Clinical Pharmacists are essential function within recognizing, averting, and resolving these medication-related issues, thereby enhancing patient safety.

Objectives: To assess clinical pharmacists' contributions to enhancing medication safety among hospitalized patients.

Methods: A hospital based Over the course of six months, an observational research was performed in a tertiary care facility. A sum of 256 patients of all age groups receiving drug therapy (inpatients and outpatients) were added in accordance with defined Inclusion and exclusion criteria. Data were collected. using structured case collection forms.

Results: Drug-related problems were identified across multiple departments, with the highest prevalence observed in General Medicine and departments managing complex and polypharmacy cases. Drug interactions were the most frequently reported DRP, particularly in Neurology/Neurosurgery (60%), Cardiology (54.5%), Urology (57.1%), and Chest & TB/Respiratory Medicine (66.7%). Dose-related errors, duplication errors, contraindications, omission errors, and untreated conditions were also observed. Patient-related compliance problems were minimal, with under-use (0.8%), over-use (0.4%), and erratic use (0.4%) reported in very few cases. Laboratory monitoring was required in 17.2% of patients. Clinical pharmacist interventions contributed to the identification and resolution of medication errors, optimization of drug therapy, and improved patient adherence.

Conclusion: The study demonstrates that drug-related problems are prevalent in hospital settings, particularly in departments handling complex therapeutic regimens. Clinical pharmacist involvement significantly improves drug safety by identifying and resolving medication errors, optimizing therapy, and enhancing interdisciplinary collaboration. Integrating clinical pharmacists into the healthcare team is essential for reducing medication errors, improving patient outcomes, and strengthening the medication safety system.

Clinical Pharmacist; Drug Safety; Drug-Related Problems (DRPs); Medication Errors; Drug Interactions; Polypharmacy; Patient Safety; Medication Monitoring; Hospital-Based Study.

Keywords: Clinical Pharmacist; Drug Safety; Drug-Related Problems (DRPs); Medication Errors; Drug Interactions; Polypharmacy; Patient Safety; Medication Monitoring; Hospital-Based Study

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INTRODUCTION

Medication safety remains a significant concern worldwide. The World Health Organization (WHO) reports that Medication mistakes contribute to millions of preventable adverse events each year. Clinical pharmacists, as experts in pharmacotherapy, engage in a key function in advancing the safe, suitable, and cost-efficient utilization of drugs.

Their responsibilities include:

- Reviewing prescriptions for accuracy
- Performing medication reconciliation
- Monitoring and reporting negative drug responses
- Detecting Possible interactions between drugs
- Giving patient education and counseling

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- Identifying and rectifying medication errors
- Contributing to the development and improvement of hospital medication policies.

This study aims to assess how effectively clinical pharmacists contribute to strengthening drug safety practices within a tertiary care hospital.

Drug safety is a major indicator of healthcare quality and reflects how effectively a nation delivers safe and evidence-based treatment. As therapies become more advanced and complex, the risk of medication-related harm also increases. Unsafe medication practices contribute significantly to global patient injuries, healthcare costs, extended hospital stays, and increased mortality.

Many ADRs and Medication mistakes are Preventable through systematic monitoring and early intervention. The WHO identifies medication safety as a global priority, especially in low- and middle-income countries facing resource shortages and lack of standardized setups. "Medication Without Harm" by WHO's Worldwide Patient Safety Issues seeks to lessen serious, preventable medication-related damage across all stages of medication use. Ensuring drug safety improves patient trust, enhances treatment outcomes, reduces financial burdens, and promotes rational medicine use. Achieving medication safety requires coordinated efforts from doctors, nurses, pharmacists, administrators, policymakers, and patients.

THE FUNCTION OF CLINICAL PHARMACISTS IN CONTEMPORARY HEALTHCARE

Clinical pharmacists are experts in medication therapy with advanced knowledge in pharmacotherapeutics. Unlike traditional roles focused mainly on dispensing, they actively participate in direct patient care. Their core competencies include:

- Monitoring therapeutic drug levels
- Identifying and preventing drug–drug and drug–food interactions
- Adjusting and optimizing medication dosages
- Ensuring appropriate medication selection
- Detecting and resolving medication errors
- Educating both patients and healthcare providers

Their practices are guided by evidence-based standards that promote safe and rational medication use.

Clinical pharmacists engage with patients throughout various phases of treatment. They evaluate medication regimens for:

- Correct dosing
- Possible adverse effects
- Duplicate therapy
- Contraindications
- Allergic reactions
- Cost-effectiveness

They work collaboratively with physicians to modify therapy when necessary and provide counselling to enhance medication adherence and minimize complications.

CLINICAL PHARMACIST INTERVENTIONS IN DRUG SAFETY

Clinical pharmacists perform comprehensive medication assessments to identify:

Drug-related problems (DRPs)

Prescription inaccuracies

Inappropriate medication choices

Under- or overdosing

Inadequate monitoring

These evaluations engage in preventing avoidable clinical risks and difficulties

An ADR is a significant source of the drug-related harm.

Clinical pharmacists help reduce their occurrence by:

- Recognizing high-risk medications
- Monitoring susceptible patient groups (such as the elderly and those with renal or pediatric concerns)
- Performing causality evaluations
- Reporting and documenting ADRs for pharmacovigilance activities

Their involvement strengthens the overall safety of medication systems.

Medication Reconciliation

Transitions of care—such as moving from home to hospital, shifting between departments, or being discharged to outpatient services—are widely regarded as critical points where medication errors are most likely to occur. During these periods, patients often experience medication discrepancies arising from incomplete drug histories, poor communication among healthcare professionals, or inadequate documentation. These gaps may result in duplicated therapies, missed essential medications, incorrect dosages, or the continuation of drugs that should have been stopped.

Clinical Pharmacists are crucial to addressing these difficulties through medication reconciliation, a structured approach to reviewing and validating a patient's medication profile. Key responsibilities during this process include:

- Obtaining a complete and accurate medication history, covering prescription medicines, over-the-counter products, herbal supplements, and individual usage patterns.
- Detecting inconsistencies between existing medications and newly prescribed treatment plans.
- Resolving unclear or conflicting medication orders in collaboration with physicians and nursing staff.
- Making appropriate modifications to prevent therapeutic duplication, harmful interactions, or inappropriate continuation or discontinuation of medications.
- Preparing a thoroughly verified and updated medication list that can be accessed by the entire healthcare team.
- Providing education to patients and caregivers regarding medication changes, dosing schedules, and potential adverse effects before discharge.

Efficient medication reconciliation significantly reduces risks during these vulnerable transitions. Research shows that pharmacist-led reconciliation:

- Substantially decreases medication errors
- Lowers the incidence of preventable adverse drug events
- Reduces hospital readmission rates
- Enhances continuity and coordination of care
- Improves patient comprehension and adherence

By ensuring accurate and consistent medication management, clinical pharmacists are essential to promoting safer care transitions and achieving better clinical outcomes. (4)

IMPORTANCE OF ASSESSING CLINICAL PHARMACY SERVICES

Although clinical pharmacists are increasingly recognized within healthcare teams, the scope of their involvement differs widely between institutions and countries. Some healthcare facilities have matured clinical pharmacy programs, while others continue to rely primarily on conventional dispensing activities.

Evaluating their services helps identify these variations in practice, utilization, and staffing.

Assessing clinical pharmacy services is essential for determining:

- The nature and number of interventions performed
- Acceptance rates of their recommendations by physicians
- Reductions in DRPs and medication errors
- Improvement in patient health outcomes
- Effects on hospitalization duration and treatment costs

Such findings reinforce the significant role clinical pharmacists play in improving patient care.

Assessment also helps uncover limitations that hinder effective clinical pharmacy practice, such as:

- Inadequate workforce
- Restricted access to patient records
- Limited collaboration among healthcare professionals
- Poor administrative support
- Narrow prescriptive authority

Recognizing these issues is vital for developing and strengthening clinical pharmacy services. (5)

CONTRIBUTION TO HEALTHCARE POLICY AND SYSTEMS

Clinical pharmacists play a key role in formulating various guidelines including:

- Safe medication-use policies
- Drug administration procedures
- Antimicrobial stewardship strategies
- High-risk medication protocols

These contributions help fortify patient safety frameworks within healthcare institutions.

Clinical pharmacists support national regulatory bodies through activities such as:

- Reporting negative drug responses
- Participating within ongoing medication safety monitoring
- Educating other healthcare workers
- Reviewing post-marketing drug safety data

Such involvement enhances the national pharmacovigilance system and promotes safer medication practices.

STATEMENT OF PROBLEM

Medication errors, ADRs, or negative drug responses as well as other DRPs, or drug-related issues remain major contributors to preventable patient harm across global healthcare systems. These issues can lead to extended hospital admissions, higher treatment costs, suboptimal therapeutic outcomes, and in severe situations, even death. In many healthcare settings—particularly in developing nations—medication safety strategies are still developing. Contributing factors include insufficient staffing, lack of structured prescription review processes, physician workload pressures, and limited use of drug information services.

Medication errors are especially common when care transitions such as at admission, and transfer among departments, and release—where inconsistencies in medication information and communication lapses frequently occur. Without the proactive role of clinical pharmacists, many DRPs remain unnoticed, increasing the risk of preventable harm.

Therefore, evaluating the role and contribution of clinical pharmacists is crucial to understanding their impact on medication safety. Examining the nature of their interventions, the acceptance by physicians, and the resulting outcomes can provide strong evidence to enhance hospital practices, promote safer medication use, and support the integration and expansion of clinical pharmacy services.

AIM

To Identify the position and efficacy of clinical pharmacists in improving drug safety by identifying, preventing, and resolving medication-connected issues at a tertiary care facility.

OBJECTIVES

To Evaluate the clinical pharmacist role in enhancing drug safety among hospitalized patients

- To identify and assess negative effects of medication among patients in hospitals
- To detect Moreover, avoid potential medication interactions. (DDIs).
- To monitor the safe use of high-risk medications (e.g., anticoagulants, insulin, antibiotics chemotherapy).
- To evaluate the effects of pharmacist actions about reducing errors in medication and improving patient outcomes.
- To promote knowledge of drug healthcare worker safety among healthcare professionals and patients through counselling and education.

MATERIALS AND METHODS

STUDY DESIGN

Present research is an observational prospective study

INCLUSION CRITERIA:

- Individuals of all ages
- Patients with wide range of illness
- Inpatients, outpatient receiving drug therapy
- Willing to participant in study
- Complete medical records available

EXCLUSION CRITERIA:

- Unable to participant in study
- Incomplete medical records
- oncology department

TARGET STUDY POPULATION AND STUDY TIME

The demographic being targeted comprised outpatients & admitted inpatient wards of a private hospital, Telangana. The research conducted for 6 months

RECRUITMENT OF STUDY PARTICIPANTS

Participants were recruited using a purposive sampling technique. Healthcare professionals who met the inclusion criteria were approached personally and aware of the study's objectives. Informed Consent was acquired from those willing to participate. The recruitment process ensured voluntary participation and maintained confidentiality

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throughout the study period.

MODALITY OF OBTAINING RESPONSE

Data will be collected from patient case sheets and medication charts, and many drug errors, such as prescription, dispensing, administration, transcription errors drug interactions, and ADRs—will be identified and documented. Drug interactions will be checked using the Drug Interaction Checker on Medscape and classified according to severity, mechanism, clinical outcome. Clinical pharmacist interventions will be recorded in a structured form, and responses from healthcare professionals regarding pharmacist involvement in drug safety will be obtained through a structured questionnaire. All findings will be analyzed descriptively.

STUDY SETTING & STUDY SAMPLE SIZE

The research was carried out in a tertiary care facility, teaching medical facility that provides both inpatient and outpatient services. 377 sample

DEVELOPMENT AND VALIDATION OF DOCUMENTATION FORM

A structured documentation form was developed to record clinical pharmacist interventions related to drug safety, including medication errors, drug interactions, and ADRs. The form was designed based on literature review and hospital safety guidelines, and includes sections for patient demographics, type of error, pharmacist recommendation, and physician acceptance.

VALIDATION OF DATA COLLECTION FORM (CONTENT VALIDATION)

RESULTS

Table 4.1 shows genders distribution in the 256 study individuals. Among them, 139 (54.3%) were females and 117 (45.7%) were males. This indicates that female

Table 4.1. Gender-wise distribution of study participants

	Frequency	Percent
Male	117	45.7
Female	139	54.3
Total	256	100.0

Table 4.2 shows department-wise distribution of 256 participants. The majority of participants were from the General Medicine department (36.7%), followed by Cardiology (8.6%), Emergency/ICU (7.6%), and ENT (7.0%). Moderate proportions were observed in Pediatrics /Neonatology (5.1%) and Gynecology/Obstetrics (4.3%), while the least representation was from Ophthalmology (0.4%) and Psychiatry (0.8%). This indicates that most participants were recruited from major clinical departments with higher patient attendance

Table 4.2. Department-wise distribution of study participants

Department	Frequency	Percent
General Medicine	94	36.7
Orthopedics	26	10.2
Gynecology / Obstetrics	11	4.3
ENT	18	7.0
Chest & TB / Respiratory Medicine	3	1.2
Ophthalmology	1	.4

Five pharmacy practice experts from GCP validated the DIs form for its content, construction and appropriate modifications suggested by the faculty were added.

ETHICAL CONSIDERATION

The Institutional Ethics Committee granted ethical approval. before initiating the study every participant was knowledgeable about goals and methods used in the study. Confidentiality of the information was strictly maintained, and participation was voluntary. Ethical principles such as Justice, autonomy, beneficence, and non-maleficence were followed throughout research process. Protocol presented was authorized by the board of institutional review of GCP on 29/08/2025 (Application Reference No: GCPK/PD25/16).

STATISTICAL ANALYSIS

All Microsoft Excel was used to enter and evaluate the data gathered. using descriptive statistics. Percentages and frequencies were employed. to summarize the types of medication errors, drug interactions, and clinical pharmacist interventions. The standard deviation and mean were calculated for the numerical variables like patient Age and number of the medications per prescription. The acceptance rate of pharmacist interventions was calculated as a percentage of total interventions made. Inferential statistics such as chi-square test was used to ascertain this relationship within the type of error and intervention acceptance where appropriate. of fewer than 0.05. The findings were displayed. using tables as well as charts over clear standard interpretation.

participants slightly outnumbered male participants in the study. Overall, both genders were reasonably represented among individuals.

Dermatology	10	3.9
General Surgery	9	3.5
Pediatrics / Neonatology	13	5.1
Neurology / Neurosurgery	10	3.9
Nephrology	5	1.9
Cardiology	22	8.6
Gastroenterology	9	3.5
Urology	7	2.7
Psychiatry	2	.8
Emergency / ICU	16	7.6
Total	256	100.0

Chi-Square Tests

Test	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.638 ^a	1	.056		
Continuity Correction^b	1.753	1	.185		

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Likelihood Ratio	4.769	1	.029		
Fisher's Exact Test				.093	.093
Linear-by-Linear	3.623	1	.057		

Table 4.3. Duplication

Table 4.3 shows the department-wise distribution of DRPs, with the highest proportion observed in General Surgery and Gastroenterology (11.1% each), followed by General Medicine (10.8%) and Orthopedics and Pediatrics/Neonatology (7.7% each).

Department	DRP status n (%)
General Medicine	Present: 10 (10.8%); Absent: 84 (89.2%); Total: 94
Orthopedics	Present: 2 (7.7%); Absent: 24 (92.3%); Total: 26
Gynecology / Obstetrics	Present: 0 (0.0%); Absent: 11 (100.0%); Total: 11
ENT	Present: 0 (0.0%); Absent: 18 (100.0%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Pediatrics / Neonatology	Present: 1 (7.7%); Absent: 12 (92.3%); Total: 13
Neurology / Neurosurgery	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 1 (4.5%); Absent: 21 (95.5%); Total: 22
Gastroenterology	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Urology	Present: 0 (0.0%); Absent: 7 (100.0%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 1 (6.3%); Absent: 15 (93.8%); Total: 16

Association					
N of Valid Cases	256				

2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.36. b. Computed only for a 2x2 t

Table 4.4. Drug interaction

Table 4.4 shows the department-wise distribution of drug interactions, with the highest proportion observed in Ophthalmology (100%), followed by Chest & TB/Respiratory Medicine (66.7%) and Neurology/Neurosurgery (60.0%).

Department	DRP status n (%)
General Medicine	Present: 32 (34.4%); Absent: 62 (65.6%); Total: 94
Orthopedics	Present: 5 (19.2%); Absent: 21 (80.8%); Total: 26
Gynecology / Obstetrics	Present: 4 (36.4%); Absent: 7 (63.6%); Total: 11
ENT	Present: 0 (0.0%); Absent: 18 (100.0%); Total: 18
Chest & TB / Respiratory Medicine	Present: 2 (66.7%); Absent: 1 (33.3%); Total: 3
Ophthalmology	Present: 1 (100.0%); Absent: 0 (0.0%); Total: 1
Dermatology	Present: 2 (20.0%); Absent: 8 (80.0%); Total: 10
General Surgery	Present: 4 (44.4%); Absent: 5 (55.6%); Total: 9
Pediatrics / Neonatology	Present: 5 (38.5%); Absent: 8 (61.5%); Total: 13
Neurology / Neurosurgery	Present: 6 (60.0%); Absent: 4 (40.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 12 (54.5%); Absent: 10 (45.5%); Total: 22
Gastroenterology	Present: 2 (22.2%); Absent: 7 (77.8%); Total: 9
Urology	Present: 4 (57.1%); Absent: 3 (42.9%); Total: 7
Psychiatry	Present: 1 (50.0%); Absent: 1 (50.0%); Total: 2
Emergency / ICU	Present: 6 (37.5%); Absent: 10 (62.5%); Total: 16

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Table 4.5. Wrong drug

Table 4.5 shows the department-wise distribution of wrong drug selection, with the highest proportion observed in Pediatrics/Neonatology (23.1%)

Department	DRP status n (%)
General Medicine	Present: 2 (2.2%); Absent: 92 (97.8%); Total: 94
Orthopedics	Present: 2 (7.7%); Absent: 24 (92.3%); Total: 26
Gynecology / Obstetrics	Present: 1 (9.1%); Absent: 10 (90.9%); Total: 11
ENT	Present: 1 (5.6%); Absent: 17 (94.4%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Pediatrics / Neonatology	Present: 3 (23.1%); Absent: 10 (76.9%); Total: 13
Neurology / Neurosurgery	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 2 (9.1%); Absent: 20 (90.9%); Total: 22
Gastroenterology	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Urology	Present: 0 (0.0%); Absent: 7 (100.0%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 1 (6.3%); Absent: 15 (93.8%); Total: 16

Table 4.6. Incorrect strength

Table 4.6 shows the department-wise distribution of incorrect strength, with the highest proportion observed in Nephrology (20.0%)

Department	DRP status n (%)
General Medicine	Present: 2 (2.2%); Absent: 92 (97.8%); Total: 94
Orthopedics	Present: 0 (0.0%); Absent: 26 (100.0%); Total: 26
Gynecology / Obstetrics	Present: 0 (0.0%); Absent: 11 (100.0%); Total: 11
ENT	Present: 0 (0.0%); Absent: 18 (100.0%); Total: 18

Department	DRP status n (%)
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Pediatrics / Neonatology	Present: 1 (7.7%); Absent: 12 (92.3%); Total: 13
Neurology / Neurosurgery	Present: 1 (10.0%); Absent: 9 (90.0%); Total: 10
Nephrology	Present: 1 (20.0%); Absent: 4 (80.0%); Total: 5
Cardiology	Present: 0 (0.0%); Absent: 22 (100.0%); Total: 22
Gastroenterology	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Urology	Present: 0 (0.0%); Absent: 7 (100.0%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 2 (12.5%); Absent: 14 (87.5%); Total: 16

Table 4.7. Inappropriate dosage form

Table 4.7 shows the department-wise distribution of inappropriate dosage form, with the highest proportion observed in Gynecology/Obstetrics (18.2%)

Department	DRP status n (%)
General Medicine	Present: 1 (1.1%); Absent: 93 (98.9%); Total: 94
Orthopedics	Present: 0 (0.0%); Absent: 26 (100.0%); Total: 26
Gynecology / Obstetrics	Present: 2 (18.2%); Absent: 9 (81.8%); Total: 11
ENT	Present: 1 (5.6%); Absent: 17 (94.4%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Pediatrics / Neonatology	Present: 1 (7.7%); Absent: 12 (92.3%); Total: 13

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Department	DRP status n (%)
Neurology / Neurosurgery	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 0 (0.0%); Absent: 22 (100.0%); Total: 22
Gastroenterology	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Urology	Present: 0 (0.0%); Absent: 7 (100.0%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 1 (6.3%); Absent: 15 (93.8%); Total: 16

Table 4.8. Contraindication apparent

Table 4.8 shows the department-wise distribution of contraindication apparent, with the highest proportion observed in Neurology/Neurosurgery (30.0%).

Department	DRP status n (%)
General Medicine	Present: 1 (1.1%); Absent: 93 (98.9%); Total: 94
Orthopedics	Present: 2 (7.7%); Absent: 24 (92.3%); Total: 26
Gynecology / Obstetrics	Present: 0 (0.0%); Absent: 11 (100.0%); Total: 11
ENT	Present: 1 (5.6%); Absent: 17 (94.4%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 1 (10.0%); Absent: 9 (90.0%); Total: 10
General Surgery	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Pediatrics / Neonatology	Present: 0 (0.0%); Absent: 13 (100.0%); Total: 13
Neurology / Neurosurgery	Present: 3 (30.0%); Absent: 7 (70.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 1 (4.5%); Absent: 21 (95.5%); Total: 22
Gastroenterology	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Urology	Present: 0 (0.0%); Absent: 7 (100.0%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2

Department	DRP status n (%)
Emergency / ICU	Present: 2 (12.5%); Absent: 14 (87.5%); Total: 16

Table 4.9. No indication apparent

Table 4.9 shows the department-wise distribution of no indication apparent, with the highest proportion observed in Urology (14.3%)

Department	DRP status n (%)
General Medicine	Present: 5 (5.4%); Absent: 89 (94.6%); Total: 94
Orthopedics	Present: 0 (0.0%); Absent: 26 (100.0%); Total: 26
Gynecology / Obstetrics	Present: 0 (0.0%); Absent: 11 (100.0%); Total: 11
ENT	Present: 1 (5.6%); Absent: 17 (94.4%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Pediatrics / Neonatology	Present: 1 (7.7%); Absent: 12 (92.3%); Total: 13
Neurology / Neurosurgery	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 0 (0.0%); Absent: 22 (100.0%); Total: 22
Gastroenterology	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Urology	Present: 1 (14.3%); Absent: 6 (85.7%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 1 (6.3%); Absent: 15 (93.8%); Total: 16

Table 4.10. Other drug selection problem

Table 4.10 shows the department-wise distribution of other drug selection problems, with the highest proportion observed in Neurology/Neurosurgery (20.0%)

Department	DRP status n (%)
General Medicine	Present: 3 (3.2%); Absent: 91 (96.8%); Total: 94
Orthopedics	Present: 0 (0.0%); Absent: 26 (100.0%); Total: 26

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Department	DRP status n (%)
Gynecology / Obstetrics	Present: 0 (0.0%); Absent: 11 (100.0%); Total: 11
ENT	Present: 0 (0.0%); Absent: 18 (100.0%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 1 (10.0%); Absent: 9 (90.0%); Total: 10
General Surgery	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Pediatrics / Neonatology	Present: 0 (0.0%); Absent: 13 (100.0%); Total: 13
Neurology / Neurosurgery	Present: 2 (20.0%); Absent: 8 (80.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 0 (0.0%); Absent: 22 (100.0%); Total: 22
Gastroenterology	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Urology	Present: 0 (0.0%); Absent: 7 (100.0%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 2 (12.5%); Absent: 14 (87.5%); Total: 16

Table 4.11. Prescribed dose too high

Table 4.11 shows the department-wise distribution of prescribed dose too high, with the highest proportion observed in Neurology/Neurosurgery and Nephrology (20.0% each).

Department	DRP status n (%)
.	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
General Medicine	Present: 2 (2.2%); Absent: 92 (97.8%); Total: 93
Orthopedics	Present: 2 (7.7%); Absent: 24 (92.3%); Total: 26
Gynecology / Obstetrics	Present: 0 (0.0%); Absent: 11 (100.0%); Total: 11
ENT	Present: 2 (11.1%); Absent: 16 (88.9%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1

Department	DRP status n (%)
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Pediatrics / Neonatology	Present: 1 (7.7%); Absent: 12 (92.3%); Total: 13
Neurology / Neurosurgery	Present: 2 (20.0%); Absent: 8 (80.0%); Total: 10
Nephrology	Present: 1 (20.0%); Absent: 4 (80.0%); Total: 5
Cardiology	Present: 0 (0.0%); Absent: 22 (100.0%); Total: 22
Gastroenterology	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Urology	Present: 1 (14.3%); Absent: 6 (85.7%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 2 (12.5%); Absent: 14 (87.5%); Total: 16

Table 4.12. Prescribed dose too low

Table 4.12 shows the department-wise distribution of prescribed dose too low, with the highest proportion observed in Urology (14.3%).

Department	DRP status n (%)
.	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
General Medicine	Present: 3 (3.2%); Absent: 91 (96.8%); Total: 94
Orthopedics	Present: 1 (3.8%); Absent: 25 (96.2%); Total: 26
Gynecology / Obstetrics	Present: 0 (0.0%); Absent: 11 (100.0%); Total: 11
ENT	Present: 1 (5.6%); Absent: 17 (94.4%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Pediatrics / Neonatology	Present: 0 (0.0%); Absent: 13 (100.0%); Total: 13
Neurology / Neurosurgery	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5

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Department	DRP status n (%)
Cardiology	Present: 2 (9.1%); Absent: 20 (90.9%); Total: 22
Gastroenterology	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Urology	Present: 1 (14.3%); Absent: 6 (85.7%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 0 (0.0%); Absent: 16 (100.0%); Total: 16

Table 4.13. Incorrect or unclear dosing instruction

Table 4.13 shows the department-wise distribution of incorrect or unclear dosing instruction, with the highest proportion observed in Neurology/Neurosurgery (40.0%).

Department	DRP status n (%)
General Medicine	Present: 3 (3.2%); Absent: 91 (96.8%); Total: 94
Orthopedics	Present: 0 (0.0%); Absent: 26 (100.0%); Total: 26
Gynecology / Obstetrics	Present: 0 (0.0%); Absent: 11 (100.0%); Total: 11
ENT	Present: 0 (0.0%); Absent: 18 (100.0%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Pediatrics / Neonatology	Present: 0 (0.0%); Absent: 13 (100.0%); Total: 13
Neurology / Neurosurgery	Present: 4 (40.0%); Absent: 6 (60.0%); Total: 10
Nephrology	Present: 1 (20.0%); Absent: 4 (80.0%); Total: 5
Cardiology	Present: 0 (0.0%); Absent: 22 (100.0%); Total: 22
Gastroenterology	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Urology	Present: 0 (0.0%); Absent: 7 (100.0%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 0 (0.0%); Absent: 16 (100.0%); Total: 16

Table 4.14. Other dose problem

Table 4.14 shows the department-wise distribution of other

dose problems, with the highest proportion observed in Pediatrics/Neonatology (7.7%).

Department	DRP status n (%)
.	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
General Medicine	Present: 1 (1.1%); Absent: 93 (98.9%); Total: 94
Orthopedics	Present: 0 (0.0%); Absent: 26 (100.0%); Total: 26
Gynecology / Obstetrics	Present: 0 (0.0%); Absent: 11 (100.0%); Total: 11
ENT	Present: 0 (0.0%); Absent: 18 (100.0%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Pediatrics / Neonatology	Present: 1 (7.7%); Absent: 12 (92.3%); Total: 13
Neurology / Neurosurgery	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 1 (4.5%); Absent: 21 (95.5%); Total: 22
Gastroenterology	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Urology	Present: 0 (0.0%); Absent: 7 (100.0%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 0 (0.0%); Absent: 16 (100.0%); Total: 16

Table 4.15. Condition undertreated

Table 4.15 shows the department-wise distribution of condition undertreated, with the highest proportion observed in Urology (28.6%).

Department	DRP status n (%)
.	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
General Medicine	Present: 14 (15.1%); Absent: 80 (84.9%); Total: 94
Orthopedics	Present: 1 (3.8%); Absent: 25 (96.2%); Total: 26
Gynecology / Obstetrics	Present: 1 (9.1%); Absent: 10 (90.9%); Total: 11

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Department	DRP status n (%)
ENT	Present: 2 (11.1%); Absent: 16 (88.9%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Pediatrics / Neonatology	Present: 2 (15.4%); Absent: 11 (84.6%); Total: 13
Neurology / Neurosurgery	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
Nephrology	Present: 1 (20.0%); Absent: 4 (80.0%); Total: 5
Cardiology	Present: 0 (0.0%); Absent: 22 (100.0%); Total: 22
Gastroenterology	Present: 1 (11.1%); Absent: 8 (88.9%); Total: 9
Urology	Present: 2 (28.6%); Absent: 5 (71.4%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 1 (6.3%); Absent: 15 (93.8%); Total: 16

Table 4.16. Omission error

Table 4.16 shows the department-wise distribution of omission errors, with the highest proportion observed in Urology (14.3%)

Department	DRP status n (%)
General Medicine	Present: 1 (1.1%); Absent: 93 (98.9%); Total: 94
Orthopedics	Present: 0 (0.0%); Absent: 26 (100.0%); Total: 26
Gynecology / Obstetrics	Present: 1 (9.1%); Absent: 10 (90.9%); Total: 11
ENT	Present: 0 (0.0%); Absent: 18 (100.0%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9

Department	DRP status n (%)
Pediatrics / Neonatology	Present: 0 (0.0%); Absent: 12 (92.3%); Total: 12
Neurology / Neurosurgery	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 0 (0.0%); Absent: 22 (100.0%); Total: 22
Gastroenterology	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Urology	Present: 1 (14.3%); Absent: 6 (85.7%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 1 (6.3%); Absent: 15 (93.8%); Total: 16

Table 4.17. Transcription error

Table 4.17 shows the department-wise distribution of transcription errors, with the highest proportion observed in Gynecology/Obstetrics (18.2%)

Department	DRP status n (%)
General Medicine	Present: 0 (0.0%); Absent: 94 (100.0%); Total: 94
Orthopedics	Present: 0 (0.0%); Absent: 26 (100.0%); Total: 26
Gynecology / Obstetrics	Present: 2 (18.2%); Absent: 9 (81.8%); Total: 11
ENT	Present: 0 (0.0%); Absent: 18 (100.0%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Pediatrics / Neonatology	Present: 0 (0.0%); Absent: 12 (92.3%); Total: 12
Neurology / Neurosurgery	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 0 (0.0%); Absent: 22 (100.0%); Total: 22
Gastroenterology	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Urology	Present: 0 (0.0%); Absent: 7 (100.0%); Total: 7

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Department	DRP status n (%)
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 0 (0.0%); Absent: 16 (100.0%); Total: 16

Table 4.18. Medication administration/documentation error

Table 4.18 shows the department-wise distribution of medication administration/documentation errors, with the highest proportion observed in Urology (14.3%)

Department	DRP status n (%)
General Medicine	Present: 1 (1.1%); Absent: 93 (98.9%); Total: 94
Orthopedics	Present: 0 (0.0%); Absent: 26 (100.0%); Total: 26
Gynecology / Obstetrics	Present: 0 (0.0%); Absent: 11 (100.0%); Total: 11
ENT	Present: 0 (0.0%); Absent: 18 (100.0%); Total: 18
Chest & TB / Respiratory Medicine	Present: 0 (0.0%); Absent: 3 (100.0%); Total: 3
Ophthalmology	Present: 0 (0.0%); Absent: 1 (100.0%); Total: 1
Dermatology	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
General Surgery	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Pediatrics / Neonatology	Present: 0 (0.0%); Absent: 12 (92.3%); Total: 12
Neurology / Neurosurgery	Present: 0 (0.0%); Absent: 10 (100.0%); Total: 10
Nephrology	Present: 0 (0.0%); Absent: 5 (100.0%); Total: 5
Cardiology	Present: 0 (0.0%); Absent: 22 (100.0%); Total: 22
Gastroenterology	Present: 0 (0.0%); Absent: 9 (100.0%); Total: 9
Urology	Present: 1 (14.3%); Absent: 6 (85.7%); Total: 7
Psychiatry	Present: 0 (0.0%); Absent: 2 (100.0%); Total: 2
Emergency / ICU	Present: 0 (0.0%); Absent: 16 (100.0%); Total: 16

Table 4.19. Patient-related DRP

Patient-related DRP	Present n (%)
Under-use by patient	2(0.8%)
Over-use by patient	1(0.4%)

DEPARTMENT/DRPs

Patient-related DRP	Present n (%)
Erratic use of medication	1(0.4%)
Intentional drug misuse	0
Difficulty using dosage form	2(0.8%)
Other compliance problem	2(0.8%)

Table 4.19.1. Under-use by patient

Status	n (%)
Present	2 (.8%)
Absent	254 (99.2%)
Total	256 (100.0%)

Table 4. 19.2. Over-use by patient

Status	n (%)
Present	1 (.4%)
Absent	255 (99.6%)
Total	256 (100.0%)

Table 4.19.3. Erratic use of medication

Status	n (%)
Present	1 (.4%)
Absent	255 (99.6%)
Total	256 (100.0%)

Table 4.19.4. Intentional drug misuse

Status	n (%)
Absent	256 (100.0%)

Table 4.19.5. Difficulty using dosage form

Status	n (%)
Present	2 (.8%)
Absent	254 (99.2%)
Total	256 (100.0%)

Table 4.19.6. Other compliance problem

Status	n (%)
Present	2 (.8%)
Absent	254 (99.2%)
Total	256 (100.0%)

Table 4.20. Monitoring problems

Monitoring problem	Monitoring required n (%)
Laboratory Monitoring	43(16.8%)
Non Laboratory Monitoring	3(3.5%)

Table 4.20.1. Laboratory monitoring

Status	n (%)
Monitoring Required	43 (16.7%)
Monitoring not Required	213 (83.2%)

Table 4.20.2. Non-laboratory monitoring

Status	n (%)
Monitoring Required	9 (3.5%)
Monitoring not Required	247 (96.5%)
Total	256 (100.0%)

D R P	Ge ner al	Ort ho	G y n	E N T	Ch est &	G e n	Pediat rics /	Ne uro log	C a r
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	Medicine	Pediatrics	ecology / Obstetrics		TB / Respiratory Medicine	General Surgery	Neonatology	Psychiatry / Neurosurgery	Dermatology		appropriate dosage form			2%		7%			0%	
Duplication	10.6%	7.7%	0.0%	0.0%	0.0%	11.1%	7.7%	0.0%	4.5%		Contraindication apparent	11.1%	7.7%	0.0%	5.6%	0.0%	0.0%	30.0%	0.0%	11.1%
Drug interaction	33.5%	19.2%	36.4%	0.0%	66.7%	44.4%	38.5%	60.0%	54.5%		No indication apparent	5.3%	0.0%	0.0%	5.6%	0.0%	11.1%	7.7%	0.0%	0.0%
Wrong drug	2.1%	7.7%	9.1%	5.6%	0.0%	0.0%	23.1%	0.0%	9.1%		Other drug selection	3.2%	0.0%	0.0%	0.0%	0.0%	11.1%	0.0%	20.0%	0.0%
Incorrect strength	2.1%	0.0%	0.0%	0.0%	0.0%	11.1%	7.7%	10.0%	0.0%											
Incorrect	1.1%	0.0%	1.8%	5.6%	0.0%	7.7%	7.7%	0.0%	0.0%											

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n p r o b l e m										io n										
	P r e s c r i b e d o s e t o h i g h	2.1 %	7.7 %	0 . 0 %	11. 1 %	0.0 %	1 1 . 1 %	7.7%	20. 0%		O t h e r d o s e p r o b l e m	1.1 %	0.0 %	0 . 0 %	0.0 %	0.0 %	0 . 0 %	7.7%	0.0 %	4 . 5 %
	P r e s c r i b e d o s e t o l o w	3.2 %	3.8 %	0 . 0 %	5.6 %	0.0 %	0 . 0 %	0.0%	0.0 %		C o n d i t i o n u n d e r t r e a t e d	14. 9%	3.8 %	9 . 1 %	11. 1 %	0.0 %	0 . 0 %	15.4%	0.0 %	0 . 0 %
	I n c o r r e c t o r u n c l e a r d o s i n g i n s t r u c t	3.2 %	0.0 %	0 . 0 %	0.0 %	0.0 %	0 . 0 %	0.0%	40. 0%		O m i s s i o n e r r o r	1.1 %	0.0 %	9 . 1 %	0.0 %	0.0 %	0 . 0 %	0.0%	0.0 %	0 . 0 %
											T r a n s c r i p t i o n e r r o r	0.0 %	0.0 %	1 8 . 2 %	0.0 %	0.0 %	0 . 0 %	0.0%	0.0 %	0 . 0 %
											M e d i c a t i o	1.1 %	0.0 %	0 . 0 %	0.0 %	0.0 %	0 . 0 %	0.0%	0.0 %	0 . 0 %

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n a d m i s t r a t i o n / d o c u m e n t a t i o n e r r o r									
DRP	Op th a l m o l o g y	Der ma t o l o g y	De n t a l	Gas tro en ter o l o g y	U r o l o g y	Psy chi a t r y	Eme r gen cy / ICU		
Dupl i c a t i o n	0.0 %	0.0%	0.0 %	11.1%	0 . 0 %	0.0 %	6.3 %		
Dru g i n t e r a c t i o n	0.0 %	20.0%	0.0 %	22.2%	5 7 . 1 %	50. 0%	37.5 %		
Wro n g d r u g	0.0 %	0.0%	0.0 %	0.0%	0 . 0 %	0.0 %	6.3 %		
Inco r r e c t s t r e n g t h	0.0 %	0.0%	0.0 %	11.1%	0 . 0 %	0.0 %	12.5 %		
Inap p r o p r i a t e d o s a g e f o r m	0.0 %	0.0%	11. 1%	0.0%	0 . 0 %	0.0 %	0.0 %		
Cont r a i n d i c a t i o n	0.0 %	10.0%	0.0 %	0.0%	0 . 0 %	0.0 %	8.8 %		

appa rent								
No i n d i c a t i o n a p p a r e n t	0.0 %	0.0%	0.0 %	0.0%	1 4 . 3 %	0.0 %	6.3 %	
Othe r d r u g s e l e c t i o n p r o b l e m	0.0 %	10.0%	0.0 %	0.0%	0 . 0 %	0.0 %	12.5 %	
Pres c r i b e d o s e t o o h i g h	0.0 %	0.0%	0.0 %	11.1%	1 4 . 3 %	0.0 %	12.5 %	
Pres c r i b e d o s e t o o l o w	0.0 %	0.0%	0.0 %	11.1%	1 4 . 3 %	0.0 %	0.0 %	
Inco r r e c t o r u n c l e a r d o s i n g i n s t r u c t i o n	0.0 %	0.0%	0.0 %	0.0%	0 . 0 %	0.0 %	0.0 %	
Othe r d o s e p r o b l e m	0.0 %	0.0%	0.0 %	0.0%	0 . 0 %	0.0 %	0.0 %	
Con d i t i o n u n d e r t r e a t e d	0.0 %	0.0%	0.0 %	11.1%	2 8 . 6 %	0.0 %	6.3 %	
Omi s s i o n e r r o r	0.0 %	0.0%	0.0 %	0.0%	1 4 . 3 %	0.0 %	6.3 %	
Tra n s c r i p t i o n e r r o r	0.0 %	0.0%	0.0 %	0.0%	0 . 0 %	0.0 %	0.0 %	

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Medication administration ratio	0.0 %	0.0%	0.0 %	0.0%	14.3 %	0.0 %	0.0 %
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/documentation error							
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DISCUSSION

General Medicine showed a high burden of DRPs, mainly due to drug interactions (33.5%) and condition undertreated (14.9%), followed by contraindications (11.1%) and drug duplication (10.6%). This reflects polypharmacy, multiple comorbidities, and complex treatment regimens, highlighting the need for close medication review by clinical pharmacists.

In Orthopedics, drug interactions (19.2%) and duplication (7.7%) were the most common DRPs, along with dosing issues. These problems may be linked to frequent use of NSAIDs, analgesics, and antibiotics, especially in post-operative care.

Gynecology & Obstetrics: This department showed a high rate of drug interactions (36.4%) and transcription errors (18.2%), along with inappropriate dosage forms (18.2%). Physiological changes during pregnancy and cautious drug selection contribute to prescribing complexity, increasing the risk of DRPs.

ENT had comparatively fewer DRPs, mainly drug selection and dosing-related problems, such as wrong drug, contraindications, and dose too high (each around 5.6–11.1%). These issues may arise from empirical antibiotic prescribing.

Chest & TB / Respiratory Medicine: -This department showed the highest proportion of drug interactions (66.7%). Long-term therapy with anti-tubercular drugs, bronchodilators, and corticosteroids increases interaction potential, emphasizing the importance of monitoring.

General Surgery demonstrated high drug interaction rates (44.4%), along with duplication and dosing errors (11.1% each). Peri-operative polypharmacy and prophylactic antibiotic use are likely contributors.

In Pediatrics /Neonatology: - drug interactions (38.5%), contraindications (30%), and condition undertreated (15.4%) were prominent. Weight-based dosing, age-specific pharmacokinetics, and limited pediatric formulations increase the risk of DRPs.

Neurology / Neurosurgery: -This department showed notable drug interactions (60%), incorrect dosing instructions (40%), and dose-related problems (20%). Use of narrow therapeutic index drugs like antiepileptics necessitates careful monitoring.

Cardiology had a high prevalence of drug interactions (54.5%), followed by wrong drug and dosing issues. Multiple cardiovascular drugs with overlapping effects contribute to interaction risks.

Ophthalmology: No Drug interactions (0%) were observed, likely due to small sample size and limited drug variety.

Dermatology: Few DRPs were noted, mainly drug interactions and contraindications (10–20%), reflecting relatively simpler regimens.

Dental: Minimal DRPs were identified, with inappropriate dosage form (11.1%) being the main issue, often related to post-procedural care.

Gastroenterology: This department showed drug interactions (22.2%), dose-related problems, and condition undertreated (11.1%), possibly due to complex GI pharmacotherapy.

Urology had significant drug interactions (57.1%), condition undertreated (28.6%), and omission errors (14.3%), especially in chronic and post-procedural cases.

Psychiatry mainly showed drug interactions (50%), reflecting polypharmacy with psychotropics

Emergency/ICU exhibited drug interactions (37.5%), dose-related errors, and administration-related issues, which may be attributed to urgent decision-making, critically ill patients, and rapid drug changes.

CONCLUSION

The present study highlights that drug-related problems (DRPs) are common across hospital departments, with drug interactions, dose-related errors, and untreated conditions being the most frequently observed issues. Departments managing complex cases and polypharmacy showed a higher burden of DRPs.

The involvement of a clinical pharmacist played a vital part in enhancing drug by identifying, preventing, and resolving medication errors at several phases in the process of using medications. Through systematic medication assessment, dose optimization, interaction screening, and collaboration with physicians, clinical pharmacists significantly contributed to safer and more rational drug therapy.

Overall, this project emphasizes integration of pharmacists in clinical practice into healthcare. The team is essential to enhance patient security, decrease medication errors, to raise the standard of patient proper care thereby strengthening the overall medication safety system in hospital settings.

LIMITATIONS

- Sample Bias
- The study period was short.
- The study was done in one hospital only.
- Some drug-related problems may have been missed or not recorded.

RECOMMENDATIONS

- Involve clinical pharmacists in patient care to prevent drug-related problems.
- Regularly review patient medications. Improve communication among healthcare professionals
- Provide proper patient counselling to improve medication use

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