



Original Article

From Classroom to Clinic: A Descriptive Cross-Sectional Study on Recall of Pharmacology Knowledge in Prescription Writing by Interns


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ABSTRACT

Background: Prescription writing is an essential clinical skill expected from medical graduates. Inadequate recall of pharmacology knowledge among house surgeons can contribute to prescription errors and unsafe prescribing practices. The present study was conducted to assess the recall of pharmacology knowledge and prescribing practices among house surgeons.

Methods: The present descriptive cross-sectional study was conducted in the Department of Pharmacology, Malabar Medical College & Research Foundation, Kerala, India. A total of 57 house surgeons with at least two months of internship posting participated in the study. Data were collected using a pre-tested structured questionnaire administered through Google Forms. The questionnaire included sections on demographics, self-assessment of recall, clinical prescription scenarios, prescription errors, and prescribing confidence. Data were analyzed using descriptive statistics and expressed as frequencies and percentages.

Results: Only 42% of house surgeons prescribed independently, while the majority depended on mobile applications, guidelines, or seniors for prescribing support. Wrong dose prescription (44.8%) was the most commonly seen prescription error. Participants were least confident in recalling adverse effects, contraindications, and dosage strength of drugs. Recall was strongest for antibiotics and analgesics, whereas poor recall was observed for endocrine drugs, anticancer drugs, and immunosuppressants. Most participants lacked confidence in prescribing for pediatric, pregnant, elderly, and comorbid patients.

Conclusions: Recall of pharmacology knowledge among interns was found to be suboptimal, especially regarding dosage, contraindications, and side effects. The findings highlight the gap between pharmacology teaching and clinical application during internship. Regular reinforcement by case-based learning, refresher courses, prescription trainings, bedside teaching, and simulation-based training may help improving prescribing competency and reduce medication errors.

Keywords: Pharmacology recall, Prescription writing, Medication errors, House surgeons, Rational prescribing, Internship training.

INTRODUCTION

Prescription writing is one of the most important practical skills expected from medical graduates during internship and early clinical practice. Rational prescribing requires adequate knowledge regarding drug selection, dosage, contraindications, duration of treatment, drug interactions, and adverse effects. However, many young doctors experience difficulty recalling pharmacology concepts learned during the second year of MBBS when they begin prescribing during internship.

The transition from classroom-based pharmacology teaching to real-life clinical application often exposes significant gaps in knowledge retention. The interval of nearly two to three years between second-year pharmacology teaching and

internship further contributes to poor recall. As house surgeons are frequently involved in first-line prescribing, inadequate recall may lead to medication errors that compromise patient safety.

Medication errors remain an important global healthcare concern. Common prescription errors include incorrect drug choice, wrong dose, incorrect frequency, incomplete instructions, and failure to recognize contraindications or drug interactions. Several studies have highlighted the prevalence of prescription errors among interns and residents, emphasizing the need for improved pharmacology education and reinforcement.

Traditional pharmacology teaching in undergraduate medical education often emphasizes theory learning over clinical application. As a result, students may struggle to integrate pharmacology teaching into practical prescribing situations. Competency-based medical education recommends integrated learning, case-based discussions, simulation-based teaching, and repeated reinforcement to improve retention and application of pharmacology knowledge.

This study was conducted to evaluate the recall of pharmacology knowledge among house surgeons and assess its impact on prescription writing practices.

REVIEW OF LITERATURE

Several studies have documented the prevalence of prescribing errors among medical trainees and junior doctors. Garbutt et al. reported that inadequate training and lack of confidence contributed significantly to unsafe medication prescribing among house staff. Lesar demonstrated that prescription errors are highly prevalent in teaching hospitals, with dosage errors being the most common.

Indian studies have similarly reported poor prescribing skills among interns. Kaur et al. observed frequent medication errors in tertiary care hospitals, highlighting deficiencies in practical pharmacology training. Kaza et al. found that many interns lacked confidence in writing complete and rational prescriptions despite adequate theoretical knowledge.

The World Health Organization emphasizes rational prescribing as a core competency for medical graduates. Studies suggest that repeated reinforcement, integrated teaching, clinical pharmacology exposure, prescription audits, and simulation-based learning improve prescribing competencies.

Despite increasing awareness regarding medication safety, knowledge attrition remains a major issue during the transition from preclinical to clinical years. Hence, evaluating recall of pharmacology knowledge among interns is necessary for identifying curricular gaps and improving training strategies.

Objectives

Primary Objective

- To assess recall of pharmacology knowledge among house surgeons.

Secondary Objectives

To identify areas of deficient recall.

To identify gaps in pharmacology training and practice.

To compare recall across different drug categories.

To evaluate the impact of recall on prescription writing accuracy.

To analyze factors affecting knowledge retention.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted in the Department of Pharmacology at Malabar Medical College & Research Foundation, Kerala, India. The study population included house surgeons who had completed at least two months of internship posting. A total of 57 house surgeons participated in the study.

Participants who were willing to participate and had completed a minimum of two months of internship were included in the study. House surgeons who provided incomplete responses or were unwilling to participate were excluded. Convenient sampling was used for participant selection.

Data were collected using a pre-tested structured questionnaire administered through Google Forms. The questionnaire consisted of seven sections, including demographic information, self-assessment of recall and prescribing practice, recall-based clinical scenarios, knowledge and error awareness, application and integration, reflections and suggestions, and prescription writing skills.

The collected data were analyzed using descriptive statistics. Frequencies and percentages were calculated and presented using tables and charts.

Ethical Considerations

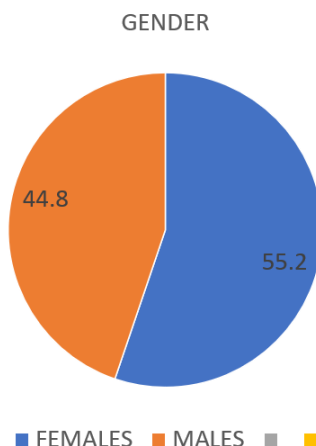
Institutional Ethics Committee approval was obtained prior to the study. Participation was voluntary and anonymous.

RESULTS

Demographic Characteristics

Among the 57 participants, females constituted 55.2% while males constituted 44.8%.

Figure 1. Gender Distribution of Participants



Self-Assessment of Recall and Practice

Only 42% of house surgeons reported prescribing independently, whereas the remaining participants relied on external sources.

Mobile applications were the most commonly used source of drug information (48.3%), followed by guidelines (17.2%) and seniors (17.2%).

Figure 2. Sources of Drug Information Used by House Surgeons

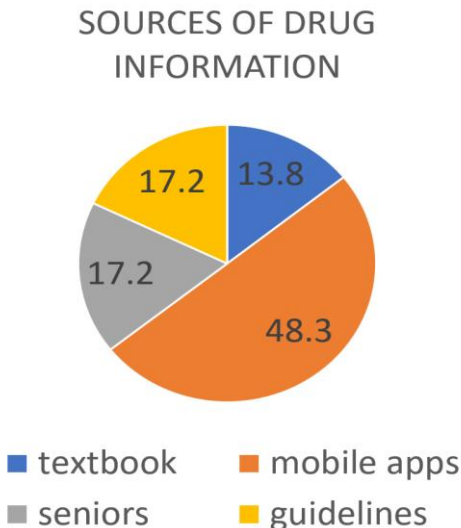


Table 1. Sources of Drug Information

Source	Percentage
Textbooks	13.8%
Mobile applications	48.3%
Seniors	17.2%
Guidelines	17.2%

Confidence in Recalling Pharmacology Knowledge

Most participants were only somewhat confident in recalling pharmacology details. Confidence was lowest for drug doses, contraindications, and adverse effects.

Figure 3. Confidence Levels in Recalling Pharmacology Information

CONFIDENCE IN RECALLING

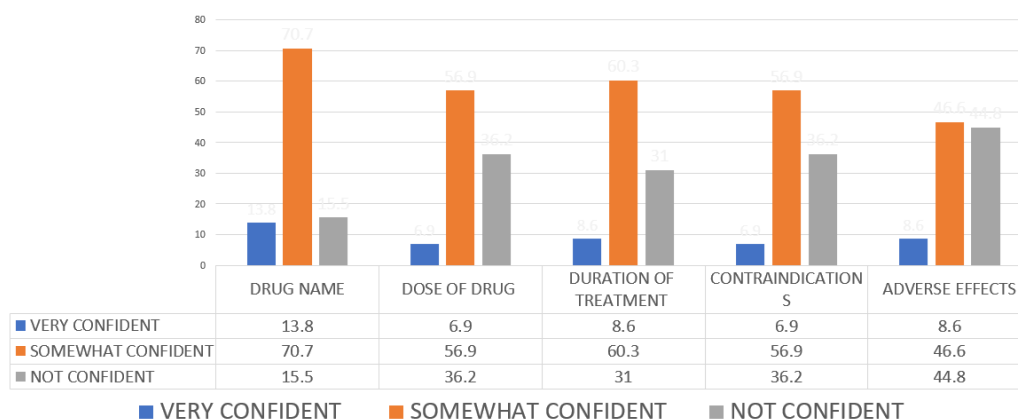


Table 2. Confidence in Recalling Drug Information

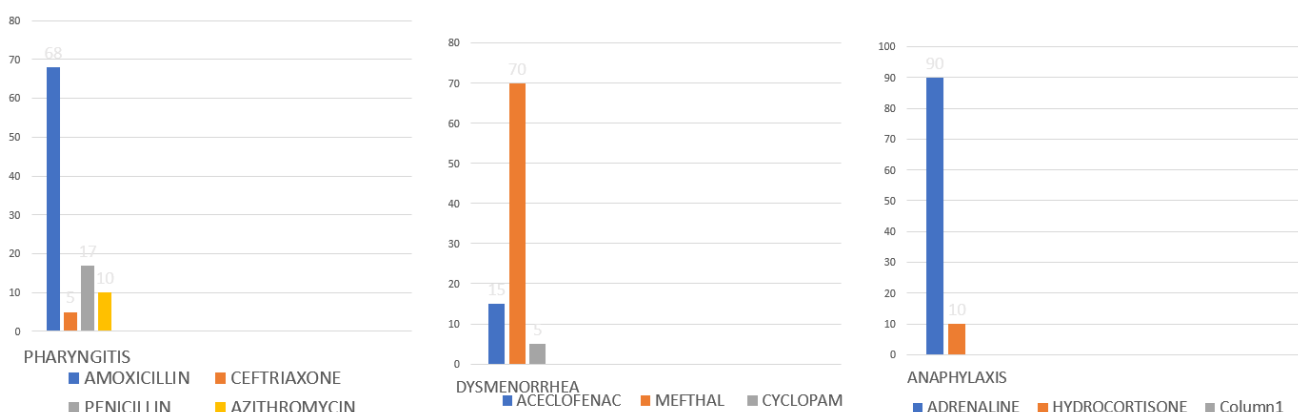
Parameter	Very Confident	Somewhat Confident	Not Confident
Drug name	13.8%	70.7%	15.5%
Dose of drug	6.9%	56.9%	36.2%
Duration of treatment	8.6%	60.3%	31%
Contraindications	6.9%	56.9%	36.2%
Adverse effects	8.6%	46.6%	44.8%

Recall-Based Clinical Scenarios

Correct drug selection exceeded 80% for common conditions such as pharyngitis, dysmenorrhea, and anaphylaxis. For pharyngitis, amoxicillin was selected by the majority of participants. For dysmenorrhea, mefenamic acid was commonly selected, and adrenaline was correctly identified as the drug of choice for anaphylaxis.

Figure 4. Responses to Clinical Prescription Scenarios

RECALL BASED CLINICAL SCENARIOS



CORRECT DRUG SELECTION EXCEEDED 80% FOR COMMON CASES SUCH AS PHARYNGITIS, DYSMENORRHEA AND ANAPHYLAXIS

Prescription Errors

The majority of participants admitted to making prescription errors during internship. Wrong dose prescription was the most common error (44.8%), followed by incomplete instructions (29.3%).

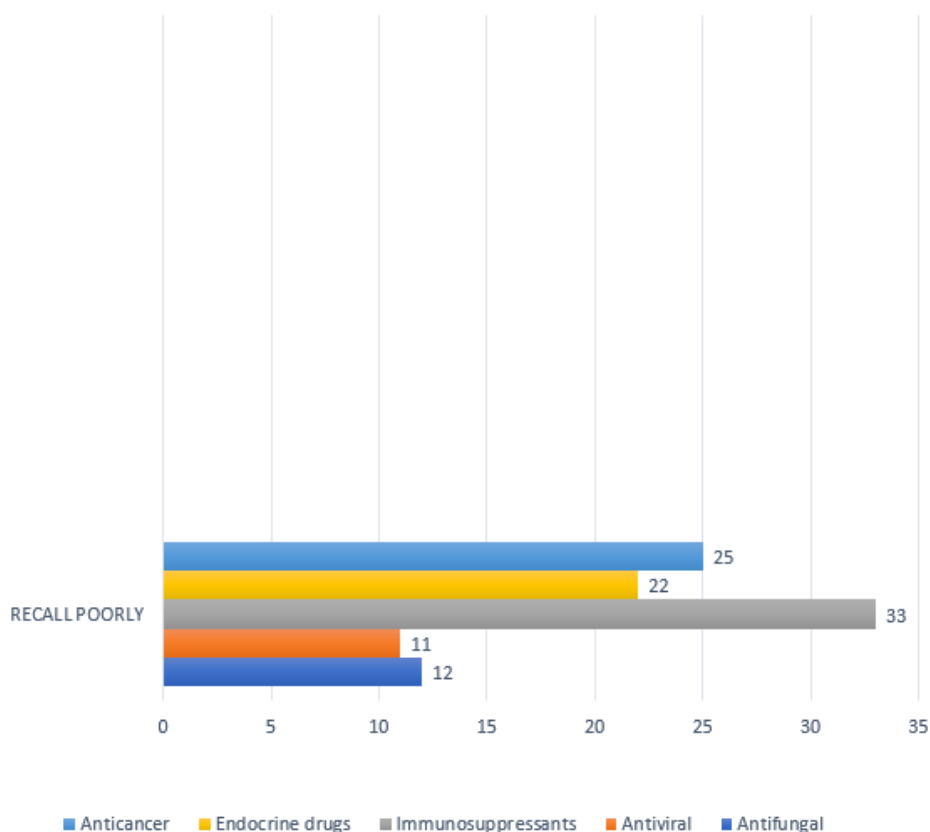
Table 3. Prescription Errors Among House Surgeons

Error Type	Percentage
Wrong drug	5.2%
Wrong dose	44.8%
Drug interactions	13.8%
Wrong frequency	6.9%
Incomplete instructions	29.3%

Recall Across Drug Categories

Recall was strongest for analgesics and antibiotics. Poor recall was observed for endocrine drugs, anticancer drugs, and immunosuppressants.

Figure 5. Drug Categories with Best Recall



DISCUSSION

The present study assessed the recall of pharmacology knowledge and prescription writing practices among house surgeons. The findings revealed deficiencies in recalling drug doses, contraindications, duration of treatment, and adverse effects. Only a minority of participants prescribed independently, while most relied on mobile applications, guidelines, or seniors for prescribing support.

Wrong dose prescription was the most commonly reported prescription error, followed by incomplete instructions. Participants demonstrated better recall for commonly prescribed drug groups such as antibiotics and analgesics, whereas recall was poor for endocrine drugs, anticancer agents, and immunosuppressants.

Most house surgeons lacked confidence in prescribing for pediatric, pregnant, elderly, and comorbid patients. This reflects inadequate reinforcement of practical pharmacology and limited exposure to prescribing in special populations during undergraduate training.

The findings also highlight the gap between theoretical pharmacology teaching and its clinical application during internship. The interval between second-year pharmacology teaching and internship may contribute to knowledge attrition and reduced confidence in prescription writing.

Participants suggested that refresher courses, case-based discussions, bedside teaching, workshops, and integrated teaching methods could improve knowledge retention and prescribing competency. Regular reinforcement and supervised prescription training may help reduce medication errors and improve patient safety.

Limitations of the Study

- The study was conducted in a single tertiary care teaching institution, which may limit the generalizability of the findings to other settings.
- The study assessed self-reported recall and prescribing practices rather than direct observation of actual prescription writing

CONCLUSION

The present study demonstrated that recall of pharmacology knowledge among house surgeons was suboptimal, particularly regarding drug dosage, contraindications, adverse effects, and prescription writing practices. A significant proportion of participants depended on external sources such as mobile applications, guidelines, and seniors for prescribing support, reflecting reduced confidence in independent prescribing.

Wrong dose prescription was identified as the most common prescription error in the present study. Similar findings were reported by Lesar TS, who observed that dosage-related errors constituted a major proportion of prescribing errors in teaching hospitals.[1] Garbutt JM et al. reported that inadequate training and lack of prescribing confidence among medical trainees contribute to unsafe medication prescribing practices.[2] Kaza RP et al. found that many interns lacked adequate prescription writing skills despite possessing theoretical pharmacology knowledge.[3]

The findings of the present study also showed poor confidence in prescribing for pediatric, pregnant, elderly, and comorbid patients. Oshikoya KA et al. similarly reported deficiencies in prescribing knowledge and practical prescribing skills among interns using WHO prescribing indicators.[4] Kaur S et al. also highlighted the prevalence of medication prescribing errors among interns in teaching hospitals.[5]

Overall, the study highlights the gap between theoretical pharmacology teaching and clinical prescription writing during internship. Regular reinforcement through case-based learning, bedside teaching, prescription workshops, refresher courses, and simulation-based training is essential to improve prescribing competency, reduce medication errors, and ensure safer patient care.

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