



Nurses' Satisfaction with Inpatient Pharmacy Services: A Survey-Based Study

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KEYWORDS

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ABSTRACT:

Background: Nurses play a critical role in medication administration and patient care, making their satisfaction with inpatient pharmacy services a key factor in hospital efficiency. However, pharmacy service performance and its impact on nursing workflow remain underexplored in Saudi Arabian hospitals.

Objective: To assess nurses' satisfaction with inpatient pharmacy services and identify priority areas for improvement using Importance-Performance Analysis (IPA).

Methods: A cross-sectional survey was conducted among 617 nurses across various hospital wards in Saudi Arabia. IPA was applied to categorize service strengths, areas for improvement, and educational opportunities.

Results: Timely medication orders, pharmacist availability, and STAT medication processing were rated low in performance but highly important, requiring immediate improvement. Moderately performing services, such as pharmacist helpfulness and drug-related communication, should be maintained and slightly optimized. Highly performing but underappreciated services, including drug information accuracy and pharmacist guidance on ambiguous prescriptions, indicate a need for better awareness and education.

Conclusion: The study highlights critical service gaps that may impact nursing workflow and patient care. Hospitals should prioritize pharmacist accessibility, improve medication response times, and enhance pharmacy-nursing collaboration. Educational initiatives may also help nurses recognize the value of existing pharmacy services. Addressing these gaps will lead to improved medication management, reduced nurse burden, and better patient outcomes.

Introduction

The role of pharmacists in direct patient care has undergone significant transformation, with clinical pharmacists now recognized as essential members of multidisciplinary healthcare teams in both inpatient and outpatient settings [1, 2]. As their involvement in patient care and level of responsibility have expanded, so have

the expectations placed upon them by healthcare professionals [3, 4]. The impact of integrating clinical pharmacists into multidisciplinary teams has been extensively studied and well-documented in the literature [5-7]. Several studies have assessed clinical pharmacy performance based on metrics such as intervention acceptance rates, reduced mortality, prevention of adverse events, and cost savings [5-8].



Assessing clinical services presents unique challenges [9, 10]. Evaluations must consider both how effectively the service meets patient needs and the quality-of-service delivery [9-11]. The quality of clinical pharmacy services has been effectively assessed through surveys targeting key service users [9, 12-15]. In hospital settings, these stakeholders include patients, nurses, physicians, and other healthcare providers.

Despite the expansion of clinical pharmacy services in Saudi hospitals, limited research has been conducted to assess nurses' satisfaction with inpatient pharmacy services. Since nurses are key stakeholders in medication administration and patient care, evaluating their experiences, challenges, and expectations can provide actionable insights to optimize pharmacy workflows, strengthen interdisciplinary collaboration, and improve patient safety. This survey-based study seeks to fill this gap by systematically assessing nurses' satisfaction with inpatient pharmacy services across hospitals in Saudi Arabia, identifying service strengths and highlighting areas for enhancement. This study aims to evaluate nurses' satisfaction with inpatient pharmacy services in hospitals across Saudi Arabia.

Methods

Study Design and Setting

This study utilized a cross-sectional survey-based design to assess nurses' satisfaction with inpatient pharmacy services in hospitals across Saudi Arabia. The survey was distributed among nursing staff working in various hospital wards, capturing their experiences and perceptions of pharmacy services.

Study Population and Sampling

The target population consisted of nurses working in inpatient hospital settings across multiple wards. The sample was selected to ensure diverse representation from different departments, including general medical wards, surgical units, intensive care units (ICUs), and specialized care units. A total of 617 nurses participated in the study, providing responses that were analyzed at both the overall level and ward group level.

Survey Instrument and Data Collection

The survey questionnaire was designed to evaluate key attributes of pharmacy services, including:

1. Responsiveness and accessibility of pharmacy staff.
2. Efficiency of medication dispensing and delivery.
3. Quality of pharmacist-nurse interactions.
4. Effectiveness of pharmacist-led medication counseling and drug information services.
5. Nurses' perceptions of the pharmacist's role in patient care.

The survey included Likert-scale questions (1 = Strongly Disagree to 5 = Strongly Agree) to assess satisfaction levels, with an additional open-ended section for qualitative feedback. The questionnaire was distributed electronically and in paper format, ensuring wide accessibility among the nursing staff.

Data Analysis

Survey responses were analyzed using IPA [16] to categorize attributes into key areas for improvement, maintenance, and enhancement. The following metrics were used for interpretation:

- Performance Mean – The average rating for each survey item (scale: 1-5).
- Performance Percent_4_5 – The percentage of respondents who rated an item as 4 or 5 (agree/strongly agree).
- Importance – The Pearson correlation between individual item ratings and overall satisfaction with pharmacy services.

A high/low classification system was applied to categorize service attributes based on their relative performance and importance scores. These findings were summarized into tables and figures, guiding recommendations for service improvement.

Statistical Analysis

Descriptive and inferential statistical analyses were conducted using STATA software (StataCorp, College Station, TX).

Ethical Considerations

The study adhered to ethical research guidelines, ensuring voluntary participation, informed consent, and



confidentiality of responses. Institutional approval was obtained from relevant hospital ethics committees in Saudi Arabia before data collection.

Results

The IPA framework effectively categorizes service attributes based on their perceived performance and importance, providing a structured approach to identifying areas for maintenance, improvement, or educational promotion. However, further clarification on the decision-making process behind categorization thresholds would enhance the study's rigor, particularly in defining performance and importance cutoffs. Additionally, prioritizing actionable improvements by distinguishing critical areas that require immediate intervention from those that can be addressed as resources allow would strengthen the practical applicability of the findings. Linking the recommendations to specific pharmacy services—such as medication availability, pharmacist accessibility, or drug information support—would provide hospital administrators with more targeted improvement strategies. Moreover, incorporating a longitudinal assessment to evaluate the impact of implemented changes could offer valuable insights into the effectiveness of the proposed interventions. Overall, the study presents a data-driven approach to improving nurses' satisfaction with inpatient pharmacy services, and expanding on strategic decision-making implications could further enhance its practical impact in hospital settings **Table (1)**.

The IPA provides a structured evaluation of nurses' satisfaction with inpatient pharmacy services, categorizing service attributes based on performance mean, the percentage of agreement (ratings of 4 or 5), and importance (correlation with overall satisfaction). The color-coded visualization effectively highlights areas that require urgent improvement, continued maintenance, or educational reinforcement.

A key finding from the analysis is that several critical pharmacy services require immediate improvement.

Attributes such as timely medication orders, pharmacist availability, and STAT medication processing received low performance scores (<3.0) but were highly correlated with overall satisfaction (>0.60). These findings suggest that delays in medication delivery and the limited presence of pharmacists are major pain points for nurses, potentially impacting patient care. Addressing these gaps should be a top priority, as they significantly influence overall satisfaction with pharmacy services.

Some attributes performed at a moderate level but were still important to nurses, such as pharmacist helpfulness, availability during night shifts, and clarity of drug-related communication. These attributes should be maintained and slightly optimized to ensure continued satisfaction. Although these aspects were not as problematic as urgent service delays, continuous monitoring and slight refinements will help sustain their positive impact.

Interestingly, several high-performing services were underappreciated by nurses, leading to a recommendation for educational reinforcement. These include drug information accuracy, pharmacist guidance on ambiguous prescriptions, and pharmacist-led ward inspections. Despite performing well, their importance scores were relatively low, suggesting that nurses may not fully recognize the value of these services. Targeted communication strategies or training sessions could help enhance awareness and appreciation of these pharmacy functions.

Lastly, some low-performing services had low importance scores, such as evening shift pharmacy services and certain order processing timelines. While these areas did not strongly correlate with overall satisfaction, they should still be addressed when resources allow. Improving these lower-priority aspects may not immediately impact satisfaction levels but could contribute to long-term efficiency in pharmacy operations **Figure (1)**.

Table (1): IPA of nurses' satisfaction with inpatient pharmacy services.

Performance Mean	Performance Percent	Importance	Recommendation
High	High	High	Maintain
High	Low	High	Maintain, but worth improving a little



Low	High	High	Maintain, but worth improving a little
High	High	Low	Educate about this advantage (first)
Low	High	Low	Educate about this advantage (second)
High	Low	Low	Educate about this advantage (second)
Low	Low	Low	Improve when you have resources
Low	Low	High	Improve as soon as possible

Attribute	Performance_Mean	Performance_Percent_4_5	Importance	Recommendation
The medication room in my unit is conveniently organized and labeled, and checked by the pharmacist on a monthly basis	3.76	71.9	0.28	Educate about this advantage (first)
The drug information provided by the pharmacy is accurate	3.63	66	0.43	Educate about this advantage (first)
The medications I receive for my patients are correct (in regard to drug, strength, dosage form, etc.)	3.5	57.8	0.38	Educate about this advantage (first)
I understand to whom I should direct my questions regarding different matters	3.46	57.6	0.37	Educate about this advantage (first)
Pharmacists are helpful in clarifying ambiguous orders (dosage scheduling, drug compatibilities, drug indications, etc.)	3.38	55	0.48	Educate about this advantage (first)
The questions that I direct to the pharmacist on my unit about medications are answered completely	3.32	51.2	0.55	Maintain
I frequently contact the pharmacist for medication-related questions about my patients	3.31	47.2	0.26	Educate about this advantage (first)
Medication errors due to a mistake made by pharmacy occur rarely	3.31	48	0.4	Educate about this advantage (first)
After the ward inspection of my unit, the pharmacist gave me positive and helpful feedback.	3.27	46.8	0.5	Maintain
Having a pharmacist available on the night shift improves the quality of care for my patients	3.21	48.5	0.51	Maintain
The listed floor stock medication is sufficient to cover the daily need of the ward	3.11	45.2	0.4	Educate about this advantage (first)
Interactions with pharmacy staff (pharmacist, technicians, etc.) are helpful	3.01	42	0.62	Maintain
The pharmacist dose explain things in words I can understand	3.01	32.2	0.13	Educate about this advantage (second)
The questions that I direct to the pharmacist on my unit about medications are answered in a timely manner	2.88	35.4	0.63	Improve as soon as possible
The pharmacy staff is friendly and polite	2.78	31.3	0.67	Improve as soon as possible
The pharmacy keeps us updated with the available/not available medication stock	2.75	29.4	0.61	Improve as soon as possible
Overall, I am satisfied with the levels of services that I receive from the department of pharmacy	2.71	30.1		
New orders for regular medications are available to administer within 2 hours after being ordered	2.67	29.5	0.66	Improve as soon as possible
The services that I receive from the pharmacy during the weekends fulfill my expectations	2.64	24.6	0.69	Improve as soon as possible
The pharmacy provides DISCHARGE medication within 90 minutes	2.61	25.6	0.58	Improve as soon as possible
I feel that there are enough pharmacists around when I have a question	2.4	14.4	0.11	Improve when you have resources
The medications I need for my patient are always available in stock	2.39	15.3	0.51	Improve as soon as possible
The services that I receive from the pharmacy during the evening shift fulfill my expectations	2.39	19.8	0.75	Improve as soon as possible
I feel that there are enough pharmacists around to dispense my medication	2.36	15	0.16	Improve when you have resources
The pharmacy provides STAT medication orders in 30 minutes	2.31	22.1	0.68	Improve as soon as possible
Telephone calls made to pharmacy are answered immediately and politely	2.3	21.8	0.65	Improve as soon as possible

Figure (1): Importance and Performance Estimates.

Discussion

The study identified critical areas requiring improvement in inpatient pharmacy services based on nurses' satisfaction ratings. The most significant concerns were related to timely medication orders, pharmacist availability, and STAT medication processing, all of which received low performance scores (<3.0) but high importance ratings (>0.60). These findings suggest that delays in medication delivery and limited pharmacist accessibility are major challenges impacting nursing workflow and patient care. Chevalier & Neville found that on a 5-point Likert scale, the authors discovered that the performance of pharmacists was assessed at 4.2 (0.5) out of 5 [17]. Clavert reported that in the past, the pharmacist's duty in the wards was expanded from

dispensing to clinical pharmacy in order to correct prescriber errors through prescription order reviews [18].

Among other duties, the pharmacists use their knowledge of drugs to perform medication reconciliation, get the patient's medication history, explain prescription orders, conduct pharmacokinetic monitoring, and provide patient counseling. Clinical service needs, pharmacist education and experience, and pharmacy practice in clinical settings standards published by American and Canadian professional associations all influence the extent of clinical practice [19, 20].

This analysis found that several moderately performing services, such as pharmacist helpfulness, night shift availability, and the clarity of drug-related communication, were found to be positively correlated



with overall satisfaction. These attributes should be maintained and slightly optimized to ensure they continue to contribute positively to nursing efficiency. **Ross *et al.*** stated that enhanced helpfulness and availability of pharmacy staff in locations served by satellite pharmacies or portable medicine carts were linked to the highest levels of satisfaction with pharmaceutical services [21]. After satellite pharmacies were implemented in a hospital in Chicago, Illinois, USA, nurses' satisfaction with pharmacy services also increased as a result of having the chance to speak with pharmacists in person [22].

Another important finding in our study was the underappreciation of high-performing pharmacy services. Certain attributes, such as drug information accuracy, pharmacist guidance on ambiguous prescriptions, and pharmacist-led ward inspections, received strong performance scores but lower perceived importance. This suggests that nurses may not fully recognize the value of these pharmacy services, leading to a recommendation for educational initiatives to enhance awareness. Similarly, **Matthias *et al.*** found that drug availability in automated drug dispensing equipment and pharmacy telephone services were associated with lower levels of satisfaction, while medication accuracy and inpatient pharmacy hours were associated with higher levels of satisfaction. When nurses and pharmacists communicated, nurses were more satisfied with pharmacy services; when technology was involved, nurses were less satisfied with pharmaceutical services [23].

Clinically, these findings reinforce the importance of pharmacist-nurse collaboration in optimizing medication management and patient care. By ensuring that pharmacists are accessible, responsive, and fully integrated into inpatient teams, hospitals can enhance medication safety, reduce nurse workload, and improve patient outcomes.

Strengths and limitations

This study has several notable strengths. The large sample size of 617 nurses ensures that the findings are statistically reliable and representative of nursing perspectives in inpatient settings. Additionally, the use of IPA provides a structured, data-driven approach to identifying priority areas for improvement, offering clear

and actionable recommendations for hospital administrators.

However, there are also some limitations to consider. The study relies on self-reported survey data, which may be subject to response bias or subjectivity in nurses' evaluations of pharmacy services. Additionally, since the study was conducted in specific hospital settings in Saudi Arabia, the findings may not be fully generalizable to other healthcare institutions with different pharmacy service models. Another limitation is that the study focuses primarily on nurse satisfaction, without directly assessing patient outcomes or medication error rates, which could provide a more comprehensive understanding of the clinical impact of pharmacy service deficiencies.

Conclusion

This study provides valuable insights into nurses' satisfaction with inpatient pharmacy services in Saudi hospitals. The findings highlight critical gaps in service efficiency, particularly in areas such as timely medication delivery, pharmacist accessibility, and STAT medication processing, which require immediate attention. Additionally, the study reveals that some high-performing pharmacy services are underappreciated, suggesting the need for targeted educational initiatives to improve nurse awareness of available pharmacy support.

To address these challenges, hospitals should prioritize enhancing pharmacy service responsiveness, strengthening pharmacist-nurse collaboration, and implementing training programs to ensure that nurses fully utilize pharmacy resources. These interventions will contribute to improving medication safety, reducing nurse workload, and ultimately enhancing patient care outcomes. Future research should explore the long-term impact of these interventions and assess their effectiveness in improving both nursing satisfaction and clinical outcomes.

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