

Adoption of ChatGPT as a Drug Information Resource: A Community-Based Study Among Pharmacists

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Abstract

Background: Access to accurate and timely drug information is essential for safe and effective pharmacy practice. However, conventional drug information resources are often limited by high costs, restricted accessibility, and time-intensive search processes. Artificial intelligence-based tools such as ChatGPT-4 offer rapid and conversational access to drug-related information, yet evidence regarding their real-world utilization in pharmacy practice remains limited.

Methods: This community-based cross-sectional study evaluated the extent, purpose, and perceived impact of ChatGPT-4 use among pharmacists. A total of 300 pharmacists from community, hospital, and academic settings were included. Data were collected using a validated questionnaire assessing frequency of use, types of queries, perceived accuracy, and associated challenges.

Results: Overall, 72% of pharmacists reported using ChatGPT-4 for drug information, with the highest utilization observed in community pharmacy settings. The most common queries included dosage adjustments (41%), drug-drug interactions (28%), and adverse drug reaction management (22%). A majority of participants perceived ChatGPT-4 as a time-saving tool (68%), while 40% rated its accuracy as moderate to high. Additionally, 55% reported increased confidence in patient counseling. However, 32% expressed concerns regarding reliability and the lack of cited sources.

Conclusion: ChatGPT-4 is widely used among pharmacists and is perceived as a useful and time-efficient tool for drug information. Despite its benefits, concerns regarding reliability and source transparency highlight the need for cautious use and further validation studies before routine integration into pharmacy practice.

Keywords: ChatGPT-4, Pharmacists, Drug information, Artificial Intelligence, Community based study, Patient counseling.

Introduction

Drug information (DI) services are the backbone of rational pharmacotherapy and patient safety. The pharmacist is the key primary custodian of drug-related knowledge and is tasked with the responsibility of ensuring appropriate dosing, detection of drug interactions, management of adverse drug reactions (ADRs), and effective patient counseling. Quality DI services have been proven to decrease medication errors and improve patient outcomes, making them an essential part of healthcare practice (1).

The conventional sources that the pharmacist uses for DI services include authoritative textbooks, drug formularies, peer-reviewed journals, and electronic databases such as Micromedex, Lexicomp, and UpToDate. Even

though these sources are referred to as gold standards because of their evidence-based information and rigorous peer-review processes, they are also linked with high costs of subscription, limited access, and cumbersome use. These issues are more apparent in the fast-paced environment of a clinical and community pharmacy setting, where quick decision-making is critical (2,3).

Recent developments in artificial intelligence (AI), especially in natural language processing (NLP), have revolutionized the way healthcare information is accessed. ChatGPT-4, a large language model, facilitates conversational engagement and quick integration of medical information. Unlike conventional databases that necessitate structured searching, ChatGPT-4 enables pharmacists to access concise drug information efficiently, which may

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help streamline workflow and improve accessibility in pharmacy practice (4).

Emerging evidence indicates that ChatGPT-4 possesses a significant body of medical knowledge and can potentially assist pharmacists in responding to drug-related inquiries, summarizing guidelines, and improving patient counseling (5). Nevertheless, issues pertaining to accuracy, lack of transparent citation, and medico-legal accountability remain contentious. Furthermore, few studies have investigated the real-world application and pharmacists' attitudes towards ChatGPT-4, especially in the Indian community-based setting. This study seeks to fill this knowledge gap by assessing the adoption, benefits, and limitations of ChatGPT-4 as a drug information resource among pharmacists (6,9).

Aim and Objectives

To evaluate the use of ChatGPT-4 as a resource for drug information among pharmacists.

Objectives

1. To determine the use of ChatGPT-4 for drug information.
2. To determine the type of drug information queries answered using ChatGPT-4.
3. To determine the views of pharmacists on accuracy, reliability, and efficiency.
4. To determine the effect of ChatGPT-4 on decision-making and patient counseling.
5. To determine the challenges and concerns of using ChatGPT-4 in pharmacy practice.

Methodology Study Design and Study period

The study was a Cross-sectional study carried out in a community setting for a period of six months among pharmacists practicing in Bangalore, Karnataka, India.

Sample Size and Study site

A total of 300 registered pharmacists from community pharmacies, hospitals, and academic institutions were included.

Study Instrument

A structured questionnaire validated with five sections: demographics, awareness and usage of ChatGPT-4, types of queries, perceived benefits, and concerns.

Study Criteria

Inclusion Criteria

1. Registered pharmacists practicing in Bangalore.

2. Pharmacists working in community pharmacies, hospital settings, or academic institutions.
3. Pharmacists with a minimum of 6 months of professional experience.
4. Pharmacists who are aware of or have exposure to ChatGPT-4.
5. Participants who provided informed consent to take part in the study.

Exclusion Criteria

1. Pharmacy students, interns, or trainees who are not yet registered pharmacists.
2. Pharmacists who are unwilling to participate or did not provide informed consent.
3. Pharmacists not practicing within the study location.
4. Incomplete or partially filled questionnaires.
5. Pharmacists with no awareness of ChatGPT-4 (for analysis related to usage and perception).

Statistical Analysis

The data was analyzed using SPSS version 26. Descriptive statistics and chi-square tests were employed to determine the association between variables (p -value < 0.05).

Ethical Approval

Approval was sought from the Institutional Ethics Committee of ABIPER IEC- 023/6/2025

Results

Table 1. Age Distribution of Pharmacists

Age Group (years)	Frequency (%)
23-30	124 (41.3)
31-40	92 (30.7)
41-50	56 (18.7)
>50	28 (9.3)

As per *table 1* and *figure 1* the majority of participants are young adults aged 23-30 years (41.3%), with representation steadily declining in older age groups.

Table 2. Gender Distribution

Gender	Frequency (%)
Male	174 (58)
Female	126 (42)

As per *table 2* The sample shows a male predominance (58%), with females comprising a smaller

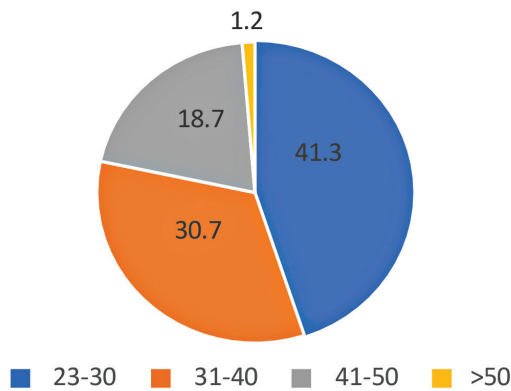


Figure 1. Age distribution of pharmacists (%).

Table 3. Educational Qualification

Qualification	Frequency (%)
D.Pharm	64 (21.3)
B.Pharm	98 (32.7)
Pharm.D	102 (34.0)
M.Pharm/PhD	36 (12.0)

As per *table 3* The distribution indicates that Pharm D holders form the largest group (34%), followed closely by B. Pharm graduates (32.7%), while D. Pharm (21.3%) and M. Pharm/PhD (12%) represent smaller proportions.

Table 4. Practice Setting

Setting	Frequency (%)
Community	135 (45)
Hospital	105 (35)
Academia	60 (20)

As per *table 4* and *figure 2* the data shows that community practice is the most common setting (45%), followed by hospital practice (35%), with academia accounting for the smallest share (20%).

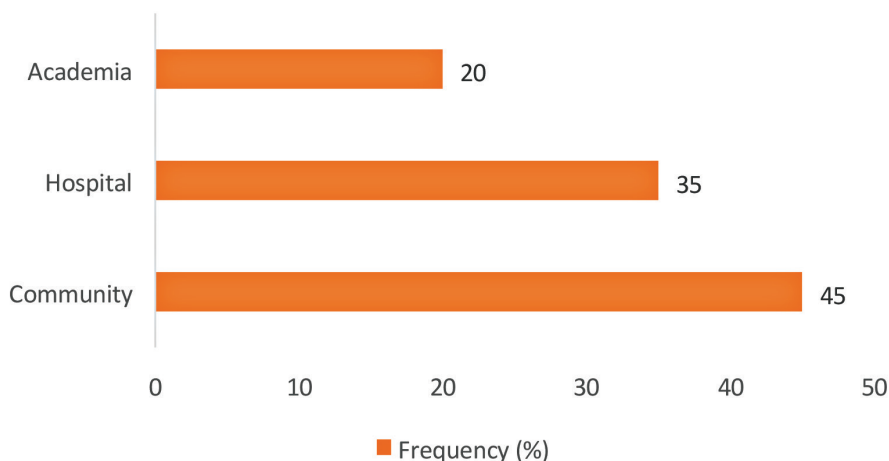


Figure 2. Practice Setting (%)

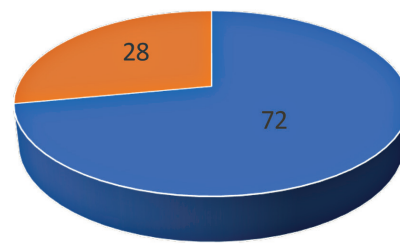


Figure 3. Utilization of ChatGPT (%).

Table 5. Awareness of ChatGPT-4

Response	Frequency (%)
Aware	264 (88)
Not aware	36 (12)

As per *table 5* the vast majority of respondents are aware of ChatGPT-4 (88%), with only a small minority not aware (12%).

Table 6. Utilization of ChatGPT-4

Usage	Frequency (%)
Users	216 (72)
Non-users	84 (28)

As per *table 6* and *figure 3* the findings reveal that a clear majority utilize ChatGPT-4 (72%), while just over a quarter are non-users (28%).

Table 7. Frequency of ChatGPT-4 Use

Frequency	Percentage
Daily	22
Weekly	38
Occasionally	40

As per *table 7* The usage pattern shows that most users engage with ChatGPT-4 occasionally (40%) or weekly (38%), while daily use is relatively limited (22%).

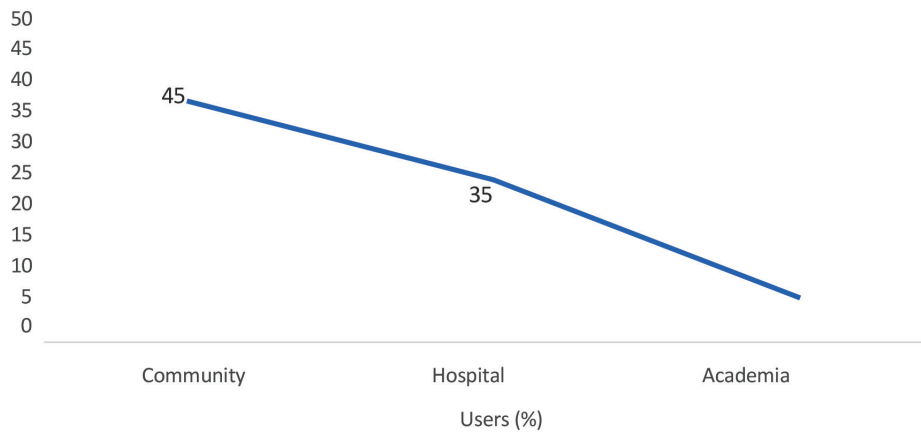


Figure 4. Utilization by Practice Setting (%)

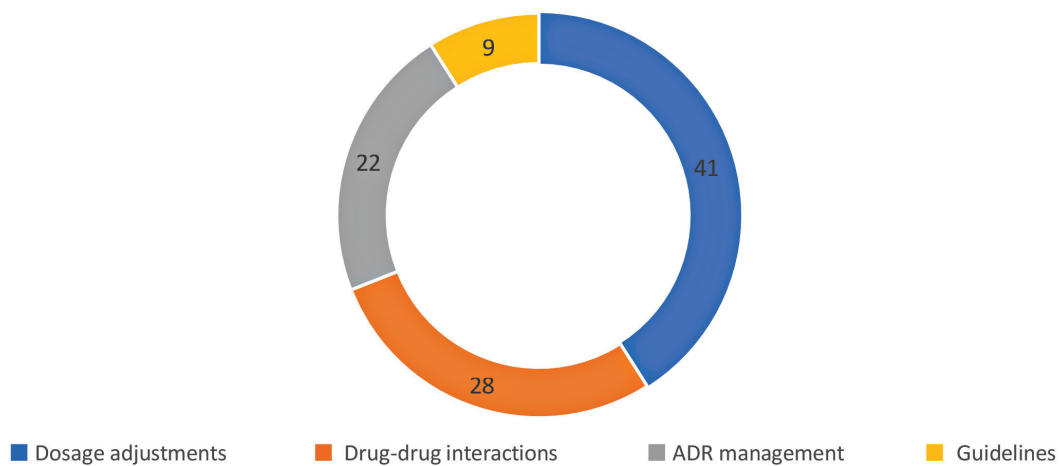


Figure 5. Fig :5 Types of Drug Information Queries

Table 8. Utilization by Practice Setting

Setting	Users (%)
Community	45
Hospital	35
Academia	20

As per table 8 and figure 4 the utilization pattern shows that community practitioners account for the largest share of ChatGPT-4 users (45%), followed by hospital settings (35%), while academia represents the smallest group (20%).

Table 9. Types of Drug Information Queries

Query Type	Percentage
Dosage adjustments	41
Drug-drug interactions	28
ADR management	22
Guidelines	9

As per table 9 and figure 5 the data highlights that dosage adjustment queries are the most common (41%), followed by drug-drug interactions (28%) and ADR management

(22%), while guideline-related queries are least frequent (9%).

Table 10. Perceived Accuracy of ChatGPT-4

Rating	Percentage
High	21
Moderate	40
Low	39

As per the table 10 and figure 6 the perception of ChatGPT-4's accuracy is mostly moderate (40%), with

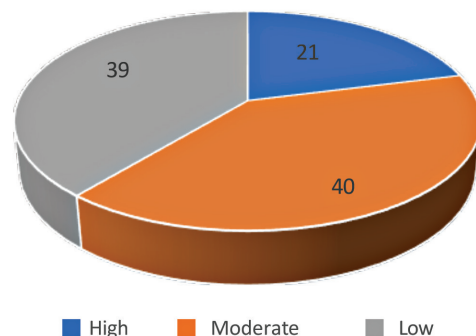


Figure 6. Age distribution of pharmacists (%).

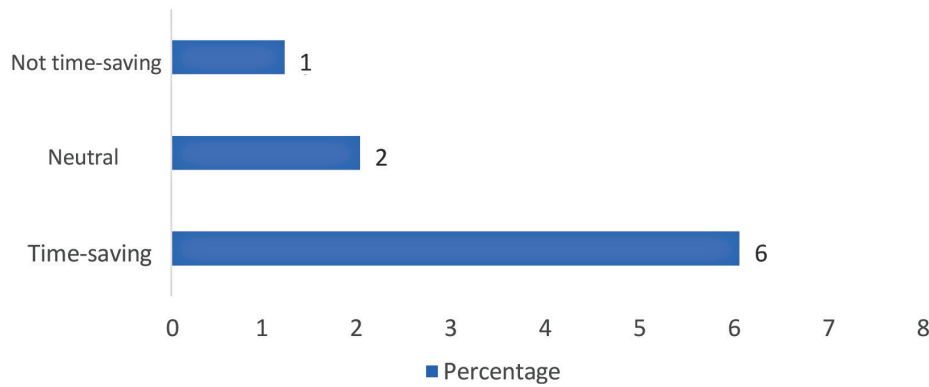


Figure 7. Time Efficiency Perception

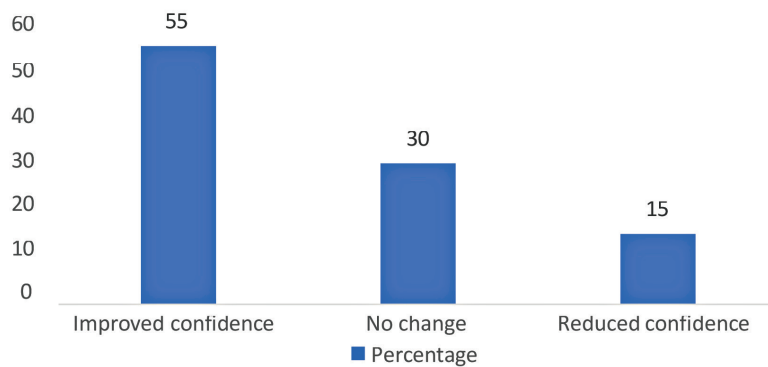


Figure 8. Impact on Patient Counselling

nearly equal proportions rating it low (39%) and a smaller group considering it high (21%)

Table 11. Time Efficiency Perception

Response	Percentage
Time-saving	68
Neutral	20
Not time-saving	12

As per *table 11* and *figure 7* the majority perceive ChatGPT-4 as time-saving (68%), while fewer respondents are neutral (20%) or find it not time-saving (12%).

Table 12. Impact on Patient Counseling

Impact	Percentage
Improved confidence	55
No change	30
Reduced confidence	15

As per the *table 12* and *figure 8* the results indicate that over half of respondents report improved confidence in patient counselling (55%), while 30% see no change and a smaller proportion experience is reduced confidence (15%).

Table 13. Impact on Clinical Decision-Making

Response	Percentage
Positive	49
Neutral	34
Negative	17

As per *table 13* and *figure 9* the results show that nearly half perceive a positive impact on clinical decision-making (49%), while 34% remain neutral and 17% report a negative impact.

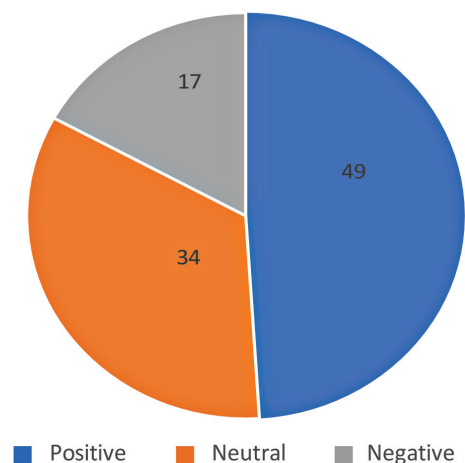


Figure 9. Impact on Clinical Decision-Making

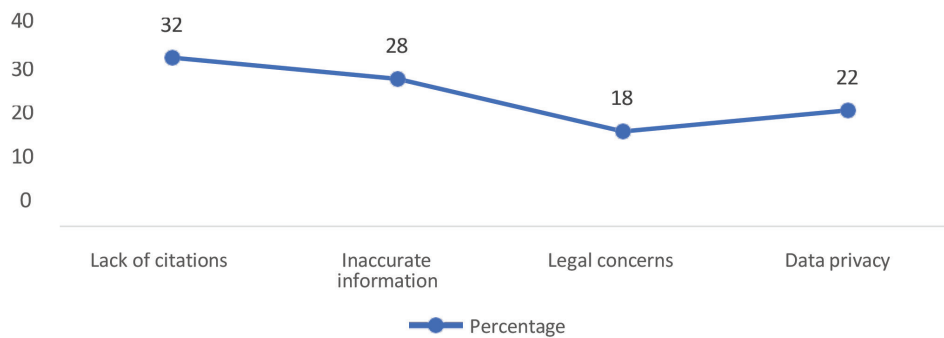


Figure 10. Concerns Regarding ChatGPT

Table 14. Concerns Regarding ChatGPT-4

Concern	Percentage
Lack of citations	32
Inaccurate information	28
Legal concerns	18
Data privacy	22

As per *table 14* and *figure 10* the main concern reported is lack of citations (32%), followed by inaccurate information (28%), while data privacy (22%) and legal issues (18%) are comparatively less emphasized

Table 15. Recommendation for Use

Recommendation	Percentage
Use with standard references	64
Avoid clinical use	14
Use independently	22

As per *table 15* and *figure 11* The recommendations indicate that most respondents favor using ChatGPT-4 alongside standard references (64%), while 22% support independent use and a smaller group prefers avoiding clinical use (14%).

Discussion

The current study draws attention to the increasing use of ChatGPT-4 among pharmacists, which represents the integration of artificial intelligence in healthcare. The high usage rates found in this study are in line with international reports that stress the increasing use of AI-driven tools in healthcare. The current study found a higher usage rate of ChatGPT-4 among community pharmacists compared to hospital and academic pharmacists. Community pharmacists are often faced with various patient inquiries and may work under time constraints with limited access to subscription-based databases. The ease of access and conversational interface of ChatGPT-4 may have contributed to the preference among community pharmacists. Trends have also been observed in the evaluation of mobile health applications and AI tools in pharmacy practice, where community pharmacists relied more on readily available digital resources (3,9).

Dosage calculations, drug interactions, and adverse drug reaction management were the most frequent types of queries resolved using ChatGPT-4. These results are consistent with the primary roles of pharmacists in medication safety and rational drug use. Previous studies on

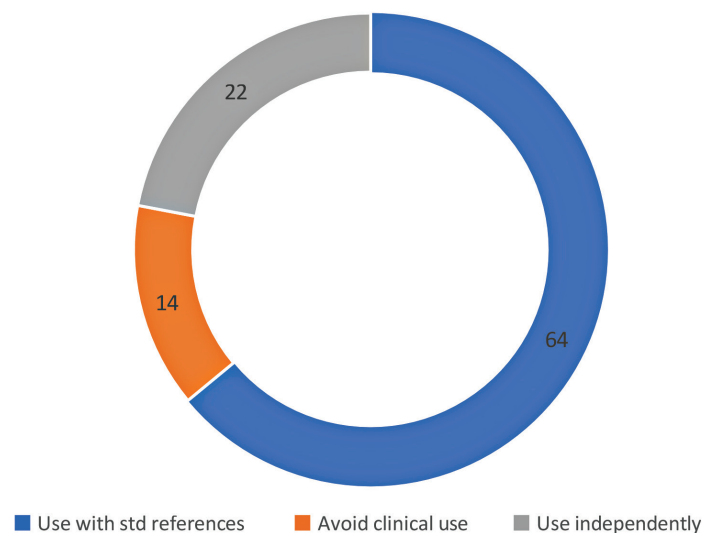


Figure 11. Recommendation for Use.

clinical decision support systems and AI tools have also identified dosage calculations and interaction checks as the main areas of use, emphasizing the importance of AI in these key areas (1,14).

Although the benefits of time-saving and enhanced counseling confidence were recognized, issues of reliability and lack of transparent citations were important. These concerns are in line with the existing literature regarding the variability of responses generated by AI and the potential for misinformation or “hallucinations” (6, 7). It is clear that regulatory and professional bodies, such as the World Health Organization, state that AI systems should support and not substitute professional judgment and that they must be developed and used within the context of ethical and regulatory frameworks. The prudent approach advocated by pharmacists in this study is in line with the general consensus that appropriate use of AI is necessary to ensure patient safety and professional accountability (8,13,15).

Study Limitations

This study has several limitations that should be considered while interpreting the findings:

- **Cross-sectional design**
 - Captures data at a single point in time
 - Does not establish causality between ChatGPT-4 use and outcomes like decision-making or counseling
- **Self-reported data**
 - Responses are subject to recall bias and social desirability bias
 - Participants may overestimate usage or perceived benefits
- **Limited geographic scope**
 - Conducted only in Bangalore, Karnataka
 - Findings may not be generalizable to other regions or rural settings
- **Sample representation**
 - Majority of participants were younger pharmacists (23–30 years)
 - May not reflect perspectives of highly experienced professionals
- **Lack of objective validation**
 - Study assessed **perceived accuracy**, not actual correctness of ChatGPT-4 responses
 - No comparison with standard drug information databases (e.g., Micromedex, Lexicomp)
- **Technology variability**
 - Different users may have used different versions or prompting styles of ChatGPT -4
 - This could influence consistency of responses

- **Rapidly evolving AI landscape**

- Findings may become outdated as AI tools are continuously improving

Despite these limitations, the study provides valuable preliminary insights into the growing role of AI tools in pharmacy practice and highlights the need for further large-scale and outcome-based research.

Conclusion

This community-based study clearly shows that ChatGPT-4 is gradually being used by pharmacists as an additional source of drug information, especially in the community pharmacy setting, where quick access to drug information is a priority. A large number of pharmacists have used ChatGPT-4 for important drug-related inquiries, such as dose changes, drug interactions, and managing adverse drug reactions. The results clearly show that pharmacists find ChatGPT-4 to be time-saving, user-friendly, and helpful in building confidence during patient counseling and initial clinical decision-making. Despite the benefits of using ChatGPT-4, important concerns have been expressed regarding the credibility, accuracy, and lack of clear source referencing of the information provided in the AI-generated responses. Pharmacists were very clear that ChatGPT-4 should only be used as a complement to existing and proven drug information resources and not as a standalone clinical decision support tool. With proper validation, training, and regulation, AI-powered tools such as ChatGPT-4 have the potential to complement traditional drug information services and enhance workflow efficiency in pharmacy practice. Future studies should aim to assess clinical outcomes related to the use of AI-assisted drug information, establish guidelines for AI use by pharmacists, and combine citation-supported and evidence-linked AI models to promote patient safety and ethical practice.

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