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Research Article

Knowledge, attitudes, and practices of hospital pharmacists regarding clinically relevant drug interactions: A multi-center regional survey in Indonesia

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Abstract

Adverse drug interactions (ADIs) remain a prevalent issue in hospital settings, highlighting the critical role of pharmacists in their prevention and management. This study aims to assess the knowledge, attitudes, and practices of hospital pharmacists in South Sulawesi Province, Indonesia, concerning clinically relevant drug interactions. Using a cross-sectional design, an online questionnaire was distributed to hospital pharmacists from November 2023 to January 2024. Among the 312 participants, we found that 38.8% had low, 31.4% had moderate, and 29.8% had high knowledge of drug interactions. Most of the pharmacists (94.5%) used software to evaluate drug interactions, and a significant proportion (91%) emphasized the necessity for regular training. Additionally, pharmacists routinely screened prescriptions for potential interactions (94.5%), assessed risks before dispensing (91.7%), documented drug interactions (85.3%), provided patient counseling (89.4%), and contacted prescribing physicians when necessary (91%). Despite the identified gaps in knowledge, the alignment of pharmacists' practices with standard procedures for managing drug interactions highlights their proactive approach to patient safety. This research underscores the need for targeted educational initiatives and continuous professional development to enhance pharmacists' understanding of drug interactions, ultimately improving patient outcomes in South Sulawesi, Indonesia.

Keywords

knowledge, attitudes, practices, hospital pharmacists, drug-drug interaction

Introduction

Adverse drug reactions (ADRs) are a significant public health concern, estimated to be the fifth leading cause of hospital deaths. Alarmingly, up to 50% of these ADRs are potentially preventable, with a substantial portion being recurrent (reADRs) (Wasylewicz et al. 2022). Among the preventable causes of ADRs, drug-drug interactions (DDIs) stand out as a critical and often overlooked factor. DDIs not only increase the risk of morbidity and mortal-

ity but also severely impair patients' quality of life (Abougalambou and Alenezi 2023; Oguz and Arslan 2023). These interactions occur when two or more incompatible drugs are taken together, leading to adverse effects (Nyamabo et al. 2022). This issue is particularly pronounced in elderly patients, who are more susceptible to ADRs due to polypharmacy and age-related physiological changes. Identifying and preventing potential DDIs is therefore crucial to safeguarding patient health (Liu et al. 2023).

The presence of comorbidities further complicates the clinical landscape, leading to worse outcomes, decreased treatment adherence, increased mortality, and higher healthcare costs. Comorbidities not only introduce clinical challenges but also heighten the risk of DDIs, complicating therapeutic management (Berk et al. 2023). Prior research has underscored the prevalence of DDIs, with approximately 33% of hospital patients and 67% of intensive care unit patients experiencing DDIs during treatment (Zheng et al. 2018). The situation is even more alarming in geriatric care units, where DDI prevalence ranges from 80.5% to 90.5% (Deoliveira et al. 2021).

Pharmacists play a pivotal role in preventing DDIs, leveraging their expertise in pharmacotherapy to identify potential interactions and recommend effective preventive measures (Shafiekhani et al. 2019). The involvement of pharmacists has been shown to significantly reduce the incidence of DDIs, particularly in intensive care settings (Rivkin and Yin 2011). Furthermore, a randomized controlled trial involving heart failure patients demonstrated that pharmacist interventions effectively decreased the number of clinically relevant DDIs (Roblek et al. 2016). These findings highlight the critical contribution of clinical and pharmaceutical interventions to optimal patient care, including the rationalization of prescriptions, enhancement of therapeutic choices, and reduction of medication errors and adverse effects. Documenting pharmacy interventions related to the identification, prevention, and resolution of DDIs is essential for ensuring optimal health outcomes (Baptista et al. 2023). These interventions may include adjusting medication doses (reducing or increasing the dose of one or both interacting drugs), altering the timing of drug administration (spacing out the administration of two drugs that interfere with each other), or substituting one or more of the interacting drugs with alternatives that do not have the same interaction potential to maintain therapeutic efficacy.

In developed countries, the integration of electronic prescriptions with patients' medical records has facilitated the prevention of DDIs through clinical decision support systems. These systems generate alerts when potentially interacting drug combinations are detected, providing actionable recommendations to mitigate interaction risks before medication is dispensed (Van De Sijpe et al. 2022). However, in developing countries such as Indonesia, where prescriptions are still written manually, the detection of DDIs relies heavily on the pharmacist's knowledge, attitude, and expertise. Unfortunately, pharmacists' ability to manually identify DDIs is limited; a previous study suggests that pharmacists accurately identify only 66% of DDIs when dealing with a regimen of two drugs, with accuracy declining as the number of drug pairs increases (Weideman et al. 1999). Additionally, a lack of up-to-date knowledge and inadequate resources can negatively impact pharmacists' practices in managing DDIs, further compromising patient safety.

Given the World Health Organization's emphasis on patient safety as a fundamental principle of healthcare (WHO 2017), it is imperative to evaluate the knowledge, attitudes, and practices of hospital pharmacists regarding clinically relevant DDIs. Such an evaluation is crucial for improving patient safety and treatment outcomes.

This study aims to investigate the knowledge, attitudes, and practices of hospital pharmacists regarding clinically relevant DDIs in hospitals in South Sulawesi, Indonesia. Previous studies have consistently reported frequent DDI incidents among hospitalized patients in South Sulawesi (Olii and Niswah 2014; Ekasafitri and Chaliks 2015; Rasyid et al. 2016; Santi and Herman 2016; Chalik et al. 2021; Sukirawati and Yusriyani 2021; Wahyudin and Kasim 2022). By providing a comprehensive overview of the current state of pharmacist knowledge, attitudes, and practices in this region, our study seeks to identify areas for improvement and develop strategies tailored to the local context. Ultimately, we aim to enhance the capabilities and competencies of pharmacists, thereby improving the quality of pharmaceutical services in hospitals and ensuring better patient outcomes.

Materials and methods

Study design and settings

This study used a cross-sectional approach, utilizing a validated questionnaire distributed online from November 2023 to January 2024. The questionnaire targeted hospital pharmacists in South Sulawesi Province, Indonesia, and involved those with at least six months of professional experience in hospital settings within the region. This duration was chosen to ensure that the pharmacists had experience managing cases related to DDIs.

Pharmacy education in Indonesia consists of a structured program designed to ensure that graduates are well prepared for the professional demands of the field. The educational journey begins with a four-year bachelor's degree in pharmacy, which provides a strong foundation in pharmaceutical sciences. Following this, students are required to complete an additional one-year professional pharmacist education program (also known as the Apothecary program), which focuses on practical skills, clinical training, and professional ethics. Before being granted a license to practice as a pharmacist, graduates must successfully pass the national competency examination (NCE), a rigorous assessment that evaluates their knowledge, skills, and readiness to enter the profession. Once licensed, pharmacists in Indonesia have the opportunity to work in various settings, including hospitals, community pharmacies, the pharmaceutical industry, regulatory agencies, pharmaceutical distributors, etc. The professional organization responsible for

ensuring that all pharmacists in Indonesia maintain a high standard of professional competence throughout their careers is the Indonesian Pharmacists Association (IAI). The IAI offers various continuing education programs, workshops, seminars, and certifications. These initiatives are designed to help pharmacists stay updated with the latest advancements in the field, meet evolving healthcare needs, and comply with regulatory requirements.

Questionnaire development and validation

The survey instrument was adapted from the questionnaire used by Abdo et al. (2020) to evaluate the knowledge, attitudes, and practices of healthcare providers regarding life-threatening drug interactions in public hospitals in Malaysia. We used the instrument from Abdo et al. (2020) due to its alignment with our research objectives. Additionally, the Abdo 2020 survey instrument has proven effective in measuring the intended variables within the context of our study and was easily understood by the respondents to this research.

The instrument translation process involved two stages: forward translation from English to Indonesian by two independent professional translators and backward translation by two native English-speaking translators fluent in Indonesian. This ensured conceptual equivalence between English and Indonesian items (Arifin et al. 2017).

The translated results were then adapted to the Indonesian context based on previous research on DDIs in Indonesia (Olii and Niswah 2014; Ekasafitri and Chaliks 2015; Rasyid et al. 2016; Santi and Herman 2016; Chalik et al. 2021; Sukirawati and Yusriyani 2021; Wahyudin and Kasim 2022). Expert consultation, including two pharmacology experts and one hospital pharmacist, refined the instrument.

Following the revision, the instrument underwent pre-testing with 10 randomly selected participants from the target population (Perneger et al. 2015). This ensured clarity and reduced measurement errors. The participants provided feedback on unclear items to enhance understanding.

The validity of the questionnaire items was tested using the Pearson bivariate correlation (Pearson product moment correlation) (Swank and Mullen 2017). An item is considered valid if there is a significant relationship ($p < 0.05$) between the item score and the total score, indicating that the item measures the same concept as the concept measured by the domain in the questionnaire. The reliability of the questionnaire was evaluated using the Cronbach's alpha value, with a minimum acceptable value of 0.6 (Taber 2018).

Questionnaire structure

The survey instrument was divided into four sections (Suppl. material 1). The first part collected data on participant sociodemographics, including gender, highest education level, age, length of employment, hospital type and accreditation, number of pharmacists in the hospital, average daily prescriptions, and participants' daily working hours. The second section evaluated the pharmacists' knowledge of clinically relevant DDIs. The responses were rated as correct, incorrect, or 'don't know,' with a score of 10 for correct answers and 0 for incorrect or don't know responses. The total score ranged from 0 to 100. In the third section, the pharmacists' attitudes towards seeking information about drug interactions were assessed using a Likert scale ranging from strongly disagree to strongly agree. The fourth section examined the pharmacists' practices related to clinically relevant DDIs using the same Likert scale.

Sample size and sampling method

The target population comprised 578 hospital pharmacists in 78 hospitals across South Sulawesi in 2023, based on the records of the South Sulawesi Chapter of the Indonesian Pharmacists Association (IAI). The minimum sample size required, calculated using the Slovin formula, was 237 participants. We used purposive sampling as the sampling method.

Data analysis

Descriptive statistics were used to describe the demographic data and the frequency of responses regarding the knowledge, attitudes, and practices of hospital pharmacists towards DDIs. The level of pharmacists' knowledge about DDIs was categorized into three levels: low (score ≤ 59%), moderate (score 60–79%), and high (score 80–100%) (Abdo et al. 2020). To assess the relationship between demographics and levels of knowledge, a chi-square test was used. The significance level was set at a p-value of less than 0.05. Statistical analyses were performed using the SPSS software, version 23 (IBM Corp., Armonk, NY, USA).

AI use

The authors utilized ChatGPT and Gemini to enhance the English language quality of this manuscript. After employing these tools, the authors carefully reviewed and edited the content as necessary, taking full responsibility for the final version of the publication.

Results

Validity and reliability of the questionnaire

All the questionnaire items in the knowledge, attitude, and practice domains demonstrated significance levels below 0.05, indicating a significant correlation with the total score in each domain. The reliability evaluation for each domain yielded Cronbach's alpha values exceeding 0.60, indicating reliability. Therefore, the questionnaire used in this study was deemed valid and reliable.

Characteristics of the respondents

The data were collected from 312 hospital pharmacists, whose characteristics are summarized in Table 1. The majority of the respondents were female (80.8%), with 23.4% aged over 40 years. Only 11.9% held a master's degree, and 32.1% had less than 2 years of work experience in hospitals. The majority (82.7%) worked in fully accredited hospitals, with over 40% being employed in facilities to handle fewer than 100 prescriptions for both inpatient and outpatient services.

Table 1. Characteristics of the respondents.

Characteristics	Number (n = 312)	Percentage (%)
Sex		
Male	60	19.2
Female	252	80.8
Age (years)		
<=30	119	38.1
31–40	120	38.5
>40	73	23.4
Education		
Pharmacist	274	87.8
Master'sdegree	37	11.9
Length of service in the hospital (years)		
<=2	100	32.1
3–5	70	22.4
6–10	58	18.6
>10	84	26.9
Hospital accreditation		
Initial	16	5.1
Basic	11	3.5
Intermediate	9	2.9
Advanced	18	5.8
Comprehensive	258	82.7
Average number of prescriptions per day		
Outpatient		
<=100	130	41.7
101–200	106	34.0
>=200	76	24.4
Inpatient		
<=100	144	46.2
101–200	70	22.4
>=200	98	31.4
Number of pharmacists		
<10 pharmacists	141	45.2
11–20 pharmacists	114	36.5
>20 pharmacists	57	18.3

Pharmacists' knowledge of drug-drug interactions

Table 2 displays the pharmacists' knowledge evaluation concerning clinically relevant DDIs. The questions varied in difficulty, with questions two and seven being comparatively easier for pharmacists. Question two, concerning the ciprofloxacin-insulin interaction, resulted in 84.3% correct responses, while question seven, on the clopidogrel-omeprazole interaction, had 79.2% correct responses. Conversely, questions one and three posed greater difficulty, with 65.4% and 62.5% of incorrect or uncertain responses, respectively. Overall, 121 (38.8%) pharmacists demonstrated a low level of knowledge (score 0–59%), 98 (31.4%) showed moderate knowledge (score 60–79%), and only 93 (29.8%) individuals exhibited a high level of knowledge (score 80–100%) (Fig. 1).

Table 2. Pharmacists' knowledge of drug-drug interactions.

Drug-drug interactions	Correct (n, %)	Incorrect and don't know (n, %)
Aspirin + Warfarin	108 (34.6)	204 (65.4)
Ciprofloxacin + Insulin	263 (84.3)	49 (15.7)
Clopidogrel + Enoxaparin	117 (37.5)	195 (62.5)
Ramipril + Spironolactone	156 (50.0)	156 (50.0)
Ibuprofen + Aspirin	185 (59.3)	127 (40.7)
Methylprednisolone + Ciprofloxacin	235 (75.3)	77 (24.7)
Clopidogrel + Omeprazole	247 (79.2)	65 (20.8)
Candesartan + Spironolactone	235 (75.3)	77 (24.7)
Allopurinol + Captopril	224 (71.8)	88 (28.2)
Amlodipine+ Simvastatin	189 (60.6)	123 (39.4)

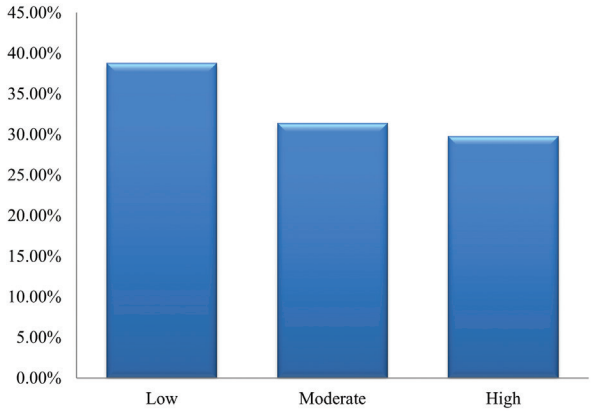

Figure 1. Level of pharmacists' knowledge of drug-drug interactions.

Factors influencing the hospital pharmacists' knowledge regarding drug-drug interactions.

In Table 3, it is evident that only the sex variable significantly affected the hospital pharmacists' knowledge regarding clinically relevant DDIs. Female pharmacists (32.9%) exhibited a higher percentage of high levels of knowledge compared to male pharmacists (16.7%).

Pharmacists' attitudes toward seeking information about drug-drug interactions

In Table 4, it is observed that 88.5% of the participants expressed agreement with using an application to search for drug interactions, and 91.0% agreed with receiving regular training on monitoring drug interactions. Furthermore, 27.9% of the respondents indicated agreement with manually searching for drug interactions using books, while 42% agreed with consulting a colleague pharmacist when encountering cases of drug interactions.

Pharmacists' practices regarding drug-drug interactions

In Table 5, a high percentage of pharmacists agreed to various practices related to DDIs, including screening for interactions with every prescription (94.5%), contacting prescribing doctors upon identifying interactions (92.9%), assessing clinical significance before dispensing medication (91.7%), routinely counseling patients about potential interactions (89.4%), and documenting encountered interactions (85.3%).

Table 3. Factors influencing the level of hospital pharmacists' knowledge regarding drug-drug interactions.

Characteristics	Level of knowledge			P-value
	Low	Moderate	High	
Sex				
Male	26 (43.3%)	24 (40.0%)	10 (16.7%)	0.04
Female	95 (37.7%)	74 (29.4%)	83 (32.9%)	
Age (Years)				
<=30	45 (37.8%)	35 (29.4%)	39 (32.8%)	0.65
31–40	46 (38.3%)	43 (35.8%)	31 (25.8%)	
>40	30 (41.1%)	20 (27.4%)	23 (31.5%)	
Education				
Pharmacist	107 (39.1%)	84 (30.7%)	83 (30.3%)	0.67
Magister	13 (35.1%)	14 (38.9%)	10 (27.0%)	
Length of service in the hospital (years)				
<=2	42 (42.0%)	31 (31.0%)	27 (27.0%)	0.96
3–5	27 (38.6%)	21 (30.0%)	22 (31.4%)	
6–10	23 (39.7%)	17 (29.3%)	18 (31.0%)	
>10	29 (34.5%)	29 (34.5%)	26 (31.0%)	
Hospital accreditation				
Initial and basic	11 (77.3%)	6 (48.9%)	10 (73.9%)	0.80
Intermediate and advanced	12 (88.8%)	7 (55.5%)	8 (55.5%)	
Comprehensive	98 (38.0%)	85 (32.9%)	75 (29.1%)	
Average number of prescriptions per day				
Outpatient:				
<=100	54 (41.5%)	35 (26.9%)	41 (31.5%)	0.55
101–200	36 (34.0%)	39 (36.8%)	31 (29.2%)	
>=200	31 (40.8%)	24 (31.6%)	21 (27.6%)	
Inpatient :				
<=100	59 (41.0%)	40 (27.8%)	45 (31.3%)	0.64
101–200	23 (32.9%)	26 (37.1%)	21 (30.0%)	
>=200	39 (39.8%)	32 (32.7%)	27 (27.6%)	
Number of pharmacist				
<10 pharmacists	51 (36.2%)	45 (31.9%)	45 (31.9%)	0.11
11–20 pharmacists	41 (36.0%)	34 (29.8%)	39 (34.2%)	
>20 pharmacists	29 (50.9%)	19 (33.3%)	9 (15.8%)	

Table 4. Pharmacists' attitudes toward seeking information about drug-drug interactions.

Statements	Disagree/ Strongly Disagree	Neutral	Agree/Strongly Agree
Prefer using a drug interaction application	14 (9.8%)	21 (6.7%)	276 (88.5%)
Prefer using reference books for drug interactions	53 (17%)	172 (55.1%)	87 (27.9%)
Prefer asking colleague pharmacists about potential drug interactions	48 (15.4%)	133 (42.6%)	131 (42%)
Prefer receiving regular training on drug interaction monitoring	6 (2.0%)	22 (7.1 %)	284 (91.0%)

Table 5. Pharmacists' practices regarding drug-drug interactions.

Statements	Disagree/ Strongly Disagree	Neutral	Agree/Strongly Agree
Screen for drug interactions with every prescription	3 (1.0%)	14 (4.5%)	295 (94.5%)
Assess the clinical significance of drug interactions before dispensing	4 (1.3%)	22 (7.1%)	286 (91.7%)
Document observed drug interactions routinely	11 (3.6%)	35 (11.2%)	266 (85.3%)
Counsel patients regularly about potential drug interactions	5 (1.6%)	28 (9.0%)	279 (89.4%)
Contact the prescribing doctor if a drug interaction is detected	6 (2.0%)	16 (5.1%)	290 (92.9%)

Discussion

This study is the first to evaluate the knowledge, attitudes, and practices of hospital pharmacists in South Sulawesi, Indonesia, regarding commonly encountered DDIs. Pharmacists' understanding of drug interactions directly impacts the quality of patient care, as it helps enhance patient safety within the hospital setting. DDIs are frequently associated with increased morbidity and mortality in patients (Ahmad et al. 2012; Rajakannan et al. 2012). We found that only 29.8% of pharmacists exhibited a high level of knowledge. Our findings are consistent with those of Alorfi et al. (2023), who reported that most community pharmacists cannot provide accurate answers regarding DDIs, despite the crucial role that pharmacists play in identifying and managing such interactions.

One factor affecting hospital pharmacists' knowledge of DDIs is sex. We found that female pharmacists exhibited a higher level of knowledge regarding drug interactions compared to male pharmacists. This aligns with previous research indicating that female pharmacists have better knowledge of drug and food interactions and a higher level of awareness of drug safety aspects (Hajj et al. 2017; Abualhasan et al. 2023). However, it should be noted that our sample had a high proportion of female pharmacists, at 80.8%, which reflects the demographic characteristics of pharmacists in Indonesia. According to a national analysis of the pharmaceutical workforce in Indonesia in 2019, 77.19% of pharmacists are female, with most of them working in hospitals and primary healthcare centers. The proportion of female pharmacists in Indonesia is projected to reach 86% by 2030 (Meilianti et al. 2022). Other recent studies involving Indonesian pharmacists have also found that the percentage of female pharmacists is around 80% (Kausar et al. 2023; Kusuma et al. 2023; Rendrayani et al. 2023).

Pharmacists' knowledge of DDIs in hospitals has significant implications for patient safety and treatment efficacy. Our study found that most of the pharmacists possessed a good understanding of common DDIs, such as those between ciprofloxacin and insulin as well as clopidogrel and omeprazole. However, challenges persisted in comprehending other drug interactions, such as those between aspirin and warfarin and between clopidogrel and enoxaparin. Efforts are needed to improve pharmacists' understanding of DDIs through training and education. Additionally, the implementation of decision support systems and easily accessible information resources can increase awareness and vigilance towards potentially harmful DDIs, thereby enhancing the quality of pharmaceutical services and overall patient safety (Hammar et al. 2021).

The attitude of the pharmacists towards seeking information about DDIs showed that the majority tend to use modern information sources, such as drug interaction applications. Most of the pharmacists were also willing to undergo regular training on monitoring drug interactions, indicating an awareness of the importance of updating their knowledge to keep up with the latest developments in pharmacy. However, a small number of the pharmacists preferred to manually search for information using books and consult with fellow pharmacists. This highlights the importance of interprofessional collaboration in the pharmacy work environment, which can facilitate the effective exchange of information and knowledge (Green and Johnson 2015). Overall, pharmacists' attitudes towards seeking information about drug interactions reflect an adaptation to technological advancements and the need for regular knowledge updates (Makkaoui et al. 2021). It is crucial to utilize various information sources optimally according to the needs and context of pharmacy practice.

The pharmacists' practices regarding DDIs demonstrate a high level of awareness and adherence to crucial procedures in managing drug interactions. Nearly all of the pharmacists were willing to screen for drug interactions on every prescription, contact the prescribing doctor if an interaction was found, evaluate the interaction risk level before dispensing medication, provide patient education, and routinely document their actions. These practices highlight the critical role of pharmacists in identifying, managing, and preventing potentially harmful drug interactions, thus underscoring their essential role in healthcare to achieve the best outcomes for patients (Abdo et al. 2020).

To improve the management of DDIs and elevate the role of pharmacists at the national level, we propose several key initiatives. First, we recommend the development and implementation of nationwide continuing education programs specifically focused on DDIs for hospital pharmacists. Second, we advocate for the integration of clinical decision support systems (CDSS) equipped with DDI alerts into hospital pharmacy practices. Third, we suggest strengthening interprofessional collaboration through regular interdisciplinary meetings and communication channels to facilitate effective discussion and management of DDIs. Furthermore, it is crucial to provide pharmacists with easy access to up-to-date and comprehensive drug interaction databases and literature. We also propose the creation of standardized protocols and best practices for managing DDIs. Finally, the development and regular updating of brochures, guides, and online resources containing practical information on DDI management will further empower pharmacists in their critical roles.

A key limitation of this study is its limited generalizability, as it was conducted solely in South Sulawesi, Indonesia. Therefore, the results may not be directly applicable to pharmacists in other regions or outside the specific context of the hospitals studied. However, the findings offer valuable lessons regarding the capabilities and roles of pharmacists in managing DDIs within a suburban area of a developing country. This study fills a critical gap in the literature concerning the knowledge, attitudes, and practices of hospital pharmacists in this region, where research on this topic is scarce. Sharing these findings on a global scale can provide important insights into the challenges pharmacists face in similar settings, particularly in developing countries. Moreover, this

study underscores the substantial need for implementing clinical decision support systems to assist in managing DDIs, adding to the growing body of evidence supporting their importance.

Additionally, although the study identified inadequacies in pharmacists' knowledge, it did not deeply explore the underlying causes or factors contributing to these inadequacies. Further analysis is therefore needed to better understand the challenges faced in improving pharmacists' knowledge and practices related to drug interactions.

Conclusion

The hospital pharmacists in South Sulawesi, Indonesia, had suboptimal knowledge of relevant drug-drug interactions. While they demonstrate strong adherence to standard procedures such as screening, risk evaluation, documentation, education, and collaboration, most of the pharmacists relied on software applications for interaction checks and sought regular training. To enhance patient safety and treatment outcomes, it is crucial to improve pharmacists' understanding of complex interactions and to advance the use of technology and ongoing educational programs.

Ethical statement

This research was conducted by following the ethical principles outlined in the "Declaration of Helsinki." The research ethics approval number for this study is 1205/UN4.17.8/KP.06.07/2023, issued by the pharmacy and health research ethics committee of the Faculty of Pharmacy of Hasanuddin University, Indonesia. Each research participant was requested to provide informed consent electronically on the first page of the questionnaire. The participants indicated their agreement to complete the questionnaire by selecting the "agree" option, and only those who agreed were given access to complete the questionnaire comprehensively.

Conflict of interest

We declare no conflicts of interest.

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Supplementary material 1

Questionnaire

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