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A Systematic Review of Healthcare Professionals' Knowledge, Attitudes, and Practices Regarding Adverse Drug Reaction Reporting in Southeast Asia

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Abstract

Background: *Adverse drug reaction (ADR) reporting is a crucial component of ensuring patient safety within a pharmacovigilance system. ADR reporting plays an essential role in detecting, assessing, and preventing adverse effects related to medications in clinical practice. However, ADR reporting practices in Southeast Asia remain low.* ***Objective:*** *The purpose of this systematic review was to evaluate and synthesize evidence regarding healthcare professionals' knowledge, attitudes, and practices (KAP) regarding ADR reporting in Southeast Asia. This review aims to provide a comprehensive overview of current evidence and identify key gaps that may affect reporting practices.* ***Methods:*** *We conducted a literature search using PubMed, Scopus, EBSCOhost, and Web of Science for studies published between 2015 and 2025. Studies meeting the inclusion criteria were assessed for quality and analyzed using the PRISMA approach. This systematic review examined 16 studies from six Southeast Asian countries.* ***Results:*** *Most healthcare professionals have positive attitudes toward reporting ADRs, but knowledge varies, and actual reporting practices are low. Training, education, and incentive support were the most frequently cited factors facilitating reporting. Time constraints, unavailability of reporting forms, lack of awareness, uncertainty about the causality of drugs with adverse reactions, and lack of incentives were the main barriers to reporting.* ***Conclusion:*** *Healthcare professionals in Southeast Asia generally show positive attitudes toward ADR reporting, but knowledge remains varied, and reporting practices are low. Continuous education, system integration, and stronger national pharmacovigilance policies are needed to improve reporting.*
Keywords**:** *adverse drug reaction reporting; ADR; ADR reporting; patient safety; pharmacovigilance*

1. INTRODUCTION

Adverse drug reactions (ADRs) are health problems that can lead to excess unscheduled hospitalizations, morbidity, significantly increased burden of care, and even mortality [1]. Badan Pengawasan Obat dan Makanan (BPOM) defines an ADR as a response to a medicine which is noxious and unintended, and which occurs at doses commonly used in humans for the prevention, diagnosis, or therapy of disease or for the modification of physiological function [2]. Globally, ADRs account for approximately 5–10% of hospital admissions [3] and are the fifth most common cause of hospital death in Europe [4]. Pharmacovigilance (PV) is an activity that involves the detection, assessment, understanding, and prevention of adverse effects and other drug-related problems. PV plays an essential role in ensuring patient safety [5]. The most popular way for patients, pharmaceutical companies, and healthcare professionals to report adverse drug reactions (ADRs) is through spontaneous reporting systems (SRS). SRS is an easy, convenient, and cost-effective ADR reporting system, However, underreporting and low-quality reporting remain major concerns [6].

HCP Knowledge and attitudes influence spontaneous reporting of ADRs [7]. The knowledge, attitudes, and practices of healthcare professionals significantly affect the effectiveness of ADR reporting. It is essential to understand and improve these factors among healthcare professionals to facilitate effective ADR reporting and enhance patient safety [8–10]. Spontaneous reporting systems are essential, but underreporting remains a global problem, with an estimated 6–10% of all ADRs ever reported [11,12]. Barriers such as time constraints, workload pressure, lack of certainty about causality, reactions that are too good to report, ADRs that are not considered serious enough to report, inadequate training, and unfamiliarity with the reporting system, limit effective ADR reporting [13–16].

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Compared to non-ASEAN nations, the Association of Southeast Asian Nations (ASEAN) nations often have less advanced PV systems and comparatively fewer ADR reports [17]. Recent studies have highlighted persistent gaps in ADR reporting among healthcare professionals. For instance, Khan *et al*. (2023) reported that although 72% of healthcare professionals demonstrated adequate knowledge, only 18% actively reported ADRs. Similarly, Alwidyan *et al*. (2025) found that despite positive attitudes, reporting practices remained suboptimal due to lack of training and awareness. Another study by Mahfodz *et al*. (2024) revealed a significant association between knowledge and ADR reporting practices among nurses in Malaysia [16,18,19]. Despite these findings, no comprehensive systematic review has synthesized evidence across Southeast Asia to provide a regional perspective on healthcare professionals' KAP regarding ADR reporting.

Therefore, this study aims to systematically review and synthesize existing evidence on the knowledge, attitudes, and practices of healthcare professionals regarding ADR reporting in Southeast Asia. Understanding these factors is essential to identify gaps and inform strategies to strengthen pharmacovigilance systems and improve patient safety across the region.

2. METHODS

Type and Research Design

This study employed a systematic review design conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines [20]. The PRISMA framework was utilized to ensure a transparent, structured, and reproducible process in identifying, screening, assessing eligibility, and including relevant studies. This design was selected to comprehensively collect, critically evaluate, and synthesize existing evidence regarding the knowledge, attitudes, and practices (KAP) of healthcare professionals toward adverse drug reaction (ADR) reporting. By applying this approach, the study aims to provide a reliable and systematic overview of current evidence in the Southeast Asian context.

Eligibility Criteria

This study encompasses articles that presented outcome data on the KAP of Southeast Asian healthcare professionals concerning ADR reporting. We included full-text articles published between 2015 and 2025 in both English and Bahasa Indonesia in this review. Since we restricted the category of healthcare professionals to those with medical qualifications, such as doctors, dentists, pharmacists, nurses, and other allied health professionals, who have formal responsibility for reporting suspected ADRs, healthcare students were not included as participants in this review [21]. Because of possible gaps in information about the studies' findings, we did not include studies published in several reviews, notes, conference proceedings, and letters.

Search Strategy

We retrieved articles from EBSCOhost (all databases), PubMed, Scopus, and the Web of Science database, as well as through manual searching. We searched these databases using both controlled and free-text language. In terms of free-text search, the keywords included the following terms or combinations: ("health professional" OR "Healthcare Professional" OR pharmacist OR Doctor OR Nurse) AND (knowledge OR attitude OR practice) AND (pharmacovigilance OR "adverse drug reaction reporting"). For the controlled language search, we included the following exploded Medical Subject Headings (MeSH) terms: "health personnel"[MeSH Terms], "health knowledge, attitudes, practice"[MeSH Terms], and "adverse drug reaction reporting systems"[MeSH Terms].

Screening and Data Extraction

The study selection process was conducted by two independent reviewers. Titles and abstracts were screened to identify potentially eligible studies, followed by full-text assessment based on the predefined inclusion and exclusion criteria. Any disagreements between reviewers were resolved through discussion and consensus. No automation tools were used in the selection process. Zotero was used for reference management and duplicate removal. To determine whether the studies met the inclusion criteria, we reviewed the study titles and abstracts. When the titles and abstracts of the articles did not adequately convey pertinent information, we examined the entire texts. We also examined the full texts of all eligible studies, using all eligibility criteria. At this point, we

eliminated study articles that did not meet the eligibility requirements. As suggested by earlier studies, the hurdles in adverse drug reaction (ADR) reporting can be categorized into several aspects [22]. One of the most common barriers is complacency, which reflects the belief that medications available on the market are inherently safe and that minor ADRs do not warrant reporting. Another critical factor is fear, where healthcare professionals may worry about potential legal consequences, damage to their professional reputation, or a loss of patient trust. In addition, ambition may also play a role, as some professionals prefer to compile ADRs into personal case series for publication rather than reporting them through official channels. Ignorance or insufficient understanding of ADR reporting standards, along with diffident feelings of insecurity or fear of appearing incompetent that discourage individuals from reporting suspected ADRs, further contribute to underreporting.

Other barriers include indifference, in which healthcare providers demonstrate apathy towards their responsibility to report ADRs, and lethargy, which results from heavy workloads, lack of motivation, time constraints, or inadequate knowledge. The absence of incentives for ADR reporting also discourages participation, while uncertainty about the causal link between an ADR and its outcomes further hinders reporting. Furthermore, the lack of feedback from pharmacovigilance authorities regarding the outcomes of submitted reports may reduce enthusiasm for future reporting. Finally, the unavailability of essential resources including reporting forms, submission channels, appropriate technologies, sufficient personnel, and an established pharmacovigilance reporting center poses practical barriers that significantly impede ADR reporting.

Quality Assessment of Eligible Studies

We evaluated the methodologies employed across suitable studies to assess the quality of such research. The merit of questionnaire investigations was evaluated using the appraisal list for questionnaire studies [23]. We graded every question on the assessment checklist as “yes”, “no”, or “unsure”. We awarded one point for every requirement met. We compared the percentage of points obtained in each study with the total number of points to assess study quality. Studies were categorized as “high quality” if they met the majority of the requirements (achieved a threshold of 75% of the indicators) and had a negligible risk of bias. We rated studies that met the majority of the criteria (at least 50% of the indicators) and displayed particular flaws with a risk of bias as “acceptable quality.” In comparison, studies that either did not meet the majority of the criteria (at least 50% of the indicators) or had significant flaws in essential study design elements were rated as “low quality” [22].

3. RESULT

Selection process

After removing duplicates, a total of 13,975 items were found from all searches, leaving 722 items. After screening the titles and abstracts, we identified 15 full-text publications; however, we disqualified six because they did not pertain to Southeast Asia. We conducted hand searches to identify pertinent research not available in the database, yielding seven publications that met the inclusion criteria. This systematic review encompassed 16 studies, with the selection procedure illustrated in Figure 1 (PRISMA Flow Diagram).

Summary of the study characteristics

Most studies were conducted in hospitals or primary healthcare settings and involved various healthcare professionals, including pharmacists, nurses, and physicians. Sample sizes ranged from 48 to 511 participants, with generally high response rates (average above 75%). The studies included three from Indonesia, five from Malaysia, two from both the Philippines and Vietnam, three from Thailand, and one from Timor Leste. The review contained a large number of high-quality papers. In the studies that were part of this study, the primary quality-related problems were the lack of detail regarding non-response analysis and the procedures used to ensure data accuracy (the full results of the quality assessment are available in the data repository) [24].

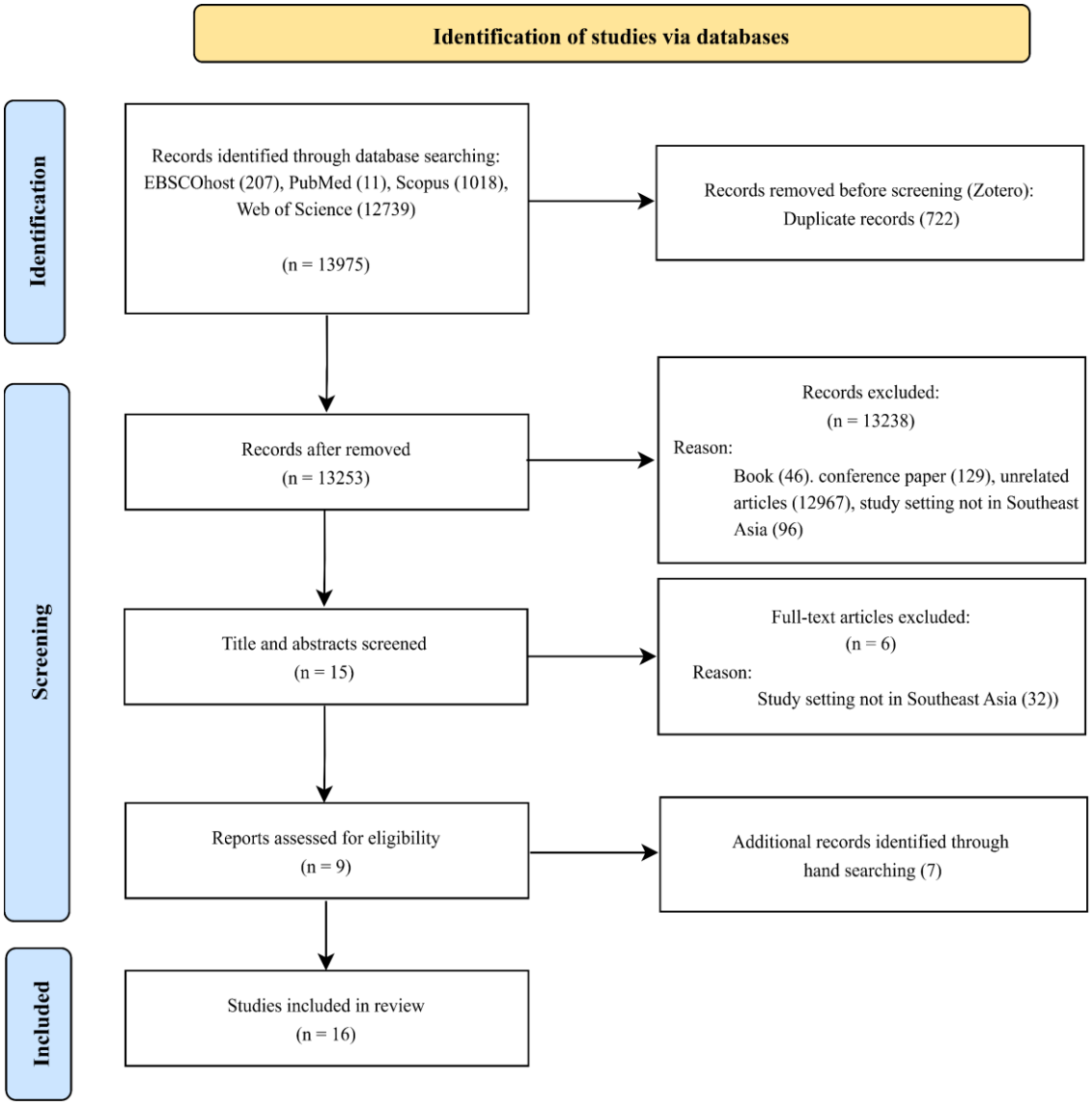

Figure 1. PRISMA Flow Diagram

Knowledge

General Level of Knowledge

Overall, healthcare professionals generally have low to moderate knowledge of ADRs and pharmacovigilance (Table 1). Few studies show that most respondents have a strong understanding of ADR reporting. In Indonesia, Ghozali & Murni (2023) found that in Bantul, Yogyakarta, only about 60.4% of pharmacists had good knowledge of ADR reporting. According to Ulfa *et al.* (2017), only 24% of community pharmacists possessed sufficient knowledge. Wangge & Akbar (2016) observed poor knowledge and attitudes towards pharmacovigilance, with no significant relationship between knowledge and attitude towards reporting practices [25–27].

In Malaysia, the results are more varied. A study by Zin *et al* (2019) found a sufficient level of knowledge among community pharmacists in Selangor. Similarly, a study conducted by Ali & Ismail (2021) showed that most respondents in Kedah had good knowledge of ADR reporting. However, Mahfodz *et al* (2024) revealed that although nurses showed high awareness of ADR reporting, their actual knowledge was still lacking, with a significant relationship found between knowledge related to ADR reporting and its practice [18,28,29]. Marquez *et al*. (2024) found that the majority of hospital pharmacists in the Philippines had moderate knowledge. Healthcare professionals in Manila were found to be moderately knowledgeable, according to Carandang *et al*. (2015), although proper reporting practices were not fully implemented [30,31].

According to a study by Worakunphanich *et al* (2021) conducted in Thailand, pharmacists had limited knowledge regarding the definition of severe ADRs and when to report them. A study conducted in Vietnam by Nguyen-Thi *et al* (2022) reported that respondents had moderate knowledge of ADRs, and Tran *et al* (2024) reported that pharmacists had the lowest knowledge scores among other professionals. According to a study conducted in Timor-Leste by Da Costa *et al* (2024) most health professionals had relatively low knowledge of ADRs and the pharmacovigilance system. The study emphasized that the majority of the causes were due to a lack of training and resources, rather than reluctance to report ADRs [32–35].

Attitude

General Attitude Towards ADR Reporting

The majority of studies reported that healthcare professionals in Southeast Asia held positive attitudes toward the importance of ADR reporting, independent of their actual knowledge or reporting behaviors (Table 1). Many respondents acknowledged that ADR reporting contributes to patient safety, even though they had never personally reported it. Ghozali & Murni (2023) reported that almost 52.1% of respondents had a positive attitude towards pharmacovigilance in Indonesia. However, Wangge & Akbar (2016) noted that healthcare professionals in Indonesia have a low attitude towards pharmacovigilance [25,27].

Research in Malaysia, although actual practice is relatively poor, has shown positive attitudes toward ADR reporting, as found by Burud *et al* (2021), Chen *et al* (2023), and Zin *et al* (2019). Mahfodz *et al* (2024) found that most nurses reported enthusiasm, despite limited knowledge [18,28,36,37]. Carandang *et al* (2015) and Marquez *et al* (2024) demonstrated that respondents in the Philippines recognized the importance of ADR reporting and exhibited positive attitudes towards it. Similar trends emerged in Thailand, as reported by Jarernsiripornkul *et al* (2023) and Srisuriyachanchai *et al* (2022), although structural challenges and diagnostic uncertainties persist [30,31,38,39] Da Costa *et al* (2024) found that in Timor-Leste, attitudes towards pharmacovigilance were generally positive, despite limited knowledge of the topic. If given appropriate training and support systems, many healthcare professionals would be willing to participate in ADR reporting [35].

Practice

Low Actual Reporting Rates

Although the level of knowledge and attitude is quite good, the actual practice of ADR reporting is low in almost all studies, indicating a gap between theory and practice (Table 1). In Indonesia, Wangge & Akbar (2016) reported that only 3.7% of healthcare professionals had ever reported ADRs. According to Ulfa *et al* (2017), most respondents were unfamiliar with the national reporting system. Burud *et al* (2021) and Mahfodz *et al* (2024) found that reporting rates remained relatively low in Malaysia, despite positive attitudes and adequate knowledge. The main obstacles were time constraints, lack of procedural knowledge, and inadequate training [18,26,27,36].

Thailand and the Philippines also showed similar patterns. Worakunphanich *et al* (2021) reported that in Thailand ADRs related to traditional medicine were reported by only one-third of participants. Srisuriyachanchai *et al* (2022) observed that younger professionals were more likely to report ADRs, likely due to their stronger adherence to protocols [32,38]. Despite positive attitudes in Timor-Leste, reporting practices are almost non-existent. According to Da Costa *et al* (2024), most professionals never report ADRs, the main reasons being the lack of a reporting system and uncertainty about reporting procedures [35].

Facilitators of and barriers to ADR reporting

Based on the analysis of the nine studies included in this systematic review, eight criteria facilitating ADR reporting were identified (Table 2). Five of the nine studies stated that education and training related to ADR monitoring and reporting can increase ADR reporting by healthcare professionals [18,26,33,36,39]. Furthermore, four studies stated that providing incentives can increase healthcare professionals' motivation to report ADRs [18,28,37,39]. Feedback from regulatory authorities and making reporting mandatory were also identified in two studies as factors driving reporting [26,27,29,33]. Other factors referred to as driving factors for ADR reporting include collaboration among healthcare professionals, online reporting systems, reminders from ADR monitoring

centres, and patient involvement in ADR reporting [18,33,39].

The analysis revealed 38 barriers to ADR reporting identified across various studies (Table 2). Lack of time for ADR reporting was the most frequently cited barrier, supported by eight studies [18,28,30,33,36–39]. Uncertainty, such as unawareness of how to report an ADR, lack of awareness of the need to report ADRs, and unfamiliarity with the ADR reporting system, were also cited as factors hindering ADR reporting [18,28,30,33,37,39]. Healthcare professionals also experienced barriers in connecting the cause and effect between drugs and adverse reactions [28,31,36–39]. Psychologically, fear of legal liability, compromising patient confidentiality, and fear of appearing ignorant also hindered reporting. Other frequently cited factors included overly complicated ADR reporting forms, a lack of financial compensation, and inadequate interprofessional collaboration [18,28,30,35–39].

Table 1. Summary of the studies assessed in this review

Author (Year)	Design	Participants/ settings	Sample size (%)	Outcomes	Conclusion	Suggestions
Ghozali and Murni (2023)	CS	Hospital and community pharmacists, Bantul, Indonesia	48 (96)	KA	60.4% had good knowledge and 52.1% had a positive attitude, with a significant relationship to PV.	Pharmacists require additional training and education to improve medication safety and ADR reporting.
Wangge and Akbar (2016)	CS	HCPs in Indonesia	109 (92.4)	KAP	Only 3.7% of HCPs practiced good pharmacovigilance. Knowledge and attitudes toward PV were limited, with no correlation between poor practice and knowledge, attitudes, or other characteristics.	Enhanced PV education and regular reminders are needed to improve HCPs' knowledge, awareness, and adherence.
Ulfa *et al* (2017)	CS	Community pharmacists, Yogyakarta	100 (36)	KP	Only 24% of pharmacists had good knowledge, and 35% had a positive perception of ADR reporting. No significant relationship was found between knowledge and perceptions.	Pharmacovigilance education and training should be improved to increase ADR reporting.
Burud *et al* (2021).	CS	HCPs, Tuanku Ja'afar Hospital, Malaysia	339 (91.6)	KAP	HCPs had satisfactory knowledge but poor ADR reporting practice. Knowledge and attitude levels were associated with poor reporting practices.	Knowledge and attitudes should be improved through effective educational initiatives and training to enhance ADR reporting.
Zin *et al* (2019)	CS	Community pharmacists, Selangor, Malaysia	219 (78.8)	KAP	Community pharmacists had high knowledge and positive attitudes about PV, but most did not report ADRs in practice.	Strategies are needed to improve ADR reporting and increase access to training, documentation tools, and IT systems.

Author (Year)	Design	Participants/ settings	Sample size (%)	Outcomes	Conclusion	Suggestions
Mahfodz *et al* (2024)	CS	Nurses in Malaysian hospitals	409 (95.1)	KAP	Nurses had inadequate knowledge of ADR and poor reporting practices despite high PV awareness. Good ADR knowledge was significantly associated with reporting practice.	Pharmacovigilance education and training should be strengthened to improve ADR reporting.
Chen *et al* (2023)	CS	Public HCPs, West Pahang, Malaysia	344 (86)	KAP	Most HCPs had good knowledge and a positive attitude, but ADR reporting practices remained poor.	Healthcare workers should receive appropriate training to improve ADR reporting practices.
Ali and Ismail (2021)	CS	Medical staff, Sultan Abdul Halim Hospital	269 (81)	KAP	Most participants demonstrated good knowledge, positive attitudes, and proper practices regarding Malaysia's ADR reporting system.	Continuous education and updates on ADR reporting are necessary to enhance medication safety.
Marquez *et al* (2024)	CS	Hospital pharmacists in Metro Manila, Philippines	120 (n/a)	KAP	Pharmacists had fair to moderate knowledge, but most respondents demonstrated poor PV practices. Attitude was significantly correlated with practice.	Interventions are needed to strengthen hospital pharmacists' knowledge and practices and to enhance their institutions' practices.
Carandang *et al* (2015)	CS	Hospital HCPs, Manila, Philippines	140 (100)	KA	HCPs had relatively adequate knowledge of ADR reporting but low reporing practice. Knowledge and attitudes significantly influenced ADR reporting.	Educational programs should focus on ADR identification and addressing misconceptions about reporting.
Jarernsiripornkul *et al* (2023)	CS	Hospital pharmacists, Thailand	286 (59.6)	MBA	Spontaneous reporting was the most common ADR monitoring method. Attitudes were favorable, but barriers such as uncertainty about drug reactions limited reporting.	Collaboration among HCPs and education on ADR monitoring and reporting should be promoted.
Worakunphanich *et al* (2021)	CS	Hospital pharmacists and traditional medicine practitioners, Thailand	195 (47.56)	KAP	Participants had positive attitudes toward traditional medicine ADR reporting but limited knowledge of severe ADR definitions and reporting timelines. Only one-third had reported ADRs.	Training programs are needed to encourage reporting of ADRs related to traditional medicine.

Author (Year)	Design	Participants/ settings	Sample size (%)	Outcomes	Conclusion	Suggestions
Srisuriyachanchai *et al* (2022)	CS	HCPs, university hospitals, Thailand	350 (68.6)	AP	HCPs had positive attitudes toward severe ADR monitoring, but uncertainty about causal relationships was a major barrier to reporting.	Knowledge and awareness of ADR monitoring should be improved to strengthen reporting practices.
Da Costa *et al* (2024)	CS	HCPs, Timor-Leste	461 (76.8)	KAP	HCPs had favorable attitudes toward PV and ADR reporting but lacked sufficient knowledge and a strong reporting culture.	Awareness, training, and resources should be increased to improve ADR reporting.
Tran *et al* (2024)	CS	HCPs, Public hospital, Vinh Long province, Vietnam	511 (92.9)	KA	Pharmacists had lower knowledge and negative attitudes toward ADR reporting, associated with education, profession, and patient interaction factors	Targeted educational interventions are needed to improve healthcare workers' knowledge and attitudes toward ADR reporting.
Nguyen-Thi *et al* (2022)	CS	HCPs, Children's Hospital, Vietnam	384 (97)	KAP	HCPs had moderate knowledge, positive attitudes, and moderate ADR reporting practice. Training improved reporting practice.	Regular training and updates on ADR reporting should be provided for HCPs.

CS: Cross-sectional; KAP: Knowledge, Attitude and Practice; KA: Knowledge and Attitude; AP: Attitude and Practice; KP: Knowledge and Perception; MBA: Methods, Barriers and Attitude; HCPs: healthcare professionals; PV: pharmacovigilance; ADR: adverse drug reaction

Table 2. Facilitators of and barriers to ADR reporting

Factor	Studies (n)	Supporting Studies
Facilitators of ADR reporting		
Training and education in ADR detection and reporting	5	[26,33,36,37,39]
Providing incentives for ADR reporting	4	[18,28,37,39]
Receiving feedback from regulatory agencies	2	[27,33]
Making ADR reporting mandatory	2	[26,29]
Collaboration between healthcare professionals	1	[33]
Online-based reporting system	1	[18]
Reminders to increase awareness from the ADR monitoring centre	1	[18]
Patient self-reporting	1	[39]
Barriers to ADR reporting		
Complacency		
All severe ADRs were detected before marketing.	1	[37]
The ADR is well-known	3	[28,38,39]
The ADR is too trivial to report.	3	[28,38,39]
Fear		
Fear of legal liability	5	[18,28,36,37,39]
Fear of jeopardizing career	2	[36,37]
Fear of compromising patient confidentiality	3	[30,36,37]

Factor	Studies (n)	Supporting Studies
Ambition		
Prefer to publish ADR rather than report it	2	[36,37]
Ignorance		
Unaware of how to report an ADR	5	[18,28,30,37,39]
Unaware of where to report ADR	2	[36,37]
Lack of understanding of the ADR monitoring process	1	[38]
Unaware of the availability of ADR forms	2	[36,37]
Lack of awareness about the presence of a national ADR reporting system.	2	[18,28]
Deficient understanding of the importance of ADR reporting.	6	[18,28,30,33,35,39]
Diffidence		
Fear of appearing foolish	3	[31,36,37]
Insufficient confidence to talk to other medical experts about ADRs	2	[18,28]
Not confident that ADR reporting will be handled confidentially	1	[37]
Indifference		
Assume that HCPs are not responsible for ADR reporting.	3	[28,30,37]
Lethargy		
Lack of time for ADR reporting	8	[18,28,30,33,36–39]
Inadequate clinical knowledge	3	[18,28,33]
ADR reporting takes too much time	5	[29,35–37,39]
Lack of information from patients	2	[28,30]
Lack of collaboration between healthcare professionals	3	[18,38,39]
Lack of cooperation between healthcare professionals and patients	1	[39]
ADR reporting will generate extra workload	1	[28]
Lack of support from management/administration	2	[18,39]
Lack of support from leaders	2	[35,38]
High workload	1	[35]
The ADR form is overly complicated	5	[18,36–39]
The ADR form has insufficient space	1	[37]
Incentives		
No financial compensation for reporting ADRs	5	[18,28,33,35,37]
Insecurity		
Uncertainty about drug–ADR causality	6	[28,31,36–39]
Feedback		
No feedback is provided to ADR reporters	1	[28]
Unavailability		
Not easy to access the ADR reporting form	1	[31]
Lack the person in charge of ADRs contact information	2	[36,37]
The ADR reporting form is not available	7	[28,33,35–39]
Lack of technology to assist ADR monitoring	2	[38,39]
Insufficient labor availability	2	[38,39]
No pharmacovigilance reporting center available in the hospital	1	[35]

ADR: adverse drug reaction

4. DISCUSSION

The findings of this systematic review show that healthcare professionals' knowledge of ADR reporting in Southeast Asia varies, and actual reporting practices remain inadequate, despite the majority of healthcare workers expressing positive attitudes towards the importance of ADR reporting. This finding is consistent with findings from various countries, which report that healthcare professionals' awareness of the importance of ADR reporting does not automatically result in adequate reporting practices, and similar studies in other regions, such as the Middle East and Africa, also report gaps between healthcare professionals' KAP of ADR reporting [8,9,40–42]. Positive attitudes among HCPs are reflected in respondents' awareness of the importance of ADR reporting for patient safety in most of the studies analyzed, although most had never directly reported an ADR [18,28,30–33,35–38].

Studies conducted in Malaysia showed that although healthcare professionals have a positive attitude regarding ADR reporting, many still do not understand the reporting procedures in detail [36,37]. Similar findings were also found in Indonesia and Vietnam, where limited knowledge and minimal training were the main barriers to ADR reporting [26,34]. Furthermore, this review identified several factors influencing ADR reporting (Table 2). Key supporting factors include education and training, incentives, and feedback from regulatory authorities [18,26–28,33,36,39]. These factors contribute to greater knowledge, motivation, and confidence among healthcare professionals in reporting ADRs. Conversely, ADR reporting is hampered by time constraints, unfamiliarity with reporting procedures, uncertainty about drug–ADR causality, and a lack of institutional support and incentives [18,28,30,31,33,36–39]. Identifying these factors is crucial for designing more effective interventions to improve ADR reporting by HCPs.

The studies analyzed in this systematic review were cross-sectional. They employed a survey approach, which limits the ability to draw causal conclusions about the relationship between KAP of ADR reporting among HCPs. The data obtained are also potentially biased because they are collected independently of respondents, such as recall bias or the tendency for respondents to provide socially expected answers rather than the actual reality. This review also imposed language restrictions, limiting studies to those published in Indonesian and English, potentially excluding results from studies in other countries that use local languages.

These results suggest that continuous training is necessary to enhance HCPs' technical understanding of ADR reporting protocols and to integrate the ADR reporting system into daily practice, which can be done through a digital platform or an electronic medical record system, helping overcome time and accessibility obstacles. Another implication of these findings is the need for institutional support, including adequate resources, legal protection for healthcare professionals who report ADRs, and effective feedback mechanisms. The role of healthcare institutions as facilitators in ADR reporting is also a potential strategy. Increasing the role of healthcare institutions is expected to increase healthcare professionals' involvement in reporting.

Long-term studies are necessary to determine whether HCPs' knowledge and attitudes evolve over time and whether these changes influence their ADR reporting practices. Furthermore, interventional research is needed to evaluate the effectiveness of training, interprofessional communication strategies, and technology-based reporting systems. Qualitative research is also recommended to provide a deeper understanding of individual perceptions, psychological and social factors, and the culture and practices prevailing in HCP workplaces in the context of ADR reporting. Overall, despite positive attitudes among HCPs toward ADR reporting in the region, ADR reporting remains suboptimal without systemic support and ongoing training. Therefore, strengthening ADR reporting practices in Southeast Asia requires a comprehensive approach encompassing interventions at the individual, institutional, and policy levels. The certainty of the evidence in this review is limited due to the predominance of cross-sectional study designs, which restrict causal interpretation. Variability in study settings, populations, and measurement tools may also affect the generalizability of the findings.

CONCLUSION

This systematic review shows that although healthcare professionals in Southeast Asia have a positive attitude towards reporting ADRs, their knowledge remains varied, and reporting practices remain relatively low. Training, education, and incentive support were the most frequently cited factors facilitating reporting. Time constraints, unavailability of reporting forms, lack of awareness, uncertainty about the causality of drugs with adverse reactions, and lack of incentives were the main barriers to reporting. An integrated strategy is necessary to enhance ADR reporting practices among healthcare professionals, encompassing ongoing education, integrating reporting systems into clinical practice, and strengthening national-level pharmacovigilance policies.

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