

Mandatory inclusion of clinical indications in prescriptions in the UAE: Pharmacists' perspectives on medication safety and implementation barriers

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Abstract: To assess pharmacists' views on the compulsory incorporation of clinical indications in prescription orders in the UAE and to pinpoint significant obstacles and enablers for implementation. A cross-sectional study investigated the experiences of pharmacists with prescription orders that needed clinical indications while also examining their perceptions of mandatory requirements and their assessment of existing obstacles. The research team selected pharmacists who worked at community pharmacies, hospital pharmacies, and ambulatory care settings that served as accessible locations throughout the three major Emirates, which included Dubai, Abu Dhabi, and Sharjah. A structured survey prepared for the purpose of this study was distributed to a total of 260 pharmacists throughout the study period. The survey covered pharmacists' experiences with clinical indications on prescriptions, their perceived benefits, barriers to implementation, and their overall stance on mandatory inclusion. The research indicated that only 41.1% of the prescriptions studied had a clinical diagnosis or medical reason for their prescription. Mandatory inclusion received support from 57.7% of pharmacists, but obstacles arose from software restrictions (52.0%), insurance-related issues (55.8%), absence of complete medical diagnoses for specific drugs (64.3%), and possible privacy risks (57.7%). Further investigation indicated that different practice environments produced different levels of support, which hospital pharmacists demonstrated through their higher support rates because they used integrated electronic health record systems. The results demonstrate that structured policies and technological solutions should help pharmacists make their clinical decisions. The implementation process needs to overcome existing obstacles that currently stand in its way.

Introduction

Global healthcare systems continue to face ongoing medication safety challenges because errors continue to occur during the prescribing process, the dispensing process, and the administration of medicines, often resulting in serious consequences for patients [1]. One of the most persistent barriers limiting the effectiveness of

pharmaceutical care is the frequent absence of clinical indications on prescriptions [2]. This omission creates a significant danger that jeopardizes patient safety [3]. Schiff et al. [3] proposed that indication-based prescribing should become standard practice and identified the authorized indication as the sixth right of medication management, which should accompany the five established rights of medication administration. They argued that these changes would improve medication safety while also enhancing patient education, clinical documentation, and interprofessional communication between prescribers and pharmacists [3]. The present framework demonstrates how pharmaceutical care has advanced from its original product-based approach to a more clinical system that combines clear explanations, thereby enabling better decision-making through teamwork and reduced uncertainty [4]. Prescribers and pharmacists generally support the voluntary inclusion of diagnosis or clinical indication on prescriptions, although pharmacists are more likely to support making it a requirement [5]. Including indications can help pharmacists ensure the appropriateness of prescriptions and reduce the need for interventions and communication with prescribers [6]. Indications on prescriptions can improve patient understanding and adherence, as patients gain a clearer sense of the purpose of their medications [7]. It can also reduce prescribing and dispensing errors by ensuring the drug and dosage match the correct indication [8].

Pharmacists believe that having access to diagnosis information can help them identify errors related to wrong medications or doses [7]. Prescribers, however, have expressed concerns about potential insurance rejections and the extra time required to include indications on prescriptions [5]. Privacy concerns also exist because many patients view the inclusion of indications as a risk to confidentiality. Technical difficulties in maintaining accurate software transmission and integrating indication data with current operational systems continue to present major obstacles [8, 9]. Recent qualitative studies have shown that sharing reason-for-use information can improve interprofessional collaboration while decreasing misinterpretations, although it still creates challenges for established work patterns [10]. The resource-constrained environments in the Middle East face even greater obstacles because of varying levels of digital infrastructure adoption, which require specific policy solutions tailored to local conditions [11]. In the UAE, electronic prescriptions are now required in community and hospital pharmacies, although current law does not require medical doctors to document patient diagnoses or clinical indications. This gap influences the amount of time pharmacists spend clarifying prescriptions instead of counselling patients and can increase the chance of dispensing errors [12]. As a result, pharmacists' ability to deliver complete pharmaceutical care services remains restricted. The healthcare system in the UAE is undergoing digital transformation, but important improvements are still needed to fully achieve national strategies aimed at enhancing patient outcomes [13].

The existing gap becomes particularly clear when compared with international standards. For example, the Netherlands has achieved stronger pharmaceutical care through its system of integrating pharmacists into primary care teams [14]. Research has also shown that nursing homes using multidisciplinary teams that include pharmacists have experienced reduced rates of inappropriate prescriptions, and this approach has proven effective in ambulatory settings in the UAE as well [15]. To address these challenges, the present study establishes the framework for a comprehensive examination of indication-based prescribing. It investigates the historical development of prescription practices, the role of pharmacists in medication safety, the differences between global and regional policy enforcement, and the advantages of patient-centred care. Recent literature from the past five years indicates that mandatory indications could help reduce polypharmacy and off-label use risks, which affect various populations within the UAE's expatriate community [16]. This research therefore provides a vital foundation for evidence-based policy reform by evaluating pharmacists' opinions about the compulsory use of clinical indications in prescription orders throughout the United Arab Emirates and by carefully examining the major obstacles and supporting factors that would influence successful implementation.

Materials and methods

Study setting: A cross-sectional survey was conducted from March 2024 to June 2024 to investigate the current usage of clinical indications on prescription orders. The researchers carried out their observations across specific pharmacy practice environments, covering community pharmacies, hospital settings, and ambulatory care pharmacies, to understand how pharmacists in different settings expressed their views. This study was conducted in accordance with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of our university (REC-22-02-24-S). The survey reflected current practices in the healthcare system following the widespread shift to electronic methods for managing medication.

Study population: The research team used convenience sampling to select 260 practicing pharmacists working in different locations throughout the United Arab Emirates. Participants were drawn from community pharmacies, hospital pharmacies, and ambulatory care settings across the three major Emirates of Dubai, Abu Dhabi, and Sharjah, which served as accessible locations. Study participants were required to hold active practice licenses as pharmacists in the UAE, to have worked in the country for at least one year, and to be routinely involved in handling prescription orders. The study excluded pharmacists working in purely administrative roles who did not participate in prescription verification. The final sample size of 260 was chosen because it was consistent with previous studies investigating pharmacists' attitudes toward prescription practices and remained practically feasible. Although convenience sampling was used, extra steps were taken to achieve reasonable representation from each emirate, with a clear focus on frontline practitioners who handle prescriptions on a daily basis.

Study questionnaire: To gather data for this study, a 19-item survey was designed and administered to practice pharmacists. The survey first evaluated existing pharmacy software systems to determine their actual capabilities and their current use for receiving diagnoses from prescription data. The second section used a four-point Likert scale (Strongly agree to Strongly disagree) to measure attitudes toward the potential effect of this practice on patient safety and health outcomes and to assess support for voluntary or mandatory implementation. The survey also asked participants to rate the importance of various barriers, which included extended prescriber workload, patient privacy problems, and the threat of insurance claim denials. The final section collected demographic information, including practice setting (community, hospital, ambulatory care), current role, educational background, and years of experience overall and within the UAE. A free-text field was provided for any additional comments.

Content validity was established through expert review by clinical pharmacists and researchers specializing in medication safety and pharmacy practice. The questionnaire was distributed online through email and professional pharmacist networks. Participants received a brief explanation of the study rationale, and informed consent was obtained before they completed the survey. Data collection continued for over six weeks to help achieve a higher response rate. The Likert scale was selected for its effectiveness in capturing nuanced attitudes, as supported by contemporary survey methodology literature [17]. Pilot testing with 20 non-participating pharmacists confirmed the clarity of the items and helped reduce response bias, with minor revisions made to the wording for better cultural appropriateness in the UAE context.

Statistical analysis: Participant responses were processed using the Statistical Package for the Social Sciences (SPSS, version 28.0, Chicago, IL, US). Descriptive analysis was performed to compute frequencies and percentages for each group of respondents. Results were supplemented with 95.0% confidence intervals for single proportions to improve readability and interpretation. Mean values and standard deviations were presented for continuous variables such as years of pharmacy practice and years of practice within the UAE. The analysis examined variations in responses according to pharmacy practice setting (community pharmacy, hospital

pharmacy, and ambulatory care). Special attention was given to pharmacists' attitudes toward the inclusion or exclusion of clinical indications and the perceived obstacles to implementation. Counts for each answer were converted into proportions and presented in tables to allow easy comparison among the different views of participants. Data integrity was maintained through double-entry verification, and missing values were addressed using the listwise deletion method.

Results

Demographic characteristics of participants: The study included 260 pharmacists whose demographic information is shown in **Table 1**. The average number of years practicing pharmacy was 5.95 ± 4.26 years, while the average duration of practice within the UAE was 4.24 ± 3.18 years. Participants were almost equally distributed between community pharmacy and hospital pharmacy (42.3% each), with ambulatory care accounting for the smallest group (15.4%). The demographics show that most participants were in the early career stage, which is consistent with the current trend of younger professionals entering the UAE pharmacy workforce as the healthcare sector continues to expand.

Table 1: Demographic characteristics of study participants

Characteristic	Mean $\pm$ SD (years)	n (%)
Years in Pharmacy Practice	5.95 ± 4.26	-
Years in UAE Practice	4.24 ± 3.18	-
Practice setting		
- Community Pharmacy	-	110 (42.3)
- Hospital Pharmacy	-	110 (42.3)
- Ambulatory Care	-	40 (15.4)

Clinical indication on prescriptions: Of pharmacists who received prescriptions containing diagnoses or clinical indications, 36.9% (n = 96) reported that their pharmacy software currently displays diagnoses or clinical indications when dispensed by physicians. Of these, 33.5% (n = 87) said this information appeared directly on the main prescription entry screen. On average, 41.12% ($\pm 30.24\%$) of the prescriptions pharmacists receive include a diagnosis or clinical indication. The study results demonstrate varying inclusion rates because electronic prescribing systems continue to experience implementation problems, which are common with digital health tools across the Middle East according to recent studies. Hospital pharmacists achieved 45.5% software functionality, whereas community pharmacists reached 32.7% and ambulatory care pharmacists achieved 25.0% functionality, indicating different institutional patterns of technological adoption across settings.

Attitudes toward inclusion of diagnosis: **Table 2** shows how pharmacists feel about whether prescription orders should include diagnosis information and clinical indication details. A substantial proportion of respondents strongly agreed that such inclusion would improve patient health outcomes (60.8%, n = 158) and patient safety (56.2%, n = 146). The study found that more than half (56.2%; n = 146) of participants supported voluntary inclusion by prescribers, while 57.7% (n = 150) supported making this information mandatory.

Table 2: Attitudes toward inclusion of diagnosis or clinical indication

Attitude	% (n)	95% CI
Improves patient health outcomes	60.8 (158)	[54.9% - 66.7%]
Enhances patient safety	56.2 (146)	[50.2% - 62.2%]
Supports voluntary inclusion by prescribers	56.2 (146)	[50.2% - 62.2%]
Supports mandatory inclusion requirement	57.7 (150)	[51.7% - 63.7%]

Challenges to the inclusion of diagnosis: **Table 3** details perceived challenges associated with including a diagnosis or clinical indication on prescriptions. The most critical concerns identified included software transmission issues, which affected 52.0% (n = 135) of participants; potential insurance claim rejections for off-label use, which occurred for 55.8% (n = 145) of participants; and the absence of a definitive diagnosis or clinical indication for certain medications, which affected 64.3% (n = 167) of participants. The study identified three challenges with lesser importance, which included additional time needed by prescribers (35.3%; n = 92), patient privacy issues (57.7%; n = 150), and possible violations of prescriber decision-making rights (53.4%; n = 139).

Table 3: Challenges to the inclusion of diagnosis or clinical indication

Challenge	% (n)	95% CI
Software transmission issues	52.0 (135)	[45.9% - 58.1%]
Insurance claim rejection for off-label use	55.8 (145)	[49.7% - 61.9%]
No definitive diagnosis/indication	64.3 (167)	[58.5% - 70.1%]
Additional prescriber time required	35.3 (92)	[29.6% - 41.0%]
Patient confidentiality/privacy concerns	57.7 (150)	[51.6% - 63.8%]
Prescriber autonomy concerns	53.4 (139)	[47.3% - 59.5%]

Discussion

The study shows that there is a significant gap between the recognized need for clinical indications on prescriptions and the actual practice of this requirement in the United Arab Emirates. The high variability and large standard deviation in the data indicate that no standardized approach currently exists. This inconsistency stems from three main factors: Prescriber practices that treat the inclusion as optional, differing policies across hospitals and clinics, and the varying capabilities of pharmacy software systems to record and display this information. As a result, the practice remains fragmented. While some pharmacists regularly receive the details they need for thorough medication review, many others do not. This uneven situation undermines the potential of clinical indications to serve as a consistent medication safety measure across the UAE healthcare system. The findings suggest that this fragmentation not only delays timely pharmacist interventions but also creates ongoing inefficiencies in a system where electronic prescribing is already widespread but not yet fully optimized. It may also be widening differences in care quality between emirates. Pharmacists who participated in the study strongly believe that mandatory inclusion would lead to meaningful improvements in patient safety and clinical outcomes. However, they report that only about 41.0% of current prescriptions contain this essential information. The existing gap persists because, despite professional support, major practical obstacles must still be overcome before full implementation can be achieved. Previous studies have shown that prescribers and pharmacists often hold different views on mandatory indication documentation, with pharmacists generally being more supportive [2, 8]. The 57.7% support for mandatory inclusion in our sample suggests that voluntary systems are not effective in the UAE context, where healthcare facilities must manage high patient volumes and need efficient, reliable processes.

Implementation faces logistical and systemic challenges, including software compatibility problems, insurance-related issues, and additional workload for prescribers. Many prescribers see the documentation of indications as time-consuming and disruptive to their normal workflow, particularly when it applies to every prescription and when electronic systems involve lengthy drop-down menus [2, 8]. Research indicates that the actual additional time required is often minimal, typically less than 20 seconds once systems are properly designed, yet prescribers tend to view the process negatively if they do not immediately see the benefits [2, 8, 18]. Poorly designed interfaces in electronic prescribing systems further complicate the entry of medical indications [8, 9]. Moreover, prescribers are concerned that sharing diagnosis information with payers could lead to claim denials when the

indication does not match insurance requirements [2, 5]. These barriers, especially the 55.8% concern regarding insurance rejections, clearly point to the need for better regulatory alignment. From our perspective, integrating indication data effectively could strengthen claims justification, reduce denials in the long term, and build greater trust in the overall system [19].

Improving prescription transparency in the UAE will require genuine collaboration among healthcare providers, policymakers, and software vendors. The main goal should be to incorporate indication documentation into routine clinical workflows without causing major disruptions or adding unnecessary burden for prescribers. Electronic prescribing interfaces need to be made more user-friendly through well-designed drop-down lists, free-text options, and indication-based order sentences [2, 8]. When automation and sensible default settings are used, prescriber workload can be significantly reduced [2, 7, 8]. Furthermore, allowing pharmacists to expand or clarify existing indications according to clear guidelines could improve data quality without placing extra work on doctors [7]. The design process should involve input from prescribers, pharmacists, patients, and IT specialists to ensure the solutions meet real needs and gain broad acceptance [7, 9]. A phased implementation strategy that begins with selected organizations adopting key elements and then gradually moves toward mandatory use once experience has been gained appears most realistic. Previous research supports this approach because mandatory indication fields have been shown to improve prescription accuracy and appropriate medication use [5, 8, 19]. Special policies will be needed to protect sensitive patient data and prevent misuse by insurers while addressing prescribers' legitimate concerns about privacy and coverage denials [2, 5]. If implemented carefully, indication-based practices should contribute to better antibiotic stewardship and improved management of chronic diseases, in line with recent programmes in the UAE [13]. The multicultural nature of healthcare in the UAE means that a phased approach, which allows time for feedback and adjustment, is likely to be particularly beneficial for building acceptance.

Effective medication safety and high-quality pharmaceutical services ultimately depend on strong collaboration between pharmacists, prescribers, regulatory bodies, and technology providers. This study highlights several practical ways to strengthen such collaboration. Establishing interdisciplinary teams that include pharmacists, prescribers, nurses, and managers can support ongoing medication assessments, reconciliation, and the development of shared procedures for high-risk drugs [16, 20]. Clearly defining roles, responsibilities, and communication channels, supported by joint training and continuing education, is also essential [16, 20]. The use of interoperable digital health records can facilitate real-time sharing of information among all stakeholders [20, 16]. Professional development in emerging roles, such as pharmacist-managed clinics and collaborative care models, should be encouraged through standardized protocols and supportive regulatory frameworks [1, 4, 15, 21]. Finally, actively engaging patients and their families in safety efforts through education, shared decision-making, and feedback mechanisms is crucial [22, 23]. Recent systematic reviews highlight the benefits of greater pharmacist involvement in prescribing decisions, which could extend to indication verification in various settings [24, 25]. In the UAE, such collaborations will need to address cultural factors to improve patient engagement, personalized care, and reduce adverse events [26]. Emerging research in specialized settings, such as dialysis centers, shows the value of giving pharmacists access to indications for better medication management and suggests that these benefits could be transferred to UAE contexts [27]. Reflecting on our own findings, the 64.3% concern about the lack of definitive diagnoses actually represents an important opportunity. Empowering pharmacists to clarify or query indications could help bridge these gaps and promote more proactive care, particularly in ambulatory settings. Future research should explore pilot initiatives to assess the real-world impact of mandatory indication-based prescribing and identify optimal strategies for integration. Additionally, investigating patient perspectives on indication-based prescribing could provide insights into its potential impact

on adherence and treatment outcomes, while exploring prescriber viewpoints is essential for developing strategies to overcome barriers such as increased administrative workload, workflow integration challenges, and concerns about clinical autonomy. Integrating these elements could foster a more holistic approach, supported by evidence from interdisciplinary collaborations in medication management.

Research impact: This research notes the low current use of clinical indications on prescriptions and explores UAE pharmacists' perspectives on making them mandatory. The research shows that pharmacists support the proposed change, but there are still multiple obstacles that prevent its implementation. The research delivers supporting evidence to policymakers who want to establish pharmacy practice standards while showing the need to resolve software problems, insurance difficulties, diagnostic uncertainty, and privacy issues. The recommendations include establishing a regulatory system that will enforce indication-based prescribing together with required software upgrades and essential training programmes that will help prescribers and pharmacists understand the advantages while decreasing their documentation tasks. The results of the study will shape digital health regulations in the United Arab Emirates while supporting national goals that aim to improve healthcare operations and provide patient-focused medical treatment [4].

Study limitations: The research findings provide important information about pharmacists' opinions on required clinical indications for UAE prescriptions but face methodological limitations that must be addressed. The research design used convenience sampling, which limits its ability to represent all pharmacists because email and professional network recruitment methods selected participants who demonstrated stronger opinions about indication-based prescribing. The sample collection method fails to achieve its goal because it does not include participants from various demographic groups, practice environments, and different parts of the UAE. Moreover, social desirability bias causes respondents to report higher support for patient safety measures because they want to meet professional standards. The 100% completion rate among 260 pharmacists is noteworthy, but the inability to quantify the total invited pool precludes calculating a participation rate, exposing the study to non-response bias. Researchers face a challenge because unengaged pharmacists demonstrate different views, which makes it harder to create an accurate sample and use their results for policy development. Future studies could mitigate this by incorporating mixed-methods approaches, as advocated in recent pharmacy research methodologies to enhance validity [28].

Conclusion: The study signifies the need for systematic incorporation of clinical indications into the prescription order system in the UAE. Although strongly supported by pharmacists, obstacles with respect to technology, regulation, and practice must be addressed for successful implementation. All stakeholders, such as pharmacists, prescribers, regulatory authorities, and technology vendors, must come together to preserve medication safety and provide seamless pharmaceutical care.

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