MEDICATION ERRORS AWARENESS AMONG NURSES IN SAUDI ARABIA: SCOPING REVIEW

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Abstract

Medication errors (MEs) constitute a serious risk to patient safety and are nevertheless common in healthcare settings, particularly in nursing practice. This scoping review looks at the factors that influence nurses' knowledge, attitudes, training, and reporting behaviors about MEs in Saudi Arabia, using findings from five empirical research published between 2022 and 2024. The analysis finds that, while nurses have remarkable understanding of MEs, considerable impediments to effective reporting and management procedures exist, including fear of penalties, insufficient training, and systemic challenges such as staffing shortages and heavy workloads. The study underlines the importance of comprehensive training interventions and supportive workplace environments that foster transparency and responsibility in error reporting. It closes by recommending that healthcare facilities improve nursing education, adopt strong error reporting methods, and foster a patient-safety culture. Addressing these issues is critical to improving medicine administration methods and attaining improved healthcare outcomes.

Keywords: Medication, Errors, Awareness, Nurses.

Introduction

Medical errors (ME) are one of the most serious patient safety issues affecting hospitals and healthcare systems today, since the IOM's 1999 study "To Err is Human," an increasing number of studies have highlighted how widespread and detrimental ME are, especially in hospital care (Aljabari & Kadhim, 2021). (MEs) are ubiquitous globally, affecting patients, their families, society, health care professionals, and the entire health care system (Al-Worafi, 2020).

A medication error is any avoidable event that can result in incorrect use of therapeutic items or negative consequences on the patient. Although drug therapy is vital in healthcare services, it can also be harmful and life-threatening if used incorrectly (Alandajani et al., 2022). Various components of the pharmaceutical usage process may be the cause of such injury, such as a lack of performance, a lack of information, slips and lapses (Sheikh et al., 2017).

A survey-based study of critical care nurses found substantial relationships between nurses' physical and emotional health, perceptions of workplace wellness support, and self-reported medical errors. The cross-sectional study included 771 nurses chosen from a random sample of 2,500 members of the American Association of Critical-Care Nurses. The findings revealed that nurses in poor physical condition and those experiencing depressive symptoms reported greater medical errors, with odds ratios of 1.31 and 1.62, respectively. Furthermore, nurses who evaluated their workplace as supportive of wellness were twice as likely to report improved physical health (odds ratio = 2.16). These findings highlight the importance of healthcare systems prioritizing nursing well-being by addressing systemic concerns and strengthening wellness support, resulting in higher patient care quality and fewer medical errors (Melnyk et al., 2021).

ME rates in Middle Eastern nations ranged from 0.18 to 56 per 100 pharmaceutical orders "/" number of prescriptions and 0.15 to 40 mistakes per 100 patient admissions (Aljuaid et al., 2021). To prevent pharmaceutical errors, it is necessary to promote knowledge about their incidence and repercussions (Alandajani et al., 2022). Prescribing errors account for almost one-fifth of all drug errors seen in primary care settings in the Kingdom of Saudi Arabia (KSA) (Alandajani et al., 2022). Several studies have been conducted to assess the prevalence of ME in various regions of Saudi Arabia. However, their results differ greatly (41.6%-70%) (Almalki et al., 2021).

Systematic research indicated that ME prescribing rates in Saudi Arabia range from 7.1% to 94%. The incidence of prescribing errors was 3.6 per 100 prescriptions, 33.9 per 100 admissions, and 76.5 per 1000 patient days, with the overall error rate in a tertiary paediatrics inpatient environment in Saudi Arabia being 56 per 100 pharmaceutical orders (Aljuaid et al., 2021). The ICUs had the greatest rate of MEs (5.5%). The majority of MEs were for inpatient prescriptions. For every 100 prescriptions, 1.5 drug mistakes occurred (Aljuaid et al., 2021). Patient safety is the most important aspect of health care quality, and it is a top goal for any health care system to assure high-quality care and make required adjustments (Alyami et al., 2022). In addition to the difficulty or incapacity of patients to connect with physicians and language hurdles, there are numerous other breaches in patient safety in Saudi Arabia (Alsulami et al., 2022). In Saudi Arabia, reporting drug errors might be difficult (Alenezi & Baker, 2023). Preventing medication errors can be problematic, especially in inpatient settings where prescription orders are more prone to errors. This can lead to greater patient care expenses, longer hospital stays, and higher mortality rates (Alanzi, 2023). The scoping review sought to extensively find and assess available literature on nurses' awareness of medication errors (MEs) in Saudi Arabia.

This review aimed to investigate the factors that influence nurses' knowledge and attitudes concerning MEs, evaluate their training and reporting methods, and discuss the consequences for patient safety and nursing education. By synthesizing available research, the evaluation sought to identify gaps in current understanding of nurses' involvement in the medication administration process and make recommendations for changing nursing practices and policies to improve overall patient safety.

Methodology

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Introduction

This scoping review uses Arksey and O'Malley's (2005) approach, as well as later methodological improvements, to systematically map the extant literature on Saudi nurses' awareness, views, and practices regarding medication errors (MEs). The scoping review design was chosen for its capacity to analyze the scope, breadth, and character of research on a certain issue. It facilitates the identification of knowledge gaps and informs future research paths in this critical field of healthcare.

Search Strategy

A comprehensive search method was developed to find relevant papers published in peer-reviewed journals. PubMed, CINAHL, Scopus, and Google Scholar were used to conduct a systematic search for papers. The search terms used included keywords related to "medication errors," "nurses," "awareness," "perceptions," and "Saudi Arabia." The Boolean operations AND/OR were used to construct a rigorous search query. The search phrase was written as follows: ("medication errors" OR "drug errors") AND ("nurses" OR "nursing staff") AND ("awareness, understanding, or perceptions") AND ("Saudi Arabia").

Inclusion Criteria

Specific inclusion criteria were used to identify the studies for this scoping review. First, the population of interest comprised research that only looked at registered nurses or nursing students in Saudi Arabia. Second, the result of interest requires that publications investigate the knowledge, awareness, perspectives, or practices associated with medication errors in the nursing environment. In addition, the study design included empirical investigations, such as quantitative, qualitative, and mixed-methods research published in peer-reviewed journals. The criteria also required that research be published in English or have English abstracts, and that the time span for publication be from 2022 to 2024.

Exclusion Criteria

To limit the scope of the review, numerous exclusion criteria were devised. The first criterion concerned the population; studies that did not directly include nurses or nursing professionals were eliminated. This included research aimed solely at other healthcare professionals, such as physicians. Furthermore, articles that did not address medication errors or lacked a clear link to nursing practices linked to drug administration were removed. Furthermore, non-empirical studies such as opinion articles, reviews, and editorials were eliminated from consideration, as were studies conducted outside of Saudi Arabia.

Selection process

The review search returned 80 results. After deleting duplicates, 60 studies remained. After evaluating the titles and abstracts, 40 studies were removed for not meeting the inclusion criteria. Thus, 20 studies were thoroughly examined to assess eligibility; 15 studies were excluded since they did not describe the original investigations. As a result, this systematic review comprised five studies (refer to the Results Chapter and Figure 1).

Data Extraction

A review search was conducted, with all titles and abstracts provided, inclusion and exclusion criteria applied, reasons for inclusion and removal indicated, and duplicates eliminated. A PRISMA flowchart was developed to show the four stages of the systematic review method. Figure 1 displays the steps of a systematic review. The characteristics of the included studies (n = 5) were gathered and reported in the results.

Result

According to the study, pharmaceutical errors are common in healthcare settings, particularly in hospital emergency rooms. The reasons of these errors are numerous and need investigation because of the devastating ramifications for both patients and healthcare organizations. The purpose of this study was to investigate nurses' opinions of medication errors in the emergency departments of Ministry of Health hospitals in Taif, Saudi Arabia. The research was conducted as a qualitative descriptive study from July 2022 to January 2023, and all nurses working in the emergency departments of Ministry of Health institutions in Taif city were requested to participate. The study involved 15 nurses from various emergency departments. The analysis revealed four major themes: the causes of medication errors, the reasons for underreporting of medication errors, factors that encourage nurses to document medication errors, and solutions for lowering the frequency of medication errors. These efforts included raising medication awareness, giving medications in the presence of a senior nurse, and expanding the number of nursing personnel (ALSubaei & Alkarani, 2023).

According to Alenezi, & Baker (2023), pharmaceutical errors are a significant cause of adverse outcomes, with knowledge, attitudes, and behavior (KAB) playing a role. Nurses, who play an important part in the medicine delivery process, are encouraged to be proactive in avoiding such errors. The study focuses on the comparison of mean KAB scores for medication errors with nurses' socio-demographic and professional factors. The study used a descriptive correlational approach and a cross-sectional survey to investigate the association between these variables. The findings revealed no significant difference in the mean ranks of knowledge scores across various characteristics; however, female nurses, non-Saudi nurses, those with intravenous drug administration education, and nurses over the age of 40 had significantly higher attitude and behavior scores toward medication errors. The study demonstrates that information influences attitude, as nurses who have a thorough grasp of medication errors are more likely to have good attitudes toward their patients, colleagues, and professional obligations. Furthermore, positive attitudes are linked to professional and ethical nursing practice (Alenezi & Baker, 2023).

A three-month cross-sectional study was undertaken in Saudi Arabia from July 1 to November 30, 2023, to analyze healthcare practitioners' awareness, attitudes, and practices regarding drug errors. The study comprised 329 randomly selected healthcare providers, including physicians, pharmacists, and nurses from various hospitals, primary health care centers, and private clinics throughout Saudi Arabia. Data was analyzed using Microsoft Excel. According to the findings, respondents had an average score of 77% for good knowledge concerning drug errors and 72% for good attitudes. Notably, 74% of respondents said they would notify their supervisor

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if they noticed a prescription error. However, impediments to reporting included fear of legal ramifications (41%), self-management (23%), being too busy (15%), and unsure who to notify (21%). Furthermore, less than half of the individuals (48%) had previously filled out an adverse drug reaction form. The study's conclusion underlines that, while Saudi healthcare workers have strong knowledge and positive attitudes concerning pharmaceutical errors, actual reporting of such errors is insufficient, indicating a major gap in total patient care quality (Alanzi, 2023).

In a descriptive cross-sectional research of nurses' perspectives on medication errors in the emergency department, 96 nurses completed a questionnaire that included demographic information, perceptions of error causes, reporting methods, and impediments. The average age of participants was 27.7 ± 3.4 years, with an average of 7.3 ± 1.9 years of experience. The majority (87.2%) were women, with 88.3% holding bachelor's degrees and 54.2 percent working fixed shifts. Notably, 46.8% of respondents reported experiencing pharmaceutical errors in the previous year, with the majority occurring only once (69.04%) and almost all (97.5%) reporting no problems from these errors. Infusion rate problems, double dosage, and medication omission were among the most commonly observed medication errors. While pharmaceutical errors were common, adverse effects were rare, occurring mostly during the prescribing or administration stages. The study emphasizes the necessity of encouraging nurses to disclose and promoting favorable responses from hospital administration in order to improve patient safety. Additionally, understanding recovery pathways might inform future actions targeted at reducing overall safety concerns in hospital settings (Ahmad et al., 2024).

A nationwide retrospective observational study analyzing medication errors reported to the General Department of Pharmaceutical Care database from March 2018 to June 2019 found a total of 71,332 errors, with physicians accounting for 88.5% of these incidents and pharmacists detecting the majority (75.9%). The study found that 84.8% of errors happened during the prescribing process, with only 5.8% reaching patients. Healthcare workers' job overload (31.6%) and lack of experience (22.7%) both played a role. The study emphasizes the importance of a no-blame culture and better education for healthcare staff in order to improve error reporting rates and ensure patient safety (Alshammari et al., 2022).

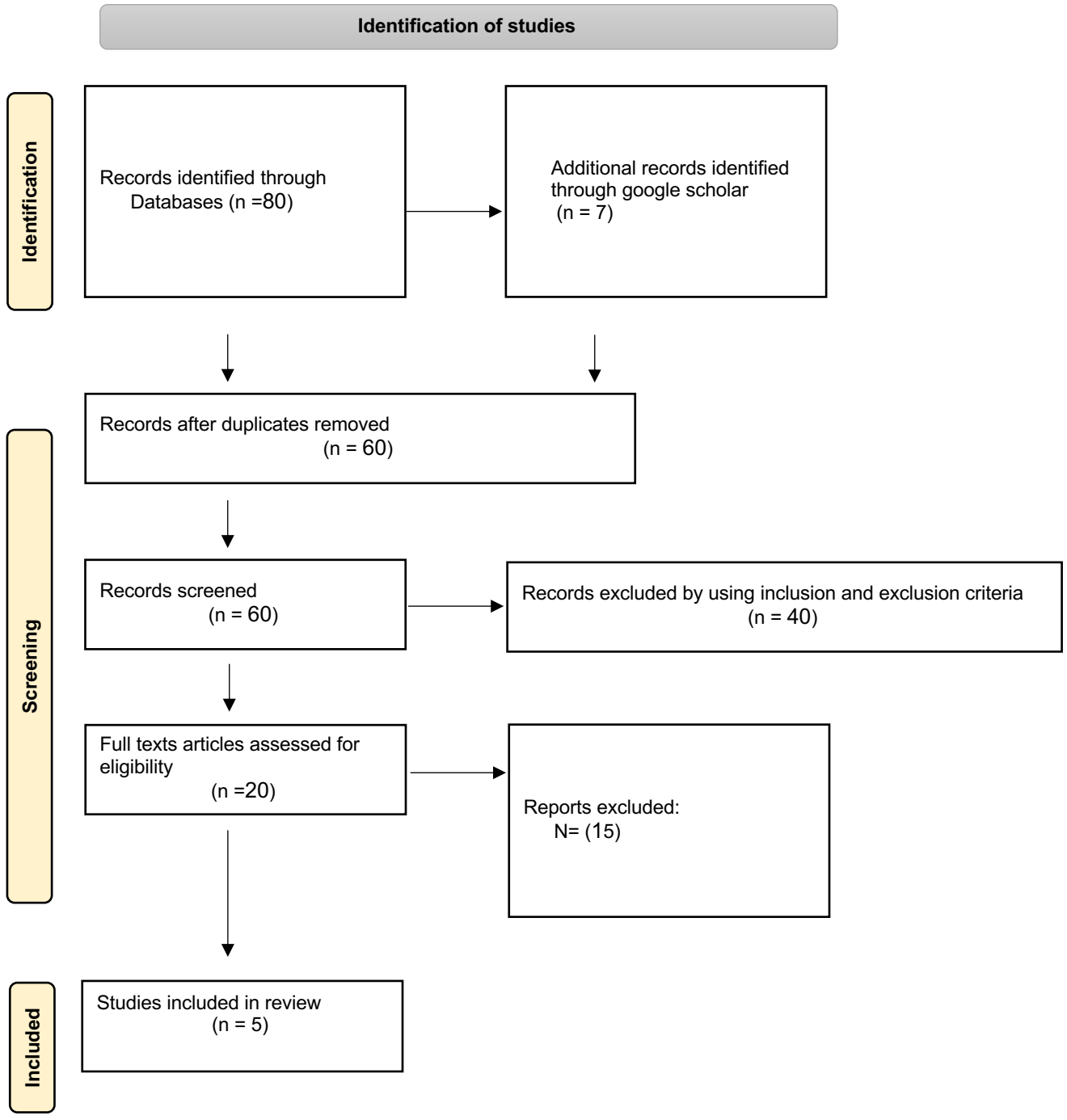

Fig. 1. PRISMA 2009 Flow Diagram

Discussion

The complicated and multifaceted issue of medication errors (MEs) in diverse healthcare settings necessitates a full study of the elements that influence nurses' knowledge, attitudes, training, and reporting behaviors. This debate draws on findings from many research undertaken

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not only in Saudi Arabia but also in other countries, highlighting both similarities and differences in the factors that contribute to MEs and the strategies required to reduce their frequency.

Several studies in Saudi Arabia, including the scoping review "Medication Errors Awareness Among Nurses in Saudi Arabia," highlight the importance of nurses' understanding and attitudes about medication errors in improving patient safety. ALSubaei and Alkarani (2023) recognized occupational stress, nurse shortages, and accountability issues as major contributors to the incidence of pharmacological errors in emergency rooms. Similarly, Alshammari et al. (2024) emphasized the importance of workload and inexperience, stating that 31.6% of errors were due to job overload, while 22.7% were due to a lack of knowledge. These findings highlight a significant systemic difficulty in the healthcare system that impedes effective medication management systems. Furthermore, all studies consistently advocate for a culture of error reporting and accountability, implying that a positive environment may contribute to better patient outcomes.

In contrast, data from the Ethiopian setting provide a distinct perspective. Wondmieneh et al. (2023) showed that 68.1% of nurses admitted to making drug administration errors in the previous year, citing insufficient training and a lack of acceptable medication administration standards. The Ethiopian study identified specific predictors of errors, such as interruptions during medicine administration and working night shifts, with less experienced nurses having a considerably higher risk of making errors. Such structural and contextual variables suggest that the circumstances surrounding nursing practice in Ethiopia demand targeted interventions that address both education and support resources.

While studies in Saudi Arabia and Ethiopia highlight the importance of training and environmental factors, Levine et al. (2020) provide a new layer by focusing on how corporate culture influences mistake reporting practices. This study found that, while acknowledging the importance of transparency and accountability in error reporting, nurses experienced significant challenges such as inadequate reporting methods and anticipated repercussions, resulting in a culture that inhibits open communication about errors. This data is consistent with Di Simone et al. (2018), who found a large knowledge gap among nurses about intravenous (IV) medicine delivery. Despite receiving fundamental knowledge in their training, only 15.6% of surveyed nurses felt their understanding was outstanding. The conclusions of this study are consistent with Saudi Arabia's findings indicating the need for comprehensive educational interventions designed to fill knowledge gaps and improve practical skills.

Moreover, Alenezi and Baker's (2023) investigation emphasized the necessity of educational interventions to reduce medication errors, highlighting that while demographics did not significantly differ in knowledge ratings, specific groups displayed more favorable attitudes toward medication administration. These findings support the Ethiopian study's statement that ongoing training and readily available guidelines are critical for improved practice. In both contexts, there is an evident need for targeted educational strategies that resonate with the demographic characteristics of the nursing workforce.

Interestingly, Alanzi (2023) brought attention to the disconnect between knowledge and the actual practice of reporting medication errors, revealing that although healthcare providers demonstrated a commendable level of knowledge (77%), structural barriers such as fear of repercussions significantly impeded effective reporting. The necessity of bridging this gap between theoretical knowledge and practical application underscores the complexity of fostering a culture of safety in healthcare.

The 2024 study by Ahmad et al. further supports the need for an environment conducive to error reporting. Despite only 46.8% of nurses reporting encounters with prescription errors, the emphasis on a blame-free culture underscores a vital consideration across all studies. A supportive atmosphere that encourages error reporting requires not just policies promoting accountability but also management willing to act on these reports for continuous improvement in patient safety.

In summary, the synthesis of these studies reveals that while nurses globally acknowledge the importance of knowledge and education in preventing medication errors, significant barriers remain rooted in structural, organizational, and psychological elements. The findings collectively advocate for multifaceted interventions that encompass systemic change, comprehensive training, supportive environments, and a cultural shift toward openness in reporting medication errors. As healthcare systems evolve, the commitment to improving nursing practices and ensuring patient safety remains paramount. Future research should aim to explore tailored, culturally relevant, and practice-oriented educational strategies that effectively bridge the gap between knowledge acquisition and application in real-world settings.

Conclusion

This review focused on the multiple elements that influence nurses' knowledge and attitudes about medication errors (MEs), as well as a critical assessment of their training and reporting techniques. It is clear that a thorough grasp of the complexity underlying MEs is essential for developing nursing practices and regulations that improve patient safety. The synthesis of available data found major gaps in understanding the intricacies of nurses' involvement in drug administration, particularly in terms of preparedness, training, and organizational support. These findings have far-reaching consequences, highlighting the critical need for comprehensive educational interventions that not only boost knowledge but also develop good attitudes and behaviors in medication management. Furthermore, the evaluation underlines the need of creating supportive work cultures that enable nursing staff to disclose errors and hold themselves accountable. By addressing these characteristics, healthcare institutions can foster a culture that prioritizes patient safety, ultimately leading to better outcomes.

Recommendations

Healthcare institutions should implement many essential recommendations to improve nurses' knowledge and attitudes toward medication errors (MEs), as well as patient safety. First, they should create thorough, obligatory pharmaceutical safety training programs that are routinely updated. Establishing strong error reporting mechanisms is critical to encouraging transparency and accountability among nursing staff, allowing them to learn from errors without fear of penalty. Furthermore, building supportive work cultures that address staffing issues and workload stress is

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critical in reducing errors. Implementing mentorship programs can help novice nurses improve their skills and confidence by pairing them with experienced staff. Finally, ongoing research should be encouraged to investigate cultural and organizational factors that influence medication errors, in order to establish evidence-based approaches to improve nursing education and patient safety. Adopting these measures can help healthcare organizations improve medication delivery practices and overall patient outcomes.

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