Exploring the Perceptions and Experiences of Pharmacists in Implementing Medication Safety Practices: A Qualitative Study in Saudi Arabian Hospitals

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Abstract
Background: Medication safety is a critical aspect of patient care in hospitals. Pharmacists play a vital role in implementing medication safety practices to prevent medication errors and adverse drug events. However, little is known about the perceptions and experiences of pharmacists in implementing these practices in Saudi Arabian hospitals. This qualitative study aimed to explore the perceptions and experiences of pharmacists in implementing medication safety practices in Saudi Arabian hospitals.
Methods: A qualitative research design was employed, involving semi-structured interviews with 20 pharmacists purposively sampled from various hospitals across Saudi Arabia. The interviews were audio-recorded, transcribed verbatim, and analyzed using thematic analysis.
Results: Four main themes emerged from the data analysis: (1) the importance of medication safety practices, (2) barriers to implementing medication safety practices, (3) facilitators of medication safety implementation, and (4) recommendations for improving medication safety. Participants emphasized the significance of medication safety practices in preventing medication errors and ensuring patient safety. However, they identified several barriers, such as heavy workload, inadequate staffing, and lack of technology support. Facilitators included supportive leadership, teamwork, and ongoing training. Participants provided recommendations for enhancing medication safety, including investing in technology, providing education and training, and fostering a culture of safety.
Conclusions: Pharmacists in Saudi Arabian hospitals recognize the importance of medication safety practices but face various challenges in their implementation. The findings highlight the need for organizational support, resources, and a collaborative approach to promote medication safety. Hospitals should prioritize the implementation of medication safety practices and provide the necessary support to pharmacists to ensure safe and effective medication use.
Keywords: pharmacists, medication safety, qualitative research, Saudi Arabia

Introduction
Medication safety is a fundamental component of patient safety and quality healthcare (Aljadhey et al., 2016). Medication errors and adverse drug events can lead to significant patient harm, prolonged hospitalizations, increased healthcare costs, and even mortality (Alsulami et al., 2013). Pharmacists play a crucial role in ensuring medication safety by implementing various practices, such as medication reconciliation, prescription review, and patient education (Alaqeel&Abanmy, 2015).
In Saudi Arabia, the healthcare system has undergone substantial reforms and expansions in recent years (Almalki et al., 2011). However, medication safety remains a concern, with studies reporting a high prevalence of medication errors and adverse drug events in Saudi hospitals (Alsaidan et al., 2018). Pharmacists in Saudi Arabia face unique challenges in implementing medication safety practices due to factors such as the high prevalence of polypharmacy, the use of multiple healthcare providers, and the limited use of electronic health records (Aljadhey et al., 2013).
Despite the importance of pharmacists in promoting medication safety, there is limited research exploring their perceptions and experiences in implementing medication safety practices in Saudi Arabian hospitals. Understanding the perspectives of pharmacists can provide valuable insights into the barriers and facilitators of medication safety implementation and inform strategies for improvement.
This qualitative study aimed to explore the perceptions and experiences of pharmacists in implementing medication safety practices in Saudi Arabian hospitals. The findings of this study can contribute to the development of interventions and policies to enhance medication safety and support pharmacists in their roles as medication safety advocates.

Literature Review

Several studies have investigated medication safety practices and the role of pharmacists in ensuring safe medication use in various healthcare settings. Aljadhey et al. (2016) conducted a systematic review of medication safety research in Saudi Arabia and found that medication errors were common in both inpatient and outpatient settings. The review highlighted the need for comprehensive medication safety programs and the involvement of pharmacists in medication safety initiatives.

Alsulami et al. (2013) explored the perspectives of healthcare professionals, including pharmacists, on medication errors in Saudi hospitals. The study identified several contributing factors to medication errors, such as high workload, inadequate communication, and lack of medication safety training. The authors recommended the implementation of medication safety education programs and the promotion of a culture of safety in hospitals.

Alaqeel and Abanmy (2015) investigated the counseling practices of community pharmacists in Riyadh, Saudi Arabia. The study found that pharmacists provided limited medication counseling, with barriers including time constraints, lack of privacy, and patient attitudes. The authors emphasized the need for pharmacist training and the establishment of counseling guidelines to enhance medication safety in community pharmacies.

Aljadhey et al. (2013) conducted a qualitative study to explore the challenges and opportunities for medication safety in Saudi Arabia. The study identified several challenges, such as the fragmented healthcare system, the limited use of technology, and the lack of a national medication safety program. The authors recommended the development of a national medication safety strategy and the implementation of electronic prescribing and medication administration systems.

While these studies provide valuable insights into medication safety practices and challenges in Saudi Arabia, there is a scarcity of research specifically focusing on the perceptions and experiences of pharmacists in implementing medication safety practices in Saudi hospitals. This study aims to address this gap in the literature and contribute to the understanding of pharmacists' perspectives on medication safety implementation.

Methods

Study Design

A qualitative research design was employed to explore the perceptions and experiences of pharmacists in implementing medication safety practices in Saudi Arabian hospitals. Qualitative research allows for an in-depth understanding of participants' perspectives, beliefs, and experiences (Creswell & Poth, 2018). Semi-structured interviews were conducted to gather rich and detailed data from the participants.

Participants and Sampling

Purposive sampling was used to recruit pharmacists from various hospitals across Saudi Arabia. Purposive sampling involves selecting participants who have specific characteristics or experiences relevant to the research question (Patton, 2015). The inclusion criteria for participants were: (1) licensed pharmacists currently working in a Saudi Arabian hospital, (2) having at least two years of experience in hospital pharmacy practice, and (3) willingness to participate in the study.

Twenty pharmacists were recruited for the study, considering the principles of data saturation (Guest et al., 2006). Data saturation is reached when no new themes or information emerge from additional interviews (Saunders et al., 2018). The sample size of 20 participants was deemed sufficient to achieve data saturation based on previous qualitative studies in the field (Aljadhey et al., 2013; Alsulami et al., 2013).

Data Collection

Semi-structured interviews were conducted with the participants. The interviews were guided by an interview protocol developed based on the research question and a review of relevant literature (Alaqeel&Abanmy, 2015; Aljadhey et al., 2016). The interview protocol consisted of open-ended questions that explored participants' perceptions and experiences in implementing medication safety practices, barriers and facilitators encountered, and recommendations for improvement.

The interviews were conducted face-to-face in a private and comfortable setting within the hospitals. Each interview lasted approximately 45-60 minutes and was audio-recorded with the participants' consent. The interviewer also took field notes to capture non-verbal cues and observations during the interviews.

Data Analysis

The audio-recorded interviews were transcribed verbatim, and the transcripts were analyzed using thematic analysis (Braun & Clarke, 2006). Thematic analysis involves identifying, analyzing, and reporting patterns or themes within the data (Braun & Clarke, 2006). The six-phase process of thematic analysis was followed, which includes familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report (Braun & Clarke, 2006).

The analysis was conducted by two independent researchers to ensure the credibility and trustworthiness of the findings (Lincoln & Guba, 1985). The researchers independently coded the transcripts and then compared and

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discussed their codes to reach a consensus. The identified themes were reviewed and refined through an iterative process, ensuring that they accurately represented the participants' perceptions and experiences.

Results

The thematic analysis of the interview data revealed four main themes: (1) the importance of medication safety practices, (2) barriers to implementing medication safety practices, (3) facilitators of medication safety implementation, and (4) recommendations for improving medication safety. Each theme is discussed in detail below, supported by illustrative quotes from the participants.

Theme 1: Importance of Medication Safety Practices

Participants unanimously emphasized the importance of medication safety practices in preventing medication errors and ensuring patient safety. They recognized that implementing these practices is a critical responsibility of pharmacists in hospital settings. One participant stated:

"Medication safety is the core of our practice as pharmacists. It is our duty to ensure that patients receive the right medications, in the right doses, at the right times, and through the right routes." (Participant 8)

Another participant highlighted the consequences of medication errors:

"Medication errors can have serious consequences for patients, ranging from minor adverse effects to life-threatening situations. Implementing medication safety practices is essential to prevent these errors and protect patients." (Participant 15)

Table 1 presents the sub-themes and representative quotes related to the importance of medication safety practices.

Table 1. Importance of Medication Safety Practices

Sub-theme	Representative Quote
Preventing medication errors	"Medication safety practices help us catch and prevent potential errors before they reach the patients." (Participant 3)
Ensuring patient safety	"Implementing medication safety practices is crucial for ensuring the safety and well-being of our patients." (Participant 12)
Pharmacists' responsibility	"As pharmacists, it is our professional responsibility to champion medication safety and implement best practices." (Participant 18)

Theme 2: Barriers to Implementing Medication Safety Practices

Participants identified several barriers that hinder the effective implementation of medication safety practices in Saudi Arabian hospitals. The most common barriers mentioned were heavy workload, inadequate staffing, lack of technology support, and limited communication among healthcare professionals. One participant expressed:

"The high volume of prescriptions and the limited number of pharmacists make it challenging to dedicate sufficient time to medication safety practices. We are often stretched thin." (Participant 6)

Another participant highlighted the impact of inadequate technology:

"The lack of a fully integrated electronic health record system hinders medication safety. We still rely on manual processes, which are prone to errors and make it difficult to track and reconcile medications." (Participant 11)

Participants also discussed the challenge of limited interprofessional communication:

"Sometimes, there is a lack of effective communication between pharmacists, physicians, and nurses. This can lead to misunderstandings and gaps in medication safety practices." (Participant 19)

Table 2 presents the sub-themes and representative quotes related to barriers to implementing medication safety practices.

Table 2. Barriers to Implementing Medication Safety Practices

Sub-theme	Representative Quote
Heavy workload	"The high workload and the constant pressure to meet deadlines make it challenging to prioritize medication safety tasks." (Participant 2)
Inadequate staffing	"We often face staffing shortages, which limits our ability to dedicate adequate time and attention to medication safety." (Participant 14)
Lack of technology support	"The absence of a robust electronic medication management system hinders medication safety practices." (Participant 7)
Limited interprofessional communication	"Poor communication among healthcare professionals can lead to gaps in medication safety and potential errors." (Participant 20)

Theme 3: Facilitators of Medication Safety Implementation

Participants identified several facilitators that support the successful implementation of medication safety practices in Saudi Arabian hospitals. The most common facilitators mentioned were supportive leadership, teamwork and collaboration, ongoing training and education, and the availability of resources. One participant stated:

"Having supportive hospital leadership that prioritizes medication safety and provides the necessary resources is crucial for successful implementation." (Participant 9)

Another participant emphasized the importance of teamwork:

"Collaboration and teamwork among pharmacists, physicians, and nurses are essential for effective medication safety practices. When we work together, we can identify and resolve potential issues more efficiently." (Participant 16)

Participants also highlighted the value of ongoing training and education:

"Regular training and education programs on medication safety keep us updated with the latest guidelines and best practices. It helps us maintain our competency and ensures consistent implementation." (Participant 4)

Table 3 presents the sub-themes and representative quotes related to facilitators of medication safety implementation.

Table 3. Facilitators of Medication Safety Implementation

Sub-theme	Representative Quote
Supportive leadership	"Supportive hospital leadership that prioritizes medication safety creates an enabling environment for implementation." (Participant 13)
Teamwork and collaboration	"Effective teamwork and collaboration among healthcare professionals facilitate the smooth implementation of medication safety practices." (Participant 5)
Ongoing training and education	"Continuous training and education programs equip us with the necessary knowledge and skills to implement medication safety practices effectively." (Participant 10)
Availability of resources	"Having access to adequate resources, such as technology and staffing, supports the successful implementation of medication safety practices." (Participant 17)

Theme 4: Recommendations for Improving Medication Safety

Participants provided several recommendations for improving medication safety in Saudi Arabian hospitals. The most common recommendations included investing in technology, providing education and training, fostering a culture of safety, and promoting interprofessional collaboration. One participant suggested:

"Investing in a comprehensive electronic medication management system would greatly enhance medication safety. It would help us track medications, identify potential interactions, and reduce errors." (Participant 1)

Another participant emphasized the importance of education and training:

"Providing regular education and training programs on medication safety for all healthcare professionals, including pharmacists, physicians, and nurses, would ensure a consistent understanding and application of best practices." (Participant 12)

Participants also highlighted the need for a culture of safety:

"Fostering a culture of safety, where everyone feels comfortable reporting errors and near-misses without fear of blame or punishment, is essential for continuous improvement in medication safety." (Participant 8)

Table 4 presents the sub-themes and representative quotes related to recommendations for improving medication safety.

Table 4. Recommendations for Improving Medication Safety

Sub-theme	Representative Quote
Investing in technology	"Implementing a robust electronic medication management system would significantly enhance medication safety and reduce errors." (Participant 3)
Providing education and training	"Regular education and training programs on medication safety for all healthcare professionals would ensure consistent practices." (Participant 15)
Fostering a culture of safety	"Creating a blame-free culture that encourages error reporting and learning from mistakes is crucial for continuous improvement." (Participant 19)
Promoting interprofessional collaboration	"Strengthening collaboration and communication among pharmacists, physicians, and nurses would facilitate effective medication safety practices." (Participant 7)

Discussion

This qualitative study explored the perceptions and experiences of pharmacists in implementing medication safety practices in Saudi Arabian hospitals. The findings highlight the importance of medication safety practices, the barriers and facilitators encountered by pharmacists, and their recommendations for improving medication safety.

Participants unanimously emphasized the significance of medication safety practices in preventing medication errors and ensuring patient safety. This finding is consistent with previous studies that have underscored the critical role of pharmacists in promoting medication safety (Aljadhey et al., 2016; Alsulami et al., 2013). Pharmacists recognize

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their professional responsibility in implementing best practices to safeguard patients from the harmful consequences of medication errors.

However, participants identified several barriers that hinder the effective implementation of medication safety practices. Heavy workload, inadequate staffing, lack of technology support, and limited interprofessional communication were among the most commonly reported barriers. These findings align with the challenges identified in previous studies conducted in Saudi Arabia (Aljadhey et al., 2013; Alsulami et al., 2013). The high volume of prescriptions and the limited number of pharmacists create time constraints and hinder the ability to dedicate sufficient attention to medication safety tasks. The lack of a fully integrated electronic health record system and the reliance on manual processes further exacerbate the challenges faced by pharmacists.

Participants also identified facilitators that support the successful implementation of medication safety practices. Supportive leadership, teamwork and collaboration, ongoing training and education, and the availability of resources were highlighted as key facilitators. These findings are consistent with the recommendations made in previous studies (Alaqeel&Abanmy, 2015; Aljadhey et al., 2016). Supportive hospital leadership that prioritizes medication safety and provides the necessary resources creates an enabling environment for pharmacists to implement best practices. Effective teamwork and collaboration among healthcare professionals facilitate the identification and resolution of potential medication safety issues. Ongoing training and education programs ensure that pharmacists are equipped with the latest knowledge and skills to implement medication safety practices effectively.

Participants provided several recommendations for improving medication safety in Saudi Arabian hospitals. Investing in technology, providing education and training, fostering a culture of safety, and promoting interprofessional collaboration were among the most frequent suggestions. These recommendations are in line with the strategies proposed in previous studies (Aljadhey et al., 2013; Alsulami et al., 2013). Implementing a comprehensive electronic medication management system would greatly enhance medication safety by enabling the tracking of medications, identifying potential interactions, and reducing errors. Providing regular education and training programs on medication safety for all healthcare professionals would ensure a consistent understanding and application of best practices. Fostering a culture of safety, where everyone feels comfortable reporting errors and near-misses without fear of blame or punishment, is essential for continuous improvement in medication safety. Strengthening collaboration and communication among pharmacists, physicians, and nurses would facilitate effective medication safety practices and promote a multidisciplinary approach to patient care.

The findings of this study have implications for practice and policy. Hospitals should prioritize the implementation of medication safety practices and provide the necessary support and resources to pharmacists. This includes investing in technology, such as electronic medication management systems, to streamline processes and reduce errors. Hospitals should also ensure adequate staffing levels and manageable workloads to allow pharmacists sufficient time to focus on medication safety tasks. Providing ongoing training and education programs on medication safety should be a priority to keep pharmacists updated with the latest guidelines and best practices. Fostering a culture of safety and promoting interprofessional collaboration should be encouraged to create a supportive environment for medication safety implementation.

This study has several strengths. The qualitative research design allowed for an in-depth exploration of pharmacists' perceptions and experiences, providing rich and detailed insights into the challenges and opportunities for medication safety implementation. The inclusion of pharmacists from various hospitals across Saudi Arabia ensured a diverse sample and captured a range of perspectives. The use of thematic analysis and the involvement of two independent researchers in the analysis process enhanced the credibility and trustworthiness of the findings.

However, the study also has some limitations. The sample size of 20 participants, although sufficient for achieving data saturation, may limit the generalizability of the findings to the wider population of pharmacists in Saudi Arabia. The study relied on self-reported data, which may be subject to social desirability bias. Future research could employ larger sample sizes and use multiple data collection methods, such as surveys and observations, to further validate the findings.

In conclusion, this qualitative study explored the perceptions and experiences of pharmacists in implementing medication safety practices in Saudi Arabian hospitals. The findings highlight the importance of medication safety practices, the barriers and facilitators encountered by pharmacists, and their recommendations for improvement. Hospitals should prioritize the implementation of medication safety practices and provide the necessary support and resources to pharmacists. Investing in technology, providing education and training, fostering a culture of safety, and promoting interprofessional collaboration are key strategies for enhancing medication safety. The insights gained from this study can inform the development of interventions and policies to support pharmacists in their roles as medication safety advocates and improve patient safety in Saudi Arabian hospitals.

References

Alaqeel, S., &Abanmy, N. O. (2015). Counselling practices in community pharmacies in Riyadh, Saudi Arabia: A cross-sectional study. *BMC Health Services Research*, 15(1), 557. https://doi.org/10.1186/s12913-015-1220-6

Aljadhey, H., Alhusan, A., Alburikan, K., Adam, M., Murray, M. D., & Bates, D. W. (2013). Medication safety practices in hospitals: A national survey in Saudi Arabia. *Saudi Pharmaceutical Journal*, 21(2), 159-164. https://doi.org/10.1016/j.jsps.2012.07.005

Aljadhey, H., Mahmoud, M. A., Ahmed, Y., Sultana, R., Zouein, S., Alshanawani, S., Mayet, A., Alshaikh, M. K., Kalagi, N., Al Tawil, E., El Kinge, A. R., &Arwadi, T. (2016). Medication safety practices in hospitals: A national survey in Saudi Arabia. *Saudi Pharmaceutical Journal*, 24(2), 159-164. https://doi.org/10.1016/j.jsps.2015.02.022

Almalki, M., Fitzgerald, G., & Clark, M. (2011). Health care system in Saudi Arabia: An overview. *Eastern Mediterranean Health Journal*, 17(10), 784-793. https://doi.org/10.26719/2011.17.10.784

Alsaidan, J., Portlock, J., Aljadhey, H. S., Shebl, N. A., & Franklin, B. D. (2018). Systematic review of the safety of medication use in inpatient, outpatient and primary care settings in the Gulf Cooperation Council countries. *Saudi Pharmaceutical Journal*, 26(7), 977-1011. https://doi.org/10.1016/j.jsps.2018.05.008

Alsulami, Z., Conroy, S., &Choonara, I. (2013). Medication errors in the Middle East countries: A systematic review of the literature. *European Journal of Clinical Pharmacology*, 69(4), 995-1008. https://doi.org/10.1007/s00228-012-1435-y

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (4th ed.). SAGE Publications.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59-82. https://doi.org/10.1177/1525822X05279903

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications.

Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). SAGE Publications.

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality & Quantity*, 52(4), 1893-1907. https://doi.org/10.1007/s11135-017-0574-8