

Exploring the Role of Pharmacy Technicians in Prescription Verification and Error Detection: A Qualitative Study in Hafr AL-Batin Hospitals Settings

Thamer Atiah Sbr Alanazi¹, Muna Salem A Alanazi², Manahil Mubarak Daghim Al-Dhafiri³, Bashayer Mubarak Daghim Al-Dhafiri⁴, Abdullah Aamer Abdullah Alaamer⁵, Hamoud Qushayan Badi Alharbi⁶,

¹ Pharmacy
²³⁴⁵⁶ Technician-Pharmacy,

Abstract

Objective: This qualitative study explored the role of pharmacy technicians in prescription verification and error detection in hospital pharmacies in Hafr AL-Batin, Saudi Arabia.

Methods: Semi-structured interviews were conducted with 20 pharmacy technicians working in various Hafr AL-Batin hospitals. Interviews were audio-recorded, transcribed verbatim, and analyzed using thematic analysis.

Results: Four main themes emerged: 1) Importance of pharmacy technicians in prescription verification; 2) Error detection strategies; 3) Barriers to effective verification; and 4) Suggestions for improvement. Technicians played a vital role in preventing errors from reaching patients. They utilized various strategies to detect errors, including double-checking, following protocols, and collaborating with pharmacists. However, high workload, time pressures, distractions, and limited training were perceived barriers. Participants suggested enhancing training, leveraging technology, and fostering a supportive work environment to optimize error detection.

Conclusion: Pharmacy technicians are essential in verifying prescriptions and detecting errors in Hafr AL-Batin hospitals. Implementing participants' recommendations could improve technicians' capacity to ensure medication safety. Further research should quantitatively examine the effectiveness of technicians' error detection and evaluate the impact of targeted interventions.

Keywords: pharmacy technicians, prescription verification, medication errors, hospital pharmacy, qualitative research

Introduction

Medication errors are a significant global patient safety concern, causing preventable harm and increasing healthcare costs (World Health Organization [WHO], 2017). In hospital pharmacies, prescription verification is a crucial defense against errors, ensuring medication orders are complete, accurate, and appropriate before dispensing. While pharmacists have traditionally been responsible for verifying prescriptions, their evolving roles and expanding workload have led to increased delegation of this task to pharmacy technicians (Desselle, 2020).

Pharmacy technicians play an increasingly important part in the medication dispensing process under pharmacist supervision. Many hospitals have broadened technicians' duties beyond traditional dispensing to include advanced roles like prescription verification, medication reconciliation, compounding, and inventory management (Koehler & Brown, 2017). However, there is limited research specifically examining technicians' role in verification and error detection, especially in Saudi Arabia.

Understanding pharmacy technicians' experiences and perspectives is essential for optimizing their contribution to patient safety. This qualitative study aimed to explore pharmacy technicians' role in prescription verification and error detection in hospital pharmacies in Hafr AL-Batin, Saudi Arabia. The objectives were to:

1. Describe pharmacy technicians' perceptions of their verification role and its importance
2. Identify strategies used by technicians to detect prescribing errors
3. Examine perceived barriers to effective prescription verification and error detection
4. Elicit suggestions for improving the prescription verification process

The findings will provide valuable insights to inform initiatives to enhance pharmacy technicians' error detection capabilities and create a more robust safety net for medication errors.

Literature Review

1.1 Medication Errors in Hospitals

Medication errors are a persistent challenge in hospital settings worldwide. In Middle Eastern countries, the prevalence of medication errors ranges from 7.1% to 90.5% across stages of the medication use process (Alsaidan et al., 2018). Errors can occur during prescribing, transcribing, dispensing, and administration, with prescribing and administration errors being most common (Alanazi et al., 2019).

Numerous factors contribute to hospital medication errors, including high workload, insufficient staffing, distractions, complex medication regimens, and communication breakdowns among healthcare professionals (Aldhwaihi et al., 2016). A systematic review found that dosing errors were the most frequent type of prescribing error, followed by incorrect drug selection and omitted medications (Lewis et al., 2009). These errors can lead to adverse drug events, prolonged hospital stays, increased costs, and even patient harm or death if not intercepted (WHO, 2016).



Figure 1 Medication Use Process and Stages Where Errors Can Occur

1.2 Role of Pharmacists in Medication Safety

Hospital pharmacists are uniquely positioned to promote medication safety due to their expertise in pharmacotherapy and central role in the medication use process. Pharmacists employ various strategies to prevent errors, such as reviewing medication orders, conducting medication reconciliation, checking for drug interactions and contraindications, and educating patients and healthcare providers (Eltorki et al., 2019).

Studies have demonstrated the positive impact of pharmacists' interventions on reducing medication errors and adverse drug events. For example, a systematic review found that pharmacist

participation in medication reconciliation reduced medication discrepancies by 66% at care transitions (Mekonnen et al., 2016). Another study in Saudi Arabia showed that pharmacist review of medication orders identified and prevented 594 prescribing errors over a 6-month period (Al-Arifi, 2014).

However, the expanding scope of pharmacists' responsibilities and increasing workload can limit their capacity to thoroughly verify every prescription (Irshaid et al., 2018). In a survey of hospital pharmacists in Saudi Arabia, 64.2% reported that workload was a major barrier to detecting and reporting medication errors (Al-Arifi, 2014). As pharmacists take on more clinical duties, they are increasingly relying on pharmacy technicians to support prescription verification and other technical tasks.

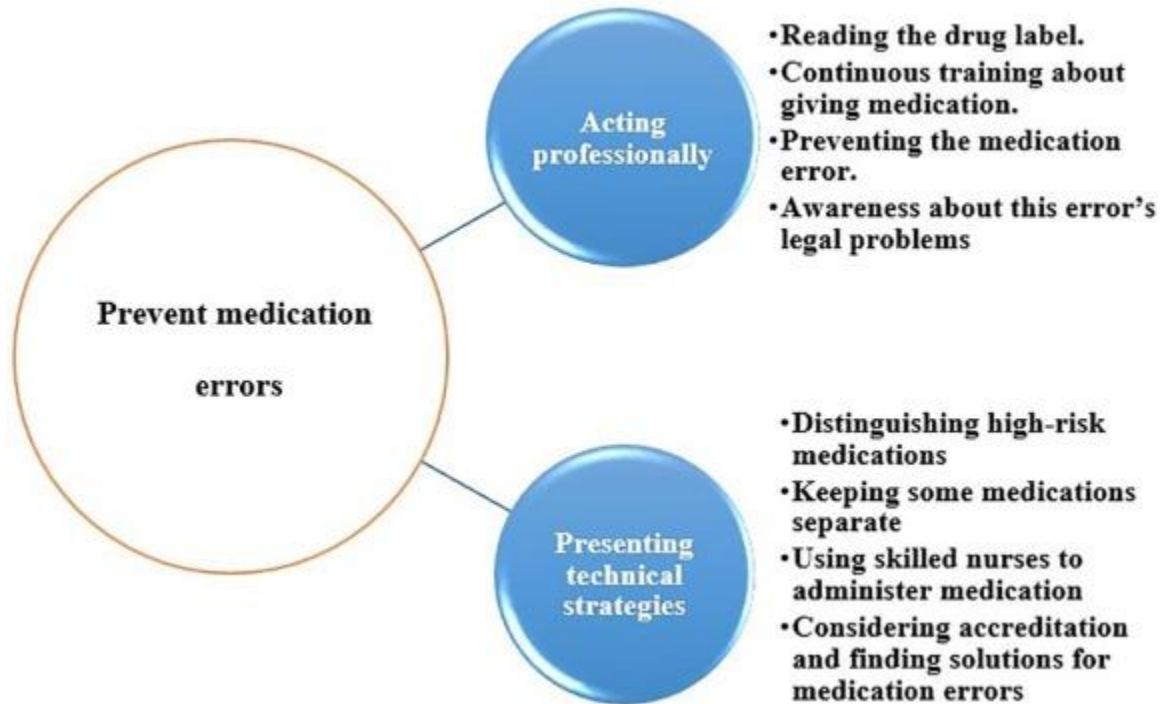


Figure 2 Pharmacists' Strategies for Preventing Medication Errors

1.3 Evolving Roles of Pharmacy Technicians

Historically, the primary function of pharmacy technicians was to assist pharmacists with medication dispensing. However, in recent years, the roles of technicians have expanded significantly to include more advanced responsibilities. In many hospital pharmacies, technicians now perform medication order entry, prepare compounded sterile products, manage inventory, assist with billing, provide patient education, and participate in quality improvement initiatives (Mattingly & Mattingly, 2018).

This role expansion allows pharmacists to focus on higher-level clinical tasks while optimizing pharmacy workflow and resources. A survey of pharmacy directors in United States hospitals found that 92.7% of respondents reported technicians performing duties beyond those required for basic dispensing (Frost & Adams, 2017). Technicians' involvement in medication reconciliation, a safety-critical process, has been shown to improve the accuracy and efficiency of medication histories compared to other healthcare providers (Markovic et al., 2017).

The broadening scope of pharmacy technicians' roles underscores the need to examine their involvement in prescription verification and error detection more closely. While some studies have investigated the accuracy of technician prescription verification (Ambrose et al., 2002; Ness et al.,

1994), most research has focused on pharmacists' perspectives and experiences. Exploring technicians' viewpoints can provide valuable insights into the realities and challenges they face in contributing to medication safety.

1.4 Pharmacy Technicians and Prescription Verification

Prescription verification is a vital step in the medication dispensing process, serving as a safeguard against errors. It involves reviewing prescriptions for completeness, accuracy, and appropriateness before medications are prepared and dispensed to patients. In many hospital pharmacies, technicians perform initial prescription verification under the supervision of pharmacists, who provide the final check before dispensing (Berdot et al., 2016).

Studies have investigated the accuracy of technician prescription verification with mixed results. One early study found that technicians detected 95.5% of prescribing errors in a sample of outpatient prescriptions, compared to 98.5% for pharmacists (Ness et al., 1994). However, a more recent study in a community pharmacy setting showed that technicians missed significantly more errors than pharmacists, particularly wrong drug errors (Ambrose et al., 2002).

Few studies have specifically examined technicians' role in prescription verification in hospital settings. A qualitative study in the United Kingdom found that technicians perceived their role in accuracy checking as important for maintaining patient safety, but identified barriers such as insufficient training, time pressures, and interruptions (James et al., 2013). Another study in Denmark found that technicians' ability to detect prescribing errors during medication order entry varied, highlighting the need for standardized training and competency assessment (Berdot et al., 2016).

The limited research on hospital pharmacy technicians' experiences with prescription verification and error detection underscores the need for further exploration. Understanding technicians' perspectives, strategies, and challenges can inform initiatives to optimize their contribution to medication safety and support their professional development.

Methods

2.1 Study Design

A qualitative descriptive design was employed to explore pharmacy technicians' experiences and perceptions regarding their role in prescription verification and error detection in Hafr AL-Batin hospital pharmacies. Qualitative description is a suitable approach when the aim is to obtain a straightforward, comprehensive summary of participant experiences related to a specific topic (Sandelowski, 2000). Semi-structured interviews were conducted to gather rich, detailed data directly from technicians. The study was reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines (Tong et al., 2007).

2.2 Setting and Participants

The study was conducted in hospital pharmacies in Hafr AL-Batin, Saudi Arabia. A purposive sampling strategy was used to recruit pharmacy technicians with experience in prescription verification and dispensing. Inclusion criteria were: 1) licensed pharmacy technician, 2) working in a Hafr AL-Batin hospital pharmacy for at least 1 year, and 3) actively involved in prescription verification. Technicians working in outpatient or community pharmacies were excluded.

Recruitment occurred through collaboration with hospital pharmacy managers, who shared study information with eligible technicians. Interested individuals contacted the researchers to schedule interviews. Sampling continued until data saturation was reached, meaning no new themes emerged from interviews. The final sample size was 20 participants.

2.3 Data Collection

Semi-structured interviews were conducted between June and August 2023 by two trained researchers (TA and MA). The interviews were guided by an interview guide (Table 1) developed based on a literature review and study objectives. The guide was pilot-tested with two technicians and refined prior to data collection.

Interviews were conducted in Arabic in a private room at each participant's workplace. Participants provided written informed consent prior to the interviews. The interviews were audio-recorded and lasted 30-60 minutes. Researchers took field notes on nonverbal cues and initial impressions. Participants also completed a brief demographic survey.

2.4 Data Analysis

Interview recordings were transcribed verbatim in Arabic and translated into English by a professional translator. Transcripts were checked against the recordings for accuracy. Data were analyzed using inductive thematic analysis, a flexible approach for identifying, analyzing, and reporting patterns within qualitative data (Braun & Clarke, 2006).

Two researchers (MA and MM) independently coded the transcripts line by line, generating initial codes. They then met to compare codes, resolve discrepancies, and organize codes into potential themes and subthemes. Themes were reviewed and refined through discussion with the full research team until consensus was reached. Data management and coding were facilitated by NVivo 12 software.

Several strategies were employed to ensure trustworthiness. Prolonged engagement, careful record-keeping, and thick descriptions of themes enhanced credibility. Purposive sampling and detailed reporting of methods and participant characteristics supported transferability. A coding framework and codebook were maintained to ensure dependability. Researcher triangulation and reflexivity promoted confirmability.

Results

3.1 Participant Characteristics

The 20 participants included 11 female and 9 male technicians, with a mean age of 34.5 years (range: 25-48 years). Most had a diploma in pharmacy technology (n=16), while 4 had a bachelor's degree. Participants had worked as technicians for an average of 8.3 years (range: 3-17 years). Seventeen worked in inpatient pharmacies and 3 in emergency department pharmacies.

3.2 Theme 1: Importance of Pharmacy Technicians in Prescription Verification

All participants emphasized the vital role of pharmacy technicians in the prescription verification process. They described themselves as the "first line of defense" (P3) and "gatekeepers" (P11) against medication errors. One technician shared:

"We are the eyes of the pharmacists. We carefully check each prescription before it reaches them. Our role is crucial in catching errors early before they harm patients." (P7)

Subthemes highlighted the specific contributions of technicians. First, technicians were seen as detail-oriented and meticulous in reviewing prescriptions. They checked for completeness, accuracy, and appropriateness of medication orders. Second, technicians played a key role in detecting prescribing errors, including incorrect doses, frequencies, routes, and formulations. Third, technicians served as a bridge between prescribers and pharmacists, clarifying orders and facilitating communication.

Participants took pride in their verification responsibilities and believed their contributions were essential for patient safety. They felt a strong sense of responsibility and accountability. One technician described:

"Checking prescriptions is not just a task for us. It's a moral obligation. We are responsible for protecting patients from harm. Even one mistake is too many." (P15)

3.3 Theme 2: Error Detection Strategies

Participants reported using various strategies to detect prescribing errors during verification. The most common strategies were double-checking, referring to references, following standardized procedures, and collaborating with pharmacists and prescribers.

Double-checking was a universal practice among technicians. They carefully reviewed each element of the prescription, including patient information, drug name, dose, route, frequency, and quantity. Some created their own checklists to ensure thoroughness. One technician noted:

"I always double-check, even triple-check, every prescription. I read it out loud to myself. I check the patient's age, weight, allergies. I make sure the dose makes sense. It takes time, but it's worth it for patient safety." (P9)

Technicians frequently consulted drug references, including electronic databases, drug information handbooks, and protocols. They checked for appropriate indications, contraindications, interactions, and dose ranges. One participant shared:

"If I'm not sure about a medication or dose, I don't hesitate to look it up. We have access to online resources and our drug information center. It's better to take a few extra minutes to verify than to let an error slip through." (P13)

Adhering to standardized verification procedures was seen as important for consistency and error prevention. Technicians followed hospital policies and used technology, such as barcode scanning and computerized order entry, to enhance accuracy. However, some felt that overreliance on technology could lead to complacency.

Collaboration with pharmacists and prescribers was key for resolving discrepancies and clarifying orders. Technicians felt comfortable asking questions and raising concerns. They appreciated when pharmacists took the time to explain clinical reasoning and provide feedback. One technician emphasized:

"We have a good relationship with our pharmacists. They trust us to bring issues to their attention. We work together as a team to ensure accuracy and safety." (P17)

3.4 Theme 3: Barriers to Effective Prescription Verification

Participants identified several barriers that hindered their ability to effectively verify prescriptions and detect errors. The most prominent barriers were high workload, time pressures, interruptions and distractions, and knowledge gaps.

High prescription volume and insufficient staffing were common challenges. Technicians often felt overwhelmed by the number of orders to verify, especially during peak hours. They struggled to balance speed and accuracy. One technician lamented:

"Sometimes it feels like an assembly line. We're expected to check hundreds of prescriptions per shift while answering phones, stocking, and helping customers. It's mentally and physically draining." (P4)

Time pressures were closely linked to workload. Technicians reported feeling rushed to verify prescriptions quickly to avoid delaying medication administration and discharge. Some worried that the focus on efficiency could compromise safety. One participant admitted:

"When we're short-staffed and the workload is high, it's tempting to cut corners. I try my best to stay focused, but I know I'm not always as thorough as I should be." (P19)

Frequent interruptions and distractions were other barriers. Technicians were often pulled away from verification tasks to answer phone calls, resolve insurance issues, and assist with other duties. The lack of a dedicated, quiet workspace made it difficult to concentrate. One technician shared:

"It's hard to stay focused when you're constantly interrupted. You lose your train of thought and have to start over. It's frustrating and increases the risk of missing something." (P6)

Participants also identified knowledge gaps as a challenge, particularly for less experienced technicians. They desired more training on pharmacotherapy, drug interactions, and error-prone medications. Some felt that continuing education opportunities were limited. One technician suggested:

"We need more hands-on training, not just online modules. It would be helpful to have case studies and interactive exercises to improve our skills in identifying errors." (P14)

3.5 Theme 4: Suggestions for Improvement

Participants offered several suggestions for optimizing the prescription verification process and enhancing error detection. The most common recommendations were providing additional training, leveraging technology, improving communication, and fostering a supportive work environment.

Technicians emphasized the need for targeted training on error prevention strategies, high-alert medications, and common error types. They wanted opportunities to learn from pharmacists and engage in interprofessional education. One participant proposed:

"We should have regular in-services and workshops on medication safety. It would be great to have pharmacists walk us through case examples and give us feedback on our verification techniques." (P8)

Participants believed that technology could be better leveraged to support verification. They suggested implementing more advanced clinical decision support systems, automated error alerts, and barcode scanning at each stage of dispensing. However, they cautioned against overreliance on technology. One technician explained:

"Technology is a tool, not a substitute for critical thinking. We still need to use our knowledge and judgment. But having systems in place to flag potential errors can definitely help us catch things we might miss." (P20)

Improving communication and collaboration among healthcare team members was seen as essential. Technicians wanted clearer, more standardized prescription orders from physicians. They also desired more opportunities to discuss errors and near misses with pharmacists and prescribers in a blame-free environment. One participant suggested:

"We should have regular meetings with physicians and pharmacists to discuss medication safety issues. It would help us understand each other's perspectives and work together to prevent errors." (P12)

Finally, technicians emphasized the importance of a supportive work environment that prioritizes patient safety. They wanted adequate staffing, realistic workload expectations, and dedicated time for prescription verification. They also desired a culture that encourages error reporting and learning from mistakes. One technician shared:

"We need to feel supported and valued in our role. When we're understaffed and overworked, it's hard to focus on safety. We should be empowered to speak up about errors without fear of punishment. Everyone makes mistakes, but we can learn from them and make the system safer." (P1)

Discussion

This qualitative study provided valuable insights into the role of pharmacy technicians in prescription verification and error detection in Hafr AL-Batin hospitals. The findings highlight the critical contributions of technicians, the strategies they use to identify errors, the challenges they face, and potential areas for improvement.

Participants strongly believed that their verification role was essential for patient safety, describing themselves as the "first line of defense" against medication errors. This finding is consistent with previous studies that have recognized the vital role of technicians in the medication use process (Desselle, 2016; Manias et al., 2014). However, our study is unique in exploring technicians' specific contributions to error detection in hospital settings.

Technicians reported using a variety of error detection strategies, including double-checking, consulting references, following protocols, and collaborating with pharmacists and prescribers. These strategies align with best practices for medication safety recommended by professional organizations (ASHP, 2018; ISMP, 2017). Double-checking, in particular, has been shown to reduce errors in medication dispensing (Douglass et al., 2018). However, our findings suggest that the effectiveness of these strategies may be hindered by workload, time pressures, and distractions. High prescription volume, insufficient staffing, and interruptions were identified as major barriers to effective prescription verification. These findings echo concerns raised in previous studies about the impact of workload and distractions on medication safety (Aldhwaihi et al., 2016; Balka et al., 2018). When technicians are overburdened and rushed, they may be more likely to overlook errors or take shortcuts in verification procedures. This underscores the need for adequate staffing and workload management to support safe medication practices.

Knowledge gaps, particularly among less experienced technicians, were another challenge. Participants desired more training on pharmacotherapy, drug interactions, and error-prone medications. This finding is consistent with research showing that technicians' knowledge and confidence in identifying medication errors vary (Berdot et al., 2016; James et al., 2013). Investing in technician education and professional development may enhance their error detection abilities and improve medication safety.

Participants offered several recommendations for optimizing prescription verification and error detection, including targeted training, technology enhancements, improved communication, and a supportive work environment. These suggestions align with best practices and quality improvement initiatives in medication safety (ASHP, 2018; Mansour et al., 2017). Implementing these changes could create a more robust safety net for identifying and intercepting errors.

However, it is important to recognize that technicians are just one part of a larger system for ensuring medication safety. While enhancing their error detection capabilities is important, it is not a substitute for other critical safeguards, such as pharmacist verification, clinical decision support systems, and prescriber education. A holistic, multi-pronged approach to medication error prevention is needed.

This study has several strengths, including the use of rigorous qualitative methods, the inclusion of technicians from multiple hospitals, and the attainment of data saturation. However, there are also limitations. The study was conducted in a single region of Saudi Arabia, which may limit generalizability to other settings. Additionally, the findings are based on self-reported experiences and perceptions, which may be subject to recall bias or social desirability bias.

Despite these limitations, this study makes important contributions to the limited literature on pharmacy technicians' role in medication safety. The findings can inform the development of targeted interventions and quality improvement initiatives to optimize technicians' error detection capabilities and create a safer medication use process.

Future research should build on these findings by quantitatively examining the effectiveness of technician verification and error detection in hospital settings. Studies should also evaluate the impact of specific interventions, such as enhanced training programs or technology implementations, on technician performance and patient safety outcomes. Additionally, exploring

the perspectives of pharmacists, prescribers, and patients could provide a more comprehensive understanding of the medication safety system.

In conclusion, this qualitative study highlighted the vital role of pharmacy technicians in prescription verification and error detection in Hafr AL-Batin hospitals. Technicians use various strategies to identify errors, but face challenges related to high workload, time pressures, distractions, and knowledge gaps. Implementing participants' suggestions for targeted training, technology enhancements, improved communication, and a supportive work environment could optimize technicians' contributions to medication safety. However, a holistic approach involving all healthcare team members is needed to create a robust system for error prevention. Further research should quantitatively examine the effectiveness of technician verification and evaluate the impact of targeted interventions on patient safety outcomes.

References

- Alanazi, M. A., Tully, M. P., & Lewis, P. J. (2019). A systematic review of the prevalence and incidence of prescribing errors with high-risk medicines in hospitals. *Journal of Clinical Pharmacy and Therapeutics*, 44(2), 163-173. <https://doi.org/10.1111/jcpt.12781>
- Aldhwaihi, K., Schifano, F., Pezsolesi, C., & Umaru, N. (2016). A systematic review of the nature of dispensing errors in hospital pharmacies. *Integrated Pharmacy Research & Practice*, 5, 1-10. <https://doi.org/10.2147/IPRP.S95733>
- 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>
- Ambrose, P. J., Saya, F. G., Lovett, L. T., Tan, S., Adams, D. W., & Shane, R. (2002). Evaluating the accuracy of technicians and pharmacists in checking unit dose medication cassettes. *American Journal of Health-System Pharmacy*, 59(12), 1183-1188. <https://doi.org/10.1093/ajhp/59.12.1183>
- American Society of Health-System Pharmacists (ASHP). (2018). ASHP guidelines on preventing medication errors in hospitals. *American Journal of Health-System Pharmacy*, 75(19), 1493-1517. <https://doi.org/10.2146/ajhp170811>
- Balka, E., Wiley, S., Amiri, L., & Davison, C. M. (2018). The human factors related challenges of working in a pharmacy described by technicians. *Canadian Pharmacists Journal*, 151(6), 361-368. <https://doi.org/10.1177/1715163518798190>
- Berdot, S., Sabatier, B., Gillaizeau, F., Caruba, T., Prognon, P., & Durieux, P. (2016). Evaluation of drug administration errors in a teaching hospital. *BMC Health Services Research*, 16, 60. <https://doi.org/10.1186/s12913-016-1304-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>
- Desselle, S. P. (2016). An in-depth examination into pharmacy technician worklife through an organizational behavior framework. *Research in Social and Administrative Pharmacy*, 12(5), 722-732. <https://doi.org/10.1016/j.sapharm.2015.10.002>
- Desselle, S. P. (2020). Pharmacy technicians' roles in medication safety: From essential functions to expanded responsibilities. *Journal of the American Pharmacists Association*, 60(5), 646-650. <https://doi.org/10.1016/j.japh.2020.02.012>
- Douglass, A. M., Elder, J., Watson, R., Kallay, T., Kirsh, D., Robb, W. G., Kaji, A. H., & Coil, C. J. (2018). A randomized controlled trial on the effect of a double check on the detection of medication errors. *Annals of Emergency Medicine*, 71(1), 74-82.e1. <https://doi.org/10.1016/j.annemergmed.2017.03.022>

- Eltorki, Y., Abdallah, O., Omar, N., & Zolezzi, M. (2019). Perceptions and expectations of health care providers towards clinical pharmacy services in a mental health hospital in Qatar. *Asian Journal of Psychiatry*, 42, 62-66. <https://doi.org/10.1016/j.ajp.2019.03.018>
- Frost, T. P., & Adams, A. J. (2017). Tech-check-tech in community pharmacy practice settings. *Journal of Pharmacy Technology*, 33(2), 47-52. <https://doi.org/10.1177/8755122516683519>
- Institute for Safe Medication Practices (ISMP). (2017). ISMPs guidelines for safe preparation of compounded sterile preparations. *Institute for Safe Medication Practices*. <https://www.ismp.org/guidelines/sterile-compounding>
- Irshaid, Y. M., Alzu'bi, Z. M. F., Abuirmeileh, A., & Alrawashdeh, H. M. (2018). Competency of hospital pharmacists in Jordanian public hospitals: A cross-sectional study. *Pharmacy*, 6(4), 116. <https://doi.org/10.3390/pharmacy6040116>
- James, K. L., Barlow, D., Bithell, A., Hiom, S., Lord, S., Pollard, M., Roberts, D., Way, C., & Whittlesea, C. (2013). The impact of automation on workload and dispensing errors in a hospital pharmacy. *International Journal of Pharmacy Practice*, 21(2), 92-104. <https://doi.org/10.1111/j.2042-7174.2012.00238.x>
- Koehler, T., & Brown, A. (2017). Documenting the evolution of the relationship between the pharmacy support workforce and pharmacists to support patient care. *Research in Social and Administrative Pharmacy*, 13(2), 280-285. <https://doi.org/10.1016/j.sapharm.2016.10.012>
- Manias, E., Aitken, R., & Dunning, T. (2004). How graduate nurses use protocols to manage patients' medications. *Journal of Clinical Nursing*, 14(8), 935-944. <https://doi.org/10.1111/j.1365-2702.2005.01212.x>
- Mansour, H., Harrison, C., & Sullivan, M. P. (2017). Comprehensive pharmacist medication workup. *Journal of the American Pharmacists Association*, 57(3), 351-354. <https://doi.org/10.1016/j.japh.2016.11.002>
- Markovic, M., Mathis, A. S., Ghin, H. L., Gardiner, M., & Fahim, G. (2017). A comparison of medication histories obtained by a pharmacy technician versus nurses in the emergency department. *P & T: A Peer-Reviewed Journal for Formulary Management*, 42(1), 41-46. <https://pubmed.ncbi.nlm.nih.gov/28090122/>
- Mattingly, A. N., & Mattingly, T. J., 2nd (2018). Advancing the role of the pharmacy technician: A systematic review. *Journal of the American Pharmacists Association*, 58(1), 94-108.e6. <https://doi.org/10.1016/j.japh.2017.10.015>
- Mekonnen, A. B., McLachlan, A. J., & Brien, J. E. (2016). Effectiveness of pharmacist-led medication reconciliation programmes on clinical outcomes at hospital transitions: A systematic review and meta-analysis. *BMJ Open*, 6(2), e010003. <https://doi.org/10.1136/bmjopen-2015-010003>
- Ness, J. E., Sullivan, S. D., & Stergachis, A. (1994). Accuracy of technicians and pharmacists in identifying dispensing errors. *American Journal of Hospital Pharmacy*, 51(3), 354-357. <https://doi.org/10.1093/ajhp/51.3.354>
- Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health*, 23(4), 334-340. [https://doi.org/10.1002/1098-240X\(200008\)23:4%3C334::AID-NUR9%3E3.0.CO;2-G](https://doi.org/10.1002/1098-240X(200008)23:4%3C334::AID-NUR9%3E3.0.CO;2-G)
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349-357. <https://doi.org/10.1093/intqhc/mzm042>
- World Health Organization (WHO). (2016). Medication errors: Technical series on safer primary care. *World Health Organization*. <https://apps.who.int/iris/bitstream/handle/10665/252274/9789241511643-eng.pdf>
- World Health Organization (WHO). (2017). Medication without harm - Global patient safety challenge on medication safety. *World Health Organization*. <https://www.who.int/initiatives/medication-without-harm>

Appendix

Table 1. Semi-structured Interview Guide

Topic	Questions
Error detection role and importance	How would you describe your role in prescription verification and error detection? How important do you think your role is for patient safety? Why?
Error detection strategies	What strategies do you use to detect prescribing errors during verification? Can you walk me through your verification process step-by-step?
Barriers to effective verification	What challenges or barriers do you face in effectively verifying prescriptions? How do factors like workload, distractions, or knowledge gaps impact your ability to detect errors?
Suggestions for improvement	What suggestions do you have for improving the prescription verification process? What resources, training, or technology would help you better detect and prevent errors?

Table 2. Participant Characteristics (N=20)

Characteristic	n (%)
Gender	
Female	11 (55.0%)
Male	9 (45.0%)
Education	
Diploma	16 (80.0%)
Bachelor's degree	4 (20.0%)
Work setting	
Inpatient pharmacy	17 (85.0%)
Emergency department	3 (15.0%)
	Mean (SD)
Age (years)	34.5 (6.8)
Experience as technician (years)	8.3 (4.2)

Table 3. Themes and Subthemes

Theme	Subthemes
1. Importance of pharmacy technicians in verification	- Detail-oriented and meticulous review
	- Detection of prescribing errors
	- Bridge between prescribers and pharmacists
2. Error detection strategies	- Double-checking
	- Referring to references
	- Following standardized procedures
3. Barriers to effective prescription verification	- Collaborating with pharmacists and prescribers
	- High workload and time pressures
	- Interruptions and distractions
4. Suggestions for improvement	- Knowledge gaps
	- Additional training
	- Leveraging technology
	- Improving communication
	- Fostering a supportive work environment