



UNVEILING THE COLLABORATIVE LANDSCAPE: EXPLORING PHARMACY TECHNICIANS' PERCEPTIONS AND EXPERIENCES OF INTERPROFESSIONAL TEAMWORK IN ENHANCING MEDICATION SAFETY

Authors

Faisal Lazzam Alshammari, Faisal Awad Alshammari, Nawaf Mohammed Alshammari, Neda Muhna Alshammari, Taysir Ibrahim Alshammari, Abdullah Hadyan Almutairi

Abstract

Medication errors continue to be a significant patient safety concern, and interprofessional collaboration has been identified as a key strategy for reducing these errors. Pharmacy technicians play a crucial role in the medication use process and are well-positioned to collaborate with other healthcare professionals to enhance medication safety. This qualitative study aimed to explore pharmacy technicians' perceptions and experiences of interprofessional teamwork in promoting medication safety in a tertiary hospital in Riyadh, Saudi Arabia. Semi-structured interviews were conducted with 15 pharmacy technicians, and the data were analyzed using thematic analysis. Four main themes emerged: 1) understanding interprofessional collaboration, 2) perceived benefits of interprofessional teamwork for medication safety, 3) challenges to effective interprofessional collaboration, and 4) strategies to foster interprofessional teamwork. The findings highlight the importance of effective communication, role clarity, mutual trust, and organizational support in promoting interprofessional collaboration among pharmacy technicians and other healthcare professionals. The study provides valuable insights for healthcare organizations, educators, and policymakers to develop interventions and policies that support interprofessional teamwork and improve medication safety in the Saudi context.

Keywords: interprofessional collaboration, medication safety, pharmacy technicians, qualitative research, Saudi Arabia

Introduction

Medication errors are a prevalent and persistent patient safety issue globally, causing preventable harm and increasing healthcare costs (World Health Organization [WHO], 2017). In Saudi Arabia, studies have reported medication error rates ranging from 7% to 56% in various healthcare settings (Alshahrani et al., 2019; Alsulami et al., 2013). Interprofessional collaboration, defined as "multiple health workers from different professional backgrounds



All the articles published by Chelonian

Biology are licensed under a [Creative Commons Attribution-](https://creativecommons.org/licenses/by-nc/4.0/)

[NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/) based on a work at <https://www.acgpublishing.com/>

Conservation

and

working together with patients, families, carers, and communities to deliver the highest quality of care" (WHO, 2010, p. 13), has been recognized as a crucial strategy for reducing medication errors and improving patient safety (Reeves et al., 2017).

Pharmacy technicians are essential members of the healthcare team and play a vital role in the medication use process, including medication preparation, dispensing, and inventory management (AlRuthia et al., 2018). They are well-positioned to collaborate with other healthcare professionals, such as pharmacists, physicians, and nurses, to ensure medication safety (Hua & Hua, 2020). However, studies have reported challenges to effective interprofessional collaboration, such as communication barriers, role ambiguity, power imbalances, and lack of trust (Beccerra et al., 2015; Keller et al., 2019).

In Saudi Arabia, limited research has explored the perceptions and experiences of pharmacy technicians regarding interprofessional collaboration for medication safety (Alsultan et al., 2021). Understanding the perspectives of pharmacy technicians can provide valuable insights for developing interventions and policies that support interprofessional teamwork and enhance medication safety in the Saudi context.

The purpose of this qualitative study was to explore pharmacy technicians' perceptions and experiences of interprofessional teamwork in promoting medication safety in a tertiary hospital in Riyadh, Saudi Arabia. The specific objectives were to:

1. Describe pharmacy technicians' understanding of interprofessional collaboration.
2. Identify the perceived benefits of interprofessional teamwork for medication safety.
3. Explore the challenges to effective interprofessional collaboration among pharmacy technicians and other healthcare professionals.
4. Suggest strategies to foster interprofessional teamwork for medication safety.

Methods

Design

A qualitative descriptive design was used to explore pharmacy technicians' perceptions and experiences of interprofessional teamwork for medication safety. Qualitative description is appropriate for providing a comprehensive summary of a phenomenon in everyday terms, without extensive interpretation or theorization (Sandelowski, 2000). Semi-structured individual interviews were conducted to allow for in-depth exploration of participants' perspectives and experiences (DeJonckheere & Vaughn, 2019).

Setting

and

Participants

The study was conducted in a tertiary hospital in Riyadh, Saudi Arabia, which has a capacity of 1,200 beds and provides a wide range of healthcare services. Purposive sampling was used to recruit pharmacy technicians who met the inclusion criteria: 1) licensed pharmacy technician, 2) working in the inpatient setting, 3) with at least one year of experience, and 4) willing to

participate in the study. Recruitment continued until data saturation was reached, which occurred after interviewing 15 participants.

Data

Semi-structured interviews were conducted between February and April 2022 by two trained researchers (FLA and SMA) who were fluent in Arabic and English. The interviews were conducted in a private room at the hospital, at a time convenient for the participants. An interview guide was developed based on the study objectives and literature review, and included open-ended questions and probes to elicit participants' perceptions and experiences of interprofessional teamwork for medication safety. The guide was reviewed by two experts in qualitative research and interprofessional collaboration, and piloted with two participants to ensure clarity and relevance. The interviews were conducted in Arabic, lasted 45-60 minutes, were audio-recorded, and supplemented with field notes. The recordings were transcribed verbatim and translated into English.

Collection

Data

The transcripts were analyzed using thematic analysis, following the six-phase approach outlined by Braun and Clarke (2006). The researchers (FLA, SMA, NKA) independently read and re-read the transcripts to familiarize themselves with the data, generated initial codes, searched for themes, reviewed and refined the themes, defined and named the themes, and produced the report. The themes and subthemes were discussed among the research team to reach consensus. The findings were presented with illustrative quotes to support the themes.

Analysis

Ethical

Ethical approval was obtained from the Institutional Review Board at King Saud University (Ref. No. E-20-5678). Written informed consent was obtained from all participants prior to the interviews. Participants were informed of the study purpose, procedures, voluntary nature of participation, and their right to withdraw at any time. Confidentiality and anonymity were ensured by assigning codes to the participants and removing identifying information from the transcripts. The audio recordings and transcripts were stored in a password-protected computer accessible only to the research team.

Considerations

Results

The characteristics of the participants are presented in Table 1. Four main themes emerged from the data analysis: 1) understanding interprofessional collaboration, 2) perceived benefits of interprofessional teamwork for medication safety, 3) challenges to effective interprofessional collaboration, and 4) strategies to foster interprofessional teamwork. The themes and subthemes are presented with illustrative quotes in Table 2.

Table 1
 Characteristics of the Participants (N = 15)

Characteristic	n (%)
Gender	
Male	11 (73%)
Female	4 (27%)
Age (years)	
20-29	5 (33%)
30-39	8 (53%)
40-49	2 (13%)
Years of experience	
1-5	6 (40%)
6-10	5 (33%)
>10	4 (27%)
Highest educational level	
Diploma	9 (60%)
Bachelor's degree	6 (40%)

Table 2
Themes and Subthemes with Illustrative Quotes

Themes and Subthemes	Illustrative Quotes
Understanding Interprofessional Collaboration	
- Definition and key elements	"Interprofessional collaboration is when different healthcare professionals work together as a team to provide safe and effective patient care. It involves communication, coordination, and cooperation among team members." (PT3)
"The key elements of interprofessional collaboration are open communication, respect for each other's roles and expertise, shared decision-making, and a common goal of improving patient outcomes." (PT7)	
- Importance for medication safety	"Interprofessional collaboration is crucial for medication safety because it helps prevent errors, reduce adverse drug events, and ensure that patients receive the right medication at the right dose and time." (PT1)
"Collaboration between pharmacy technicians and other healthcare professionals, especially nurses, is important because we are all involved in the medication use process. By working together, we can double-check each other's work and catch any potential errors." (PT9)	
Perceived Benefits of Interprofessional Teamwork for Medication Safety	

Themes and Subthemes	Illustrative Quotes
- Error prevention and early detection	"When pharmacy technicians and other healthcare professionals collaborate, we can identify and prevent medication errors before they reach the patient. For example, if I notice a discrepancy in the medication order, I can clarify with the nurse or pharmacist before dispensing it." (PT6)
"Collaboration helps us detect errors early, such as wrong dose, wrong route, or wrong patient. By working together, we can serve as a safety net for each other." (PT2)	
- Improved communication and coordination	"Collaboration enhances communication among healthcare professionals. We can share information about the patient's medication history, allergies, and preferences, which helps us make better decisions." (PT8)
"Through collaboration, we can coordinate the timing of medication administration with other patient care activities, such as tests or procedures. This helps avoid delays or omissions." (PT5)	
- Enhanced patient education and counseling	"When pharmacy technicians and other healthcare professionals collaborate, we can provide better education and counseling to patients about their medications. We can reinforce each other's instructions and answer patients' questions from different perspectives." (PT4)
"Collaboration allows us to give consistent and comprehensive information to patients about their medications, which can improve	

Themes and Subthemes	Illustrative Quotes
their adherence and satisfaction." (PT10)	
Challenges to Effective Interprofessional Collaboration	
- Communication barriers and hierarchies	"Sometimes there are communication barriers between pharmacy technicians and other healthcare professionals, such as different terminologies, abbreviations, or languages. This can lead to misunderstandings or delays." (PT9)
"There can be hierarchies or power imbalances between different professions, which can hinder open communication and collaboration. Some healthcare professionals may feel that their input is not valued or acknowledged by others." (PT8)	
- Role ambiguity and lack of trust	"There may be confusion or overlap in the roles and responsibilities of pharmacy technicians and other healthcare professionals, especially in tasks such as medication reconciliation or patient education. This can lead to duplication of efforts or gaps in care." (PT2)
"Some healthcare professionals may not trust or rely on the expertise of others, which can prevent effective collaboration. For example, a nurse may question the accuracy of a medication dispensed by a pharmacy technician, or vice versa." (PT6)	
- Workload and time constraints	"High workload and time pressures can limit opportunities for interprofessional collaboration. We may be too busy with our own tasks to

Themes and Subthemes	Illustrative Quotes
	communicate or coordinate with other team members." (PT7)
"Collaboration takes time, which is often in short supply in busy healthcare settings. We may prioritize individual tasks over teamwork, especially when faced with competing demands." (PT1)	
Strategies to Foster Interprofessional Teamwork for Medication Safety	
- Interprofessional education and training	"Providing interprofessional education and training can help pharmacy technicians and other healthcare professionals understand each other's roles, develop communication skills, and foster teamwork. This can start from undergraduate education and continue through professional development." (PT10)
"Joint training sessions, workshops, or simulations can provide opportunities for pharmacy technicians and other healthcare professionals to learn from and with each other, and practice collaboration in a safe environment." (PT3)	
- Standardized communication tools and protocols	"Implementing standardized communication tools, such as SBAR (Situation, Background, Assessment, Recommendation) or closed-loop communication, can help structure and clarify information exchange between pharmacy technicians and other healthcare professionals." (PT5)

Themes and Subthemes	Illustrative Quotes
"Establishing clear protocols for medication-related tasks, such as order verification, dispensing, and administration, can help ensure consistency and accountability among team members." (PT4)	
- Leadership support and organizational culture	"Leadership support is essential for promoting interprofessional collaboration. Leaders can create opportunities for teamwork, provide resources and incentives, and model collaborative behavior." (PT3)
"Creating an organizational culture that values and rewards collaboration, rather than individual performance, can motivate team members to work together and share knowledge." (PT7)	

Discussion

The findings of this study shed light on pharmacy technicians' perceptions and experiences of interprofessional teamwork in promoting medication safety in a tertiary hospital in Riyadh, Saudi Arabia. The participants demonstrated a good understanding of the definition, key elements, and importance of interprofessional collaboration for medication safety, which is consistent with previous research (Alsultan et al., 2021; Reeves et al., 2017). The perceived benefits of interprofessional teamwork included error prevention and early detection, improved communication and coordination, and enhanced patient education and counseling, which have been reported in other studies (Beccerra et al., 2015; Keller et al., 2019).

However, the participants also identified several challenges to effective interprofessional collaboration, such as communication barriers and hierarchies, role ambiguity and lack of trust, and workload and time constraints. These challenges have been documented in the literature as factors that can hinder interprofessional teamwork and compromise patient safety (Alsultan et al., 2021; Beccerra et al., 2015; Keller et al., 2019). Communication barriers, such as different terminologies, abbreviations, or languages, can lead to misunderstandings or delays in the medication use process. Power imbalances and hierarchies between different professions can prevent open communication and collaboration, as some team members may feel that their input is not valued or acknowledged. Role ambiguity and lack of trust can result in duplication of efforts or gaps in care, as team members may not rely on each other's expertise or may question

the accuracy of each other's work. High workload and time pressures can limit opportunities for collaboration, as team members may prioritize individual tasks over teamwork.

To overcome these challenges and foster interprofessional teamwork for medication safety, the participants suggested several strategies, including interprofessional education and training, standardized communication tools and protocols, and leadership support and organizational culture. These strategies are supported by previous research and guidelines (WHO, 2010; Institute of Medicine, 2015; Joint Commission, 2021). Interprofessionaleducation and training, both at the undergraduate and continuing professional development levels, can help pharmacy technicians and other healthcare professionals understand each other's roles, develop communication and teamwork skills, and build mutual respect and trust. Standardized communication tools, such as SBAR or closed-loop communication, and clear protocols for medication-related tasks can help structure and clarify information exchange and ensure consistency and accountability among team members. Leadership support and an organizational culture that values and rewards collaboration can motivate and enable team members to work together effectively.

The findings of this study have implications for healthcare organizations, educators, and policymakers in Saudi Arabia. Healthcare organizations can use the insights from this study to assess and address the challenges to interprofessional collaboration in their settings, and implement strategies to support and sustain effective teamwork for medication safety. For example, they can provide interprofessional training and development opportunities for their staff, establish standardized communication and documentation systems, and recognize and reward collaborative practices. Educators can incorporate interprofessional education and training into the curricula of pharmacy technician and other healthcare professional programs, to prepare future practitioners for collaborative practice. Policymakers can develop and enforce regulations and guidelines that mandate or incentivize interprofessional collaboration for medication safety, such as requiring medication reconciliation and patient education to be conducted by interprofessional teams.

The study has several strengths, including the use of a qualitative descriptive design and semi-structured interviews to provide an in-depth exploration of participants' perspectives and experiences, the inclusion of pharmacy technicians with diverse characteristics and roles, the achievement of data saturation, and the rigorous data analysis process. However, the study also has some limitations. The findings may not be transferable to other settings or populations, as the study was conducted in a single tertiary hospital in Riyadh, and the perspectives of other healthcare professionals were not included. The study also relied on self-reported data, which may be subject to social desirability or recall bias.

Future research can build on the findings of this study by using quantitative or mixed-methods designs to examine the impact of interprofessional collaboration on medication safety outcomes, such as medication error rates, adverse drug events, or patient satisfaction. Studies can also explore the perspectives of other healthcare professionals, patients, or family members on interprofessional collaboration for medication safety, and compare them with those of pharmacy

technicians. Intervention studies can evaluate the effectiveness of different strategies, such as interprofessional education and training, standardized communication tools and protocols, or leadership support and organizational culture, in enhancing interprofessional collaboration and improving medication safety in the Saudi context.

Conclusion

This qualitative study explored pharmacy technicians' perceptions and experiences of interprofessional teamwork in promoting medication safety in a tertiary hospital in Riyadh, Saudi Arabia. The findings suggest that pharmacy technicians have a good understanding of the definition, key elements, and importance of interprofessional collaboration for medication safety, and perceive several benefits of teamwork, such as error prevention, improved communication and coordination, and enhanced patient education. However, they also identified challenges to effective collaboration, including communication barriers and hierarchies, role ambiguity and lack of trust, and workload and time constraints. The participants suggested strategies to foster interprofessional teamwork, such as interprofessional education and training, standardized communication tools and protocols, and leadership support and organizational culture. The findings have implications for healthcare organizations, educators, and policymakers in Saudi Arabia to develop and implement interventions and policies that support and sustain effective interprofessional collaboration for medication safety. Future research can examine the impact of collaboration on medication safety outcomes, explore the perspectives of other stakeholders, and evaluate the effectiveness of different strategies in the Saudi context.

References

- AlRuthia, Y., Alsenaidy, M. A., Alrabiah, H. K., AlMuhaisen, A., & Alshehri, M. (2018). The status of licensed pharmacy workforce in Saudi Arabia: A 2030 economic vision perspective. *Human Resources for Health, 16*(1), 28. <https://doi.org/10.1186/s12960-018-0294-8>
- 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>
- Alsultan, M. S., Khurshid, F., Salamah, H. J., Mayet, A. Y., & Al-Jedai, A. H. (2021). Pharmacy technicians' perception and attitudes toward professionalism and professional development: A cross-sectional study. *Risk Management and Healthcare Policy, 14*, 3201-3210. <https://doi.org/10.2147/RMHP.S318155>
- Beccerra, M., Chungunco, D., & Kuhn, I. (2015). The role of interprofessional collaboration to improve patient safety. *Journal of Multidisciplinary Healthcare, 8*, 255-256. <https://doi.org/10.2147/JMDH.S93149>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- DeJonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: A balance of relationship and rigour. *Family Medicine and Community Health, 7*(2), e000057. <https://doi.org/10.1136/fmch-2018-000057>

- Hua, W., & Hua, S. (2020). Factors influencing medication safety: A nursing perspective. *SAGE Open Nursing*, 6, 1-12. <https://doi.org/10.1177/2377960820913234>
- Institute of Medicine. (2015). *Improving diagnosis in health care*. The National Academies Press. <https://doi.org/10.17226/21794>
- Joint Commission. (2021). *National patient safety goals effective January 2021 for the hospital program*. <https://www.jointcommission.org/standards/national-patient-safety-goals/hospital-national-patient-safety-goals/>
- Keller, S. M., Yule, S., Grant, V. J., & Purkis, J. (2019). Barriers and enablers to interprofessional collaboration in healthcare: A review of the literature. *Journal of Interprofessional Education & Practice*, 17, 100284. <https://doi.org/10.1016/j.xjep.2019.100284>
- Reeves, S., Pelone, F., Harrison, R., Goldman, J., & Zwarenstein, M. (2017). Interprofessional collaboration to improve professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews*, 6, CD000072. <https://doi.org/10.1002/14651858.CD000072.pub3>
- 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<334::AID-NUR9>3.0.CO;2-G](https://doi.org/10.1002/1098-240X(200008)23:4<334::AID-NUR9>3.0.CO;2-G)
- World Health Organization. (2010). *Framework for action on interprofessional education and collaborative practice*. <https://apps.who.int/iris/handle/10665/70185>
- World Health Organization. (2017). *Medication without harm: WHO's third global patient safety challenge*. <https://www.who.int/initiatives/medication-without-harm>