

# A Systematic Review of Healthcare Providers Awareness of Medication Switching for Polypharmacy Patients in Saudi Arabia

Meshari Mohammed Alsaif<sup>1\*</sup>, Theyab Mohammed Aldawsari<sup>1</sup>, Abdullah Saud Alqutaym<sup>1</sup>, Maram Saud Alqutaym<sup>1</sup>, Ayash Mohammed Alanazi<sup>1</sup>

<sup>1</sup>Pharmacist, Department of Pharmaceutical Care Management, Ministry of Health, Riyadh, Saudi Arabia

DOI: [10.36348/sjimps.2024.v10i06.010](https://doi.org/10.36348/sjimps.2024.v10i06.010)

| Received: 04.05.2024 | Accepted: 09.06.2024 | Published: 27.06.2024

\*Corresponding author: Meshari Mohammed Alsaif

Pharmacist, Department of Pharmaceutical Care Management, Ministry of Health, Riyadh, Saudi Arabia

## Abstract

**Background:** Polypharmacy, the concurrent use of multiple medications by an individual, presents challenges in medication management, patient safety, and healthcare outcomes, particularly among older adults. In Saudi Arabia, the prevalence of polypharmacy is increasing due to the aging population and the burden of chronic diseases. Understanding healthcare providers' awareness and practices regarding medication switching is crucial for optimizing medication use and improving patient outcomes. **Study Aim:** This systematic review aims to synthesize and analyze existing literature on healthcare providers' awareness of medication switching for polypharmacy patients in Saudi Arabia. The study focuses on pharmacists and physicians, exploring their knowledge, attitudes, and practices related to medication management, deprescribing, pharmacovigilance, and Medication Therapy Management (MTM) services. **Methodology:** A systematic search was conducted across major databases, including PubMed, Scopus, and Google Scholar, using predefined search terms related to polypharmacy, medication switching, healthcare providers' awareness, and Saudi Arabia. Eligible studies were selected based on inclusion criteria, including study design, setting, participants, and relevance to the study aim. Data extraction and synthesis were performed to analyze key findings and themes related to healthcare providers' awareness of medication switching. **Results:** Six eligible studies were included in the systematic review, encompassing survey-based investigations, cross-sectional studies, and qualitative studies conducted in various healthcare settings across Saudi Arabia. The findings revealed gaps in pharmacists' and physicians' knowledge regarding Potentially Inappropriate Medications (PIMs), Drug-Drug Interactions (DDIs), pharmacovigilance practices, and deprescribing strategies. Recommendations for improving pharmacists' education, enhancing pharmacovigilance practices, and promoting collaborative care models were highlighted. **Conclusion:** Healthcare providers in Saudi Arabia demonstrate varying levels of awareness and practices regarding medication switching for polypharmacy patients. There is a need for targeted educational interventions, standardized pharmacovigilance practices, and collaborative efforts among healthcare providers to optimize medication use, reduce polypharmacy-related risks, and improve patient outcomes.

**Keywords:** Polypharmacy, medication switching, healthcare providers, awareness, Saudi Arabia, pharmacists, physicians, deprescribing, pharmacovigilance, Medication Therapy Management (MTM) services.

**Copyright © 2024 The Author(s):** This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## BACKGROUND

Polypharmacy, the simultaneous use of multiple medications by an individual, is a pervasive issue in healthcare, particularly among older adults. It often arises from the management of multiple chronic conditions, which is increasingly common in aging populations [1]. In Saudi Arabia, as in many other countries, the prevalence of polypharmacy is on the rise due to demographic shifts, improved healthcare access, and advancements in medical treatments [2].

The complexity of polypharmacy extends beyond the mere number of medications prescribed. It encompasses considerations such as drug interactions, adverse effects, medication adherence, and the appropriateness of prescribing for individual patients [3]. These factors contribute to the challenges faced by healthcare providers in ensuring safe and effective medication use among polypharmacy patients.

Medication switching, defined as the process of changing or substituting medications within a treatment

**Citation:** Meshari Mohammed Alsaif, Theyab Mohammed Aldawsari, Abdullah Saud Alqutaym, Maram Saud Alqutaym, Ayash Mohammed Alanazi (2024). A Systematic Review of Healthcare Providers Awareness of Medication Switching for Polypharmacy Patients in Saudi Arabia. *Saudi J Med Pharm Sci*, 10(6): 391-396.

regimen, plays a crucial role in managing polypharmacy. It is often necessitated by factors such as therapeutic failures, adverse drug reactions, changes in clinical guidelines, or patient-specific considerations [4]. However, medication switching can also introduce new risks, including medication errors, treatment discontinuity, and patient confusion [5].

Healthcare providers, including pharmacists and physicians, play key roles in managing medication regimens for polypharmacy patients. Their awareness, knowledge, attitudes, and practices regarding medication switching are instrumental in optimizing medication use, minimizing risks, and improving patient outcomes [6]. Understanding the factors influencing healthcare providers' decision-making processes related to medication switching is essential for enhancing medication safety and quality of care.

In recent years, there has been growing interest in deprescribing practices as a strategy to address polypharmacy and reduce medication-related harms among older adults [7]. Deprescribing involves the systematic review and discontinuation of medications that may no longer be necessary, beneficial, or appropriate for patients [8]. However, the implementation of deprescribing practices faces challenges related to provider awareness, patient preferences, clinical guidelines, and organizational support [9].

Pharmacovigilance, another critical aspect of medication management, focuses on monitoring and assessing the safety of medications, particularly in real-world clinical settings [10]. Effective pharmacovigilance practices help identify and mitigate potential risks associated with medication use, including adverse drug reactions, medication errors, and drug interactions [11]. Enhancing pharmacovigilance awareness and practices among healthcare providers is paramount in ensuring medication safety and minimizing harm.

Furthermore, Medication Therapy Management (MTM) services have emerged as a comprehensive approach to optimizing medication use, promoting medication adherence, and improving health outcomes, especially for patients with complex medication regimens [12]. MTM services involve a range of activities, including medication reviews, patient education, adherence monitoring, and medication reconciliation [13]. Integrating MTM services into clinical practice requires healthcare providers to have a deep understanding of medication management principles and patient-centered care [14].

In light of these considerations, this systematic review aims to explore and synthesize existing literature on healthcare providers' awareness of medication switching for polypharmacy patients in Saudi Arabia. The review will focus on pharmacists and physicians,

examining their knowledge, attitudes, and practices related to medication management, deprescribing, pharmacovigilance, and MTM services. The findings will contribute valuable insights to enhance medication safety, optimize prescribing practices, and improve patient care in the context of polypharmacy.

## **METHODOLOGY**

### **Search Strategy**

A systematic search was conducted across major databases, including PubMed, Scopus, and Google Scholar, using predefined search terms related to polypharmacy, medication switching, healthcare providers' awareness, and Saudi Arabia. The search strategy included a combination of Medical Subject Headings (MeSH) terms and keywords to ensure comprehensive coverage of relevant literature.

### **Study Selection**

Eligible studies were selected based on predefined inclusion criteria. These criteria included studies conducted in Saudi Arabia, encompassing healthcare providers such as pharmacists and physicians, with a focus on awareness of medication switching for polypharmacy patients. The study designs considered for inclusion were survey-based investigations, cross-sectional studies, and qualitative studies. Studies published in English and Arabic were included to ensure a thorough review of available literature.

### **Data Extraction**

Data extraction was performed independently by two reviewers using a standardized data extraction form. The extracted data included study characteristics (e.g., study ID, study design, setting, duration), participant details (e.g., type of participants, number of participants), assessment tools used, key findings related to polypharmacy and medication switching, and conclusions drawn by the authors.

### **Qualitative Data Synthesis**

A qualitative data synthesis approach was employed to analyze and synthesize the findings from the included studies. This involved identifying key themes, patterns, and insights related to healthcare providers' awareness of medication switching for polypharmacy patients in Saudi Arabia. The synthesis process focused on categorizing and interpreting the qualitative data extracted from the studies to derive meaningful conclusions and implications.

## **RESULTS**

### **Search Results**

After screening the systematic search results, a total of 6 eligible studies were included in this review. These studies were selected based on their relevance to the awareness of healthcare providers regarding medication switching for polypharmacy patients in Saudi Arabia. The inclusion criteria focused on studies conducted in Saudi Arabia, encompassing various study

designs such as survey-based investigations, cross-sectional studies, and qualitative studies. The settings included community pharmacies, hospitals, and academic medical centers across different cities in Saudi Arabia. The duration of the studies ranged from specific time periods, such as January 2016 to March 2016, to broader timelines spanning several months. The types of participants varied, including pharmacists (both expatriate and local), family medicine physicians, and other healthcare providers involved in medication management and deprescribing practices.

### Characters of the Included Studies

The included studies exhibit a diverse range of characteristics in terms of study design, settings, study duration, types of participants, number of participants, assessment tools used, and key findings related to polypharmacy and medication management in Saudi Arabia.

One study, conducted by Gillani *et al.*, in 2017 [15], employed a survey-based investigation in community pharmacies of Saudi Arabia from December 2015 to May 2016. It involved 1258 expatriate pharmacists (EPs) and utilized a self-developed questionnaire. The study focused on association patterns with drug-dose adjustment practices, defining critical symptoms, and utilizing pharmacoinformatic databases. The findings emphasized the significant need for practice improvements among pharmacists to enhance clinical services.

In contrast, Al Doughan *et al.*, cross-sectional study in 2019 [16] encompassed both community and hospital pharmacists in Saudi Arabia from January 2016 to March 2016, involving 263 participants. Their study, using a validated and structured questionnaire, revealed that hospital pharmacists showed higher awareness of pharmacovigilance compared to community pharmacists, indicating the importance of enhancing pharmacovigilance practices across different pharmacy settings.

AlRasheed *et al.*, qualitative study in 2018 [17], conducted at King Saud University Medical City (KSUMC) in Riyadh, involved 15 family medicine physicians. Through focus group discussions, the study identified factors such as cost-effectiveness, time effectiveness, the role of clinical pharmacists, and patient counseling as facilitators and barriers to deprescribing in older patients, highlighting the complexities involved in medication management.

Alfahmi *et al.*, cross-sectional survey in 2023 [18] focused on hospitals and community pharmacies in Jeddah, Saudi Arabia, involving 157 community and hospital pharmacists. Their findings indicated inadequate knowledge about Potentially Inappropriate Medications (PIMs) among pharmacists, with only 10.8% claiming adequate knowledge and a minority using tools to detect PIMs (14.7%). The study emphasized the need for improving pharmacists' knowledge, attitudes, and practices regarding PIMs use in older adults through educational programs and promotion of PIM screening tools.

Similarly, Alrabiah *et al.*, cross-sectional study in 2019 [19] focused on community pharmacies in Riyadh city, Saudi Arabia, with 283 community pharmacists participating. Their study revealed inadequate knowledge among community pharmacists regarding Drug-Drug Interactions (DDIs), signaling the need for specific courses and training programs in drug interactions to enhance pharmacists' competencies in managing DDIs effectively.

Lastly, Alotaibi *et al.*, cross-sectional study in 2023 [20], conducted across community pharmacies in Saudi Arabia, involved 319 community pharmacists. Their findings showed that 65.5% of pharmacists reported moderate to high knowledge about Medication Therapy Management (MTM) services, suggesting the importance of educational sessions on MTM services for older adults to enhance pharmacists' capabilities in providing comprehensive medication management and optimizing patient outcomes.

**Table 1: Characters and findings of the included studies (n=6)**

Study ID	Study design	Study setting	Study duration	Type of participants	Number of participants	Assessment tool	Findings related to polypharmacy	Conclusion
Gillani <i>et al.</i> , 2017 [15]	Survey-based investigation	Community pharmacies of Saudi Arabia	December 2015 - May 2016	Expatriate pharmacists (EPs)	1258	Self-developed questionnaire	Association patterns with drug-dose adjustment practices, defining critical symptoms, pharmacoinformatic database, etc.	Pharmacists have a significant need for practice to improve clinical services.

<b>Alotaibi <i>et al.</i>, 2023</b> [20]	Cross-sectional study	Community pharmacies across Saudi Arabia	February - May 2023	Community pharmacists	319	Self-administered questionnaire	65.5% of pharmacists reported moderate to high knowledge about MTM services	Educational sessions on MTM services for older adults are recommended for pharmacists.
<b>Alrabiah <i>et al.</i>, 2019</b> [19]	Cross-sectional study	Community pharmacies in Riyadh city, Saudi Arabia	Not reported	Community pharmacists	283	Self-administered questionnaire	Knowledge about DDIs was inadequate	Community pharmacists need specific courses in drug interactions.
<b>Alfahmi <i>et al.</i>, 2023</b> [18]	Cross-sectional survey	Hospitals and community pharmacies in Jeddah, Saudi Arabia	Not reported	Community and hospital pharmacists	157	Self-administered questionnaire	- Knowledge about PIMs was inadequate (only 10.8% claimed adequate knowledge) - Minority of pharmacists used tools to detect PIMs (14.7%)	Pharmacists' knowledge, attitude and practices toward PIMs use in older adults need improvement. Educational programs and promotion of PIM screening tools are needed
<b>AlRasheed <i>et al.</i>, 2018</b> [17]	Qualitative study	King Saud University Medical City (KSUMC), Riyadh, Saudi Arabia	Not reported	Family medicine physicians	15	Focus group discussions	Identified factors: cost-effectiveness, time effectiveness, clinical pharmacist's role, patient counseling, etc.	Physicians identified facilitators and barriers to deprescribing in older patients.
<b>Al Doughan <i>et al.</i>, 2019</b> [16]	Cross-sectional study	Saudi Arabia	January 2016 - March 2016	Community and hospital pharmacists	263	Validated and structured questionnaire	Hospital pharmacists showed higher awareness of pharmacovigilance than community pharmacists.	Hospital pharmacists have higher awareness of pharmacovigilance compared to community pharmacists.

## DISCUSSION

Polypharmacy, defined as the concurrent use of multiple medications by an individual, is a common phenomenon among older adults and is associated with increased risks of adverse drug events, drug interactions, and medication non-adherence [2]. In Saudi Arabia, like many other countries, the aging population and the prevalence of chronic diseases contribute to the complexity of medication management, necessitating a thorough understanding of healthcare providers' awareness and practices regarding medication switching for polypharmacy patients [3].

The systematic review included six eligible studies that provided insights into the awareness of healthcare providers, particularly pharmacists and physicians, regarding medication switching for polypharmacy patients in Saudi Arabia [15-20].

Gillani *et al.*, [15] highlighted the significant need for practice improvements among pharmacists to enhance clinical services, focusing on drug-dose adjustment practices, critical symptoms definition, and pharmacoinformatic database utilization. Al Doughan *et al.*, [16] found that hospital pharmacists exhibited higher



awareness levels of pharmacovigilance practices compared to community pharmacists, indicating disparities in pharmacovigilance practices across different pharmacy settings. AlRasheed *et al.*, [17] identified various factors influencing deprescribing practices among family medicine physicians, emphasizing the complexities involved in deprescribing for older patients.

Alfahmi *et al.*, [18] revealed inadequate knowledge about Potentially Inappropriate Medications (PIMs) among pharmacists, highlighting the need for improving pharmacists' knowledge, attitudes, and practices regarding PIMs use in older adults. Alrabiah *et al.*, [19] highlighted inadequate knowledge among community pharmacists regarding Drug-Drug Interactions (DDIs), underscoring the necessity for specific training programs to enhance pharmacists' competencies in managing DDIs effectively. Alotaibi *et al.*, [20] emphasized the importance of educational sessions on Medication Therapy Management (MTM) services for older adults to enhance pharmacists' capabilities in providing comprehensive medication management.

The findings from the included studies shed light on several crucial aspects of medication management and polypharmacy awareness among healthcare providers in Saudi Arabia. Firstly, the identified need for practice improvements among pharmacists, as highlighted by Gillani *et al.*, [15], underscores the importance of continuous education and training programs to enhance pharmacists' skills in medication management, drug-dose adjustments, and utilization of pharmacoinformatic databases. This finding aligns with existing literature emphasizing the role of ongoing education in improving pharmacists' clinical services and patient outcomes [9, 12].

The discrepancies in pharmacovigilance awareness between hospital and community pharmacists, as observed by Al Doughan *et al.*, [16], suggest the need for standardized pharmacovigilance practices and continuous monitoring across all pharmacy settings. Literature supports the notion that enhancing pharmacovigilance practices can significantly contribute to medication safety and reduce the risks of adverse drug events [16, 21].

The factors influencing deprescribing practices identified by AlRasheed *et al.*, [17], such as cost-effectiveness, time effectiveness, and the role of clinical pharmacists, resonate with findings from international studies, highlighting the multifaceted challenges in deprescribing and the importance of collaborative efforts among healthcare providers.

The inadequate knowledge regarding PIMs and DDIs among pharmacists, as indicated by Alfahmi *et al.*, [18] and Alrabiah *et al.*, [19] respectively, underscores

the gaps in pharmacists' training and the necessity for targeted educational interventions focusing on medication safety, appropriate prescribing practices, and effective management of drug interactions [22]. The recommendation for educational sessions on MTM services for older adults, as proposed by Alotaibi *et al.*, [20], aligns with global initiatives aimed at optimizing medication management, promoting patient-centered care, and improving health outcomes among older populations.

The findings of this systematic review are consistent with international literature highlighting the challenges and complexities associated with polypharmacy, medication management, and healthcare providers' awareness and practices [22, 23]. Studies from various countries have also emphasized the need for continuous education, standardized practices, collaborative care models, and targeted interventions to enhance medication safety, reduce polypharmacy-related risks, and improve patient outcomes among older adults [9, 11, 21].

Furthermore, the identified gaps in pharmacists' knowledge and practices regarding PIMs, DDIs, and pharmacovigilance in Saudi Arabia resonate with similar findings reported in other healthcare settings globally. These findings underscore the importance of addressing these gaps through tailored educational programs, clinical guidelines, and interprofessional collaboration to optimize medication use and promote safe and effective healthcare delivery.

## CONCLUSION

Overall, this systematic review contributes to the existing literature by providing a comprehensive overview of healthcare providers' awareness of medication switching for polypharmacy patients in Saudi Arabia, highlighting areas for improvement, and emphasizing the significance of ongoing education and collaborative efforts in enhancing medication management practices and patient safety.

## REFERENCES

1. Fulton, M. M., & Allen, E. R. (2005). Polypharmacy in the elderly: a literature review. *Journal of the American Association of Nurse Practitioners*, 17(4), 123-32.
2. Alsuwaidan, A., Almedlej, N., Alsabti, S., Daftardar, O., Al Deaji, F., Al Amri, A., & Alsuwaidan, S. (2019). A comprehensive overview of polypharmacy in elderly patients in Saudi Arabia. *Geriatrics*, 4(2), 36.
3. Nobili, A., Garattini, S., & Mannucci, P. M. (2011). Multiple diseases and polypharmacy in the elderly: challenges for the internist of the third millennium. *Journal of comorbidity*, 1(1), 28-44.
4. Kutsal, Y. G., Barak, A., Atalay, A., Baydar, T., Kucukoglu, S., Tuncer, T., ... & Basaran, A. (2009). Polypharmacy in the elderly: a multicenter study.

- Journal of the American Medical Directors Association*, 10(7), 486-490.
5. Linjakumpu, T., Hartikainen, S., Klaukka, T., Veijola, J., Kivelä, S. L., & Isoaho, R. (2002). Use of medications and polypharmacy are increasing among the elderly. *Journal of clinical epidemiology*, 55(8), 809-817.
  6. Rambhade, S., Chakarborty, A., Shrivastava, A., Patil, U. K., & Rambhade, A. (2012). A survey on polypharmacy and use of inappropriate medications. *Toxicology international*, 19(1), 68.
  7. McCarthy, C., Flood, M., Clyne, B., Smith, S. M., Wallace, E., Boland, F., & Moriarty, F. (2023). Medication changes and potentially inappropriate prescribing in older patients with significant polypharmacy. *International Journal of Clinical Pharmacy*, 45(1), 191-200.
  8. Rollason, V., & Vogt, N. (2003). Reduction of polypharmacy in the elderly: a systematic review of the role of the pharmacist. *Drugs & aging*, 20, 817-832.
  9. Messerli, M., Blozik, E., Vriends, N., & Hersberger, K. E. (2016). Impact of a community pharmacist-led medication review on medicines use in patients on polypharmacy—a prospective randomised controlled trial. *BMC health services research*, 16, 1-16.
  10. Beuscart, J. B., Petit, S., Gautier, S., Wierre, P., Balcaen, T., Lefebvre, J. M., ... & Décaudin, B. (2019). Polypharmacy in older patients: identifying the need for support by a community pharmacist. *BMC geriatrics*, 19, 1-8.
  11. Clark, C. M., Hejna, M., Shao, E., Maerten-Rivera, J. L., Monte, S. V., & Wahler Jr, R. G. (2020). Knowledge and attitudes of student pharmacists regarding polypharmacy and deprescribing: a cross-sectional study. *Pharmacy*, 8(4), 220.
  12. Chen, C. M., Kuo, L. N., Cheng, K. J., Shen, W. C., Bai, K. J., Wang, C. C., ... & Chen, H. Y. (2016). The effect of medication therapy management service combined with a national PharmaCloud system for polypharmacy patients. *Computer methods and programs in biomedicine*, 134, 109-119.
  13. Sherman, J. J., Davis, L., & Daniels, K. (2017). Addressing the polypharmacy conundrum. *US Pharm*, 42(6), 14-20.
  14. Kim, K., Magness, J. W., Nelson, R., Baron, V., & Brixner, D. I. (2018). Clinical utility of pharmacogenetic testing and a clinical decision support tool to enhance the identification of drug therapy problems through medication therapy management in polypharmacy patients. *Journal of Managed Care & Specialty Pharmacy*, 24(12), 1250-1259.
  15. Gillani, S. W., Rahman, S. A. U., Mohammad Abdul, M. I., & Sulaiman, S. A. S. (2017). Assessment of community pharmacists' perceptions of healthcare services in Saudi Arabia. *Journal of Pharmaceutical Health Services Research*, 8(4), 269-274.
  16. Al Doughan, F. F., Alomi, Y. A., & Iflaifel, M. H. (2019). Pharmacist's awareness and knowledge of reporting adverse drug reactions in Saudi Arabia. *International Journal of Pharmacy and Health Sciences*, 2(1).
  17. Alrasheed, M. M., Alhawassi, T. M., Alanazi, A., Aloudah, N., Khurshid, F., & Alsultan, M. (2018). Knowledge and willingness of physicians about deprescribing among older patients: a qualitative study. *Clinical interventions in aging*, 1401-1408.
  18. Alfahmi, A. A., Curtain, C. M., & Salahudeen, M. S. (2023). Assessment of knowledge, attitude and practices of the hospital and community pharmacists in Saudi Arabia (Jeddah) towards inappropriate medication use in older adults. *International Journal of Environmental Research and Public Health*, 20(2), 1635.
  19. Alrabiah, Z., Alhossan, A., Alghadeer, S. M., Wajid, S., Babelghaith, S. D., & Al-Arifi, M. N. (2019). Evaluation of community pharmacists' knowledge about drug–drug interaction in Central Saudi Arabia. *Saudi Pharmaceutical Journal*, 27(4), 463-466.
  20. Alotaibi, F. M., Bukhamsin, Z. M., Alsharafaa, A. N., Asiri, I. M., Kurdi, S. M., Alshayban, D. M., ... & Alotaibi, M. M. (2023, November). Knowledge, Attitude, and Perception of Health Care Providers Providing Medication Therapy Management (MTM) Services to Older Adults in Saudi Arabia. In *Healthcare* (Vol. 11, No. 22, p. 2936). MDPI.
  21. Greeshma, M., Lincy, S., Maheswari, E., Tharanath, S., & Viswam, S. (2018). Identification of drug related problems by clinical pharmacist in prescriptions with polypharmacy: a prospective interventional study. *Journal of Young Pharmacists*, 10(4), 460.
  22. Chiarelli, M. T., Antoniazzi, S., Cortesi, L., Pasina, L., Novella, A., Venturini, F., ... & ad hoc Deprescribing Study Group. (2021). Pharmacist-driven medication recognition/reconciliation in older medical patients. *European journal of internal medicine*, 83, 39-44.
  23. Szilvay, A., Somogyi, O., Dobszay, A., Meskó, A., Zekó, R., & Hankó, B. (2021). Analysis of interaction risks of patients with polypharmacy and the pharmacist interventions performed to solve them—A multicenter descriptive study according to medication reviews in Hungarian community pharmacies. *PloS one*, 16(6), e0253645.