



## OPTIMIZING PATIENT OUTCOMES: THE ROLE OF NURSES IN MEDICATION THERAPY MANAGEMENT

Areej Mahboub Al Samti<sup>1\*</sup>, Abdullah Khelaif Alanazi<sup>2</sup>, Naif Mohammed Alanazi<sup>3</sup>, Ahmed Abdalaziz Bin Mehiza<sup>4</sup>, Saad Shujaa Alotaibi<sup>5</sup>, Majed Fahad Alotaibi<sup>6</sup>, Mona Abdalrahman Alharbi<sup>7</sup>, Diena Mahboub Alsamti<sup>9</sup>, Farraj Hasan Almutairi<sup>10</sup>, Salema mohammad abuhebera<sup>11</sup>, Samiah Ibrahim Alenzei<sup>12</sup>, Mervat Ali Alharis<sup>13</sup>

### Abstract

Healthcare needs medication treatment management to enhance patient outcomes and save costs. This research examines how medication treatment management services affect patient outcomes, including medication adherence, health-related quality of life, healthcare consumption, and cost savings. To evaluate medication treatment management services, we reviewed and analyzed relevant material from the last decade. The study examined a broad spectrum of patient demographics, focusing on chronic sick and elderly patients. Medication treatment management strategies increased medication adherence by 10% compared to standard therapy. Medication treatment management services also improve health-related quality of life, notably in diabetics and hypertensives. Medication treatment management improved patients' physical and mental health, indicating a wider impact on their well-being. Medication treatment management services also reduce healthcare usage, reducing hospitalizations and ER visits. Although the findings were positive, finance, provider availability, and healthcare practitioner hostility to medication treatment management services prevented broad usage. Overcoming these challenges is crucial to expanding medication treatment management services, especially for complex healthcare patients.

**Keywords:** Medication therapy management, medication adherence, health-related quality of life, healthcare utilization, cost savings

---

<sup>1\*,2,3,4,5,6,7,8,9,10,11,12,13</sup>ksa, ministry of health

**\*Corresponding Author:** Areej Mahboub Al Samti

\*ksa, ministry of health

**DOI:** 10.53555/ecb/2022.11.6.111

## 1. Introduction

Pharmaceutical therapy entails the pharmacist taking responsibility for meeting patients' needs linked to medication by identifying and resolving issues related to drugs. Medication treatment management services are increasingly necessary in healthcare, aiming to improve patient outcomes and save healthcare costs. Medication therapy management is a comprehensive assessment of a patient's medications, with the goal of improving the effectiveness of pharmacological therapy and promoting patient adherence and health outcomes. Medication treatment management services follow the concepts and patient care approach of healthcare performance as described by Cipolle et al. (1).

Various researches have shown that the adoption of pharmacological care protocols has a positive impact on the health status of persons. A recent research has shown that individuals who received in-person medication therapy management services had improved adherence to their chronic disease prescriptions. This was assessed by measuring the proportion of days covered for various classes of drugs (2,3). Tan et al. (4) found that the inclusion of pharmacists in primary care clinics had positive effects on drug consumption and clinical outcomes. Strand et al. (5) demonstrated that pharmacists successfully addressed 88.0% of patients' drug-related problems, while Mendonça et al. (6) obtained a satisfactory resolution for 62.7% of the identified drug-related problems.

While academics and healthcare professionals in developed countries are actively exploring and improving the sustainability of medication therapy management services, these services are still limited in underdeveloped nations. However, the possible beneficial benefits of pharmaceutical care on drug usage are not taken into consideration. In developing countries, pharmacists mostly focus on acquiring and overseeing the distribution of drugs, with little involvement in directly treating patients (7). This review article aims to analyze the impact of medication therapy management services on patient outcomes, with a special emphasis on medication adherence, health-related quality of life, and healthcare utilization.

## 2. Methodology

A comprehensive literature search was conducted utilizing electronic databases such as PubMed, MEDLINE, and Google Scholar. Search terms included "medication therapy administration," "patient consequences," "adherence," "health-related quality of life," and "healthcare utilization." The criteria for inclusion were works

published during the last ten years, with a focus on randomized controlled trials, observational studies, and systematic reviews. The inclusion criteria were studies that evaluated the impact of medication therapy management services on patient outcomes, including medication adherence, health-related quality of life, and healthcare utilization. In addition, research that explicitly investigated patient demographics, such as the elderly or persons with chronic diseases, was also included.

## 3. The Impact of Medication Therapy Management Services on Medication Adherence Levels

Medication therapy management is an innovative service provided by healthcare professionals, such as pharmacists, with the goal of improving the results of medical treatments for patients. The main objectives of the medication therapy management service are to ensure appropriate utilization of prescribed medications, improve patients' understanding of drug usage, encourage adherence to prescribed drug therapy, and reduce the likelihood of drug-related adverse events, ultimately enhancing the patient's quality of life. The five main components of medication therapy management are medication treatment review, personal medication record, medication-related action plan, intervention, and follow-up (8,9).

The integration of these elements of medication therapy management is expected to enhance the collaboration and information sharing among pharmacists, doctors, and other healthcare professionals in delivering patient care, while also optimizing the efficacy of drug usage for better results. As a result, patients, particularly those with diabetes mellitus, may achieve adherence and a superior quality of life. Multiple studies have shown that the utilization of medication therapy management services offered by pharmacists may enhance the medical status of individuals with diabetes.

Viswanathan et al. (10) performed a comprehensive analysis of several research using Cochrane databases and Worldwide Pharmacy Proposals. The research specifically examined the effectiveness of medication therapy management services provided to individuals receiving outpatient care for chronic conditions. The investigation revealed that the implementation of medication therapy management procedures resulted in enhancements in the proper prescription of pharmaceuticals, use of suitable medications, adherence to medication regimens, and the overall quality of life for patients. The study conducted by Erku et al. (11) showed that

there was an improvement in patient adherence to medication therapy management services delivered by pharmacists.

Several studies have shown that medication therapy management services have a positive impact on drug adherence. Ibrahim et al. (12) did a study where they completed a thorough review of previous studies. The results showed that medication therapy management services were associated with improved medication adherence in persons with chronic diseases. The results indicated a significant increase in medication adherence when patients received medication therapy management services compared to getting conventional care. Chou et al. (13) performed a second experiment to evaluate the impact of medication therapy management services on medication adherence in older persons. The study found that those who received medication therapy management services had considerably higher rates of adherence compared to those who did not get such services.

Moreover, medication therapy management services have had a positive impact on health-related quality of life, as well as improving medication adherence. Jeong et al. (14) performed study to evaluate the impact of medication therapy management services on the health-related quality of life of individuals with diabetes. The research demonstrated that those who received medication therapy management treatments had improved physical and mental well-being, as shown by higher health ratings, in contrast to those who did not get such services. A further study done by Naga et al. (15) discovered a link between the implementation of medication therapy management services and improvements in the health-related quality of life for patients diagnosed with hypertension.

#### **4. The impact of Medication Therapy Management services on the use of healthcare services.**

Medication therapy management services have shown the capacity to reduce healthcare use, such as hospital admissions and visits to the emergency department. The study done by Schwartz et al. (16) examined the impact of medication therapy management services on healthcare use in individuals diagnosed with heart failure. The results indicated that those who received medication therapy management treatments saw a significant reduction of 20% in hospitalizations compared to those who did not get such services. Fernandez-Lazaro et al. (17) did a different analysis and found that the implementation of medication therapy management services led to a

significant 15% reduction in the frequency of visits to the emergency department by patients with multiple chronic conditions.

#### **5. Financial advantages associated with Medication Therapy Management services**

Medication therapy management services not only improve patient outcomes but also have the potential to provide cost savings for healthcare institutions. Okere et al. (18) performed study to evaluate the cost-effectiveness of medication therapy management services. The findings revealed that these services were associated with a 10% reduction in healthcare expenditures compared to normal therapy. Subsequent studies have investigated the financial advantages for the healthcare system that arise from the involvement of pharmacists in medication management, as well as the economic impact on pharmacies that provide medication therapy management services. Ramalho de Oliveira et al. (19) showed that an integrated health care system might potentially save more money over a period of 10 years. McDonough et al. (20) evaluated the overall financial results of medication therapy management services delivered by pharmacists and pharmacy students in a separate community pharmacy. During a period of 16 months, the pharmacy obtained a net financial gain of USD 3.28 by providing medication therapy management services.

In addition, Winston and Lin (21) evaluated the total financial benefits of pharmacist interventions in terms of cost reductions on pharmaceuticals. These interventions were implemented using several approaches, including in-person encounters at a community pharmacy, phone interventions conducted by community pharmacy personnel, a call center operated by pharmacists, and the distribution of patient education materials via direct mailings. This study showed that the most significant cost reductions for prescription goods were accomplished by interventions carried out in community pharmacies, either through direct encounters or telephonic communication. Conversely, the interventions conducted by pharmacists in call centers or via instructional mailers were not as successful in producing cost reductions. This study aimed to evaluate the pharmaceutical costs per patient, specifically focusing on the savings achieved via reduced pricing of medical products. However, it did not take into account the out-of-pocket charges that patients had to pay.

## 6. Challenges in the Execution of medication therapy management Services

Despite the positive impact of medication therapy management services on patient outcomes and cost savings, there are several barriers hindering their implementation. These problems include the lack of remuneration for medication therapy management services, limited access to medication therapy management providers, and resistance from healthcare practitioners. There is a direct relationship between the amount of time technicians spend and the successful implementation of medication therapy management. However, the extent to which pharmacists promote technician engagement varies, as stated by (22).

Many pharmacists believe that technicians are not adequately trained to engage in medication therapy management. Proficient training in medication therapy management integration is essential for the successful transfer of clinical and technical duties. Non-pharmacist staffs are hesitant to take on medication therapy management responsibility because of uneven training (23,24). The lack of well-defined roles and duties leads to internal issues in team dynamics. Research indicates that the majority of issues in team dynamics in medication therapy management are centered on the use of technicians.

Several impediments discourage technicians from embracing medication therapy management. The relationship between technicians and medication therapy management is often impeded by persistent issues of confidence and trust. Technicians are often left out of the patient work up, and some medication therapy management software systems do not allow technician login, hence hindering their capacity to participate in the administration of patient medications. The significant turnover rate among technical workers is a barrier in effectively engaging them in medication therapy management. The pharmacy is facing an increasing difficulty in training technicians to carry out medication therapy management owing to a high rate of staff turnover. Pharmacists who teach their technicians to help with medication therapy management are annoyed by the frequent departure of technicians, since this forces the pharmacist to take on the whole responsibility of medication therapy management (23,24).

Adding to these challenges is a lack of support for pharmacy management. The dissemination of medication therapy management encountered an obstacle during the feasibility study as a result of

inadequate collaboration from pharmacy owners, corporate organizations, and pharmacy benefit managers. Some owners and staff members have hesitancy in providing medication therapy management. A study was done to ascertain the challenges encountered by pharmacists in delivering their services. The report also proposed strategies that management may use to successfully implement changes (25,26).

The lack of appropriate physical infrastructure has also affected the delivery of medication therapy management services. Several studies have shown the importance of appropriate physical settings for medicine and disease management facilities in community pharmacies. Due to a lack of adequate private facilities, a number of pharmacies have ceased offering their medication management service (27,28).

## 7. Conclusion

In the end, medication therapy management services have a positive impact on patient outcomes, such as improved medication adherence, enhanced health-related quality of life, and reduced healthcare utilization. Moreover, they have the ability to provide economic advantages for healthcare systems. However, there are other barriers that need to be addressed in order to successfully implement medication therapy management services. Future research should emphasize the development of strategies to overcome these challenges and expand the accessibility of medication therapy management services for patients with chronic illnesses and complex healthcare needs.

## References

1. Cipolle, R. J., Strand, L. M., & Morley, P. C. (2012). Pharmaceutical care practice: the patient-centered approach to medication management services. (*No Title*).
2. Brummel, A., & Carlson, A. M. (2016). Comprehensive medication management and medication adherence for chronic conditions. *Journal of managed care & specialty pharmacy*, 22(1), 56-62.
3. Fikri-Benbrahim, N., Faus, M. J., Martínez-Martínez, F., & Sabater-Hernández, D. (2013). Impact of a community pharmacists' hypertension-care service on medication adherence. The AFenPA study. *Research in Social and Administrative Pharmacy*, 9(6), 797-805.
4. Tan, E. C., Stewart, K., Elliott, R. A., & George, J. (2014). Pharmacist services provided in general practice clinics: a systematic review and meta-analysis. *Research*

- in *Social and Administrative Pharmacy*, 10(4), 608-622.
5. Strand, L. M., Cipolle, R. J., Morley, P. C., & Frakes, M. J. (2004). The impact of pharmaceutical care practice on the practitioner and the patient in the ambulatory practice setting: twenty-five years of experience. *Current pharmaceutical design*, 10(31), 3987-4001.
  6. Mendonça, S. D. A. M., Melo, A. C., Pereira, G. C. C., Santos, D. M. D. S. S. D., Grossi, E. B., Sousa, M. D. C. V. B., ... & Soares, A. C. (2016). Clinical outcomes of medication therapy management services in primary health care. *Brazilian Journal of Pharmaceutical Sciences*, 52, 365-373.
  7. Rodrigues, B., Viol, L. A., da Silva Santos, M. E., Fátima, C., Guarido, L. G. R. D. S., Baldoni, A. O., & Obreli-Neto, P. R. (2023). Screening for diabetes kidney disease in primary health care. *Arterial hypertension*, 838, 76-7.
  8. Malina, R., Yasin, N. M., & Wiedyaningsih, C. (2020). The Effect of Based Services Medication Therapy Management on Treatment Adherence and Quality of Life of Diabetes Mellitus Patients. *J. Manaj. Pelayanan Farm*, 10, 204.
  9. Burns, A. (2008). Medication therapy management in pharmacy practice: core elements of an MTM service model (version 2.0). *Journal of the American Pharmacists Association*, 48(3), 341-353.
  10. Viswanathan, M., Kahwati, L. C., Golin, C. E., Blalock, S. J., Coker-Schwimmer, E., Posey, R., & Lohr, K. N. (2015). Medication therapy management interventions in outpatient settings: a systematic review and meta-analysis. *JAMA internal medicine*, 175(1), 76-87.
  11. Erku, D. A., Ayele, A. A., Mekuria, A. B., Belachew, S. A., Hailemeskel, B., & Tegegn, H. G. (2017). The impact of pharmacist-led medication therapy management on medication adherence in patients with type 2 diabetes mellitus: a randomized controlled study. *Pharmacy Practice (Granada)*, 15(3).
  12. Ibrahim, K. M., Schommer, J. C., Morisky, D. E., Rodriguez, R., Gaither, C., & Snyder, M. (2021). The association between medication experiences and beliefs and low medication adherence in patients with chronic disease from two different societies: The USA and the Sultanate of Oman. *Pharmacy*, 9(1), 31.
  13. Chou, J., Pellegrin, K., Cooke, C. E., Zarowitz, B., Hanlon, A., Lozano, A., & Brandt, N. J. (2020). Understanding the Socioeconomic and Geographical Characteristics of Beneficiaries Receiving a Comprehensive Medication Review. *Journal of Managed Care & Specialty Pharmacy*, 26(10), 1276-1281.
  14. Jeong, S., Lee, M., & Ji, E. (2018). Effect of pharmaceutical care interventions on glycemic control in patients with diabetes: a systematic review and meta-analysis. *Therapeutics and clinical risk management*, 1813-1829.
  15. Naga, Y. S., Hamdy, N. A., Bassiouny, A. E., Selim, M., & ElHafeez, S. S. A. (2023). Effect of medication therapy management services on medication-burden quality of life in hemodialysis patients. *BMC nephrology*, 24(1), 277.
  16. Schwartz, E. J., Turgeon, J., Patel, J., Patel, P., Shah, H., Issa, A. M., ... & Bain, K. T. (2017). Implementation of a standardized medication therapy management plus approach within primary care. *The Journal of the American Board of Family Medicine*, 30(6), 701-714.
  17. Fernandez-Lazaro, C. I., Adams, D. P., Fernandez-Lazaro, D., Garcia-González, J. M., Caballero-Garcia, A., & Miron-Canelo, J. A. (2019). Medication adherence and barriers among low-income, uninsured patients with multiple chronic conditions. *Research in Social and Administrative Pharmacy*, 15(6), 744-753.
  18. Okere, A. N., Ezendu, K., Berthe, A., & Diaby, V. (2018). An evaluation of the cost-effectiveness of comprehensive MTM integrated with point-of-care phenotypic and genetic testing for US elderly patients after percutaneous coronary intervention. *Journal of Managed Care & Specialty Pharmacy*, 24(2), 142-152.
  19. Ramalho de Oliveira, D., Brummel, A. R., & Miller, D. B. (2010). Medication therapy management: 10 years of experience in a large integrated health care system. *Journal of Managed Care Pharmacy*, 16(3), 185-195.
  20. McDonough, R. P., Harthan, A. A., McLeese, K. E., & Doucette, W. R. (2010). Retrospective financial analysis of medication therapy management services from the pharmacy's perspective. *Journal of the American Pharmacists Association*, 50(1), 62-66.
  21. Winston, S., & Lin, Y. S. (2009). Impact on drug cost and use of Medicare Part D of medication therapy management services delivered in 2007. *Journal of the American Pharmacists Association*, 49(6), 813-820.
  22. Adeoye, O. A., Lake, L. M., Lourens, S. G., Morris, R. E., & Snyder, M. E. (2018). What predicts medication therapy management completion rates? The role of community pharmacy staff characteristics and beliefs about

- medication therapy management. *Journal of the American Pharmacists Association*, 58(4), S7-S15.
23. Burnside, T. P., Scott, N. J., & Smith, M. G. (2019). Implementation of technician-driven medication therapy management program in community pharmacies. *Journal of the American Pharmacists Association*, 59(4), S156-S160.
24. Hohmeier, K. C., McDonough, S. L., Rein, L. J., Brookhart, A. L., Gibson, M. L., & Powers, M. F. (2019). Exploring the expanded role of the pharmacy technician in medication therapy management service implementation in the community pharmacy. *Journal of the American Pharmacists Association*, 59(2), 187-194.
25. Isetts, B. (2017). Integrating medication therapy management (MTM) services provided by community pharmacists into a community-based accountable care organization (ACO). *Pharmacy*, 5(4), 56.
26. Hattingh, H. L., Kelly, F., Fowler, J., & Wheeler, A. J. (2017). Implementation of a mental health medication management intervention in Australian community pharmacies: facilitators and challenges. *Research in Social and Administrative Pharmacy*, 13(5), 969-979.
27. Domiati, S., Sacre, H., Lahoud, N., Sili, G., & Salameh, P. (2018). Knowledge of and readiness for medication therapy management among community pharmacists in Lebanon. *International Journal of Clinical Pharmacy*, 40(5), 1165-1174.
28. Hattingh, H. L., Emmerton, L., Ng Cheong Tin, P., & Green, C. (2016). Utilization of community pharmacy space to enhance privacy: a qualitative study. *Health Expectations*, 19(5), 1098-1110.