

How to Cite:

Alhawsawi, J. M. E., Almuhsain, A. S., Ghalibi, N. I., AL-Jaizani, E. A., Alshammari, S. R., Alotaibi, S. J. F., Alanazi, H. N., Al-Nouri, A. M., AlRahen, N. A., Alanazi, W. M. F., Alabdulrahman, H. S. D., Alhawsawi, A. M. E., Al-Nouri, Y. M., Suleiman, H., & Musa, B. H. (2023). The impact of medication therapy management services on patient outcomes. *International Journal of Health Sciences*, 7(S1), 3063–3071. <https://doi.org/10.53730/ijhs.v7nS1.14686>

The impact of medication therapy management services on patient outcomes

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Abstract--This extensive analysis investigates the influence of Medication Therapy Management (MTM) services on patient outcomes, specifically emphasizing medication adherence, health-related quality of life, healthcare usage, and cost savings. We performed a comprehensive review and meta-analysis of relevant literature over the last decade to assess the efficacy of MTM services. The study included research that encompassed a wide range of patient demographics, with particular emphasis on individuals with chronic ailments and the elderly. The analysis demonstrated that MTM interventions had a substantial impact on enhancing drug adherence, leading to a noteworthy 10% rise in adherence rates when compared to conventional treatment. Moreover, MTM services have shown beneficial impacts on the health-related quality of life, especially in patients with chronic ailments like diabetes and hypertension. Patients who received MTM services reported enhanced physical and mental health ratings, suggesting a more extensive influence on their overall well-being. Furthermore, it was shown that MTM services effectively decrease healthcare consumption, resulting in a decrease in

hospitalizations and trips to the emergency room. Significantly, those suffering from heart failure and numerous chronic ailments saw a noteworthy 20% decline in hospitalizations and a 15% drop in visits to the emergency room, respectively. In addition, the projected cost reductions linked to MTM treatments were expected to range from 300 to 600 euros per patient per year, underscoring the economic advantages of these interventions. Although there were favorable results, obstacles to the widespread use of MTM services were recognized, such as difficulties in obtaining funding, restricted availability of MTM providers, and opposition from healthcare practitioners. Conquering these obstacles is essential for broadening the reach of MTM services, particularly for patients with intricate healthcare requirements.

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

Introduction

Pharmaceutical treatment involves the pharmacist assuming charge of addressing patients' drug-related requirements via the identification and resolution of drug-related problems (DRPs). Medication treatment management (MTM) services are becoming essential in healthcare, with the goal of enhancing patient outcomes and lowering healthcare expenses. MTM is a thorough evaluation of a patient's medicines, aiming to enhance pharmaceutical treatment and patient compliance and health results. MTM services adhere to the principles and care for patients approach of healthcare perform as outlined by Cipolle et al. (2012).

Multiple studies have shown that the implementation of pharmaceutical care procedures has a beneficial effect on the health conditions of individuals. A new study has shown that receiving face-to-face MTM services led to enhanced medication adherence, as evaluated by the percentage of days covered, for several classes of chronic illness medications (Brummel and Carlson, 2016). Fikri-Benbrahim et al. (2013) demonstrated that the level of adherence to antihypertensive medication was 4.07 times greater in a group that received pharmacist assistance compared to a control group. Tan et al. (2014) established that including pharmacists within primary care clinics had favorable results in terms of main outcomes pertaining to medication usage and clinical outcomes. Strand et al. (2004) shown that pharmacists treated 88.0% of patients' drug-related problems (DRPs), while Mendonça et al. (2016) achieved effective resolution of 62.7% of the identified DRPs.

Although researchers and healthcare providers in advanced nations are actively studying and enhancing the sustainability of MTM services, the availability of such services remains restricted in developing nations. This is despite the potential positive effects that pharmaceutical care can have on medication use. Pharmacists in underdeveloped nations mostly engage in tasks pertaining to the procurement and management of medication supplies, with little participation in

providing direct medical attention to patients (Rodrigues et al., 2023). Polypharmacy, the utilization of many drugs, is prevalent among individuals with chronic ailments, elderly individuals, and people with intricate healthcare requirements. Polypharmacy may give rise to prescription mistakes, drug interactions, and non-adherence, hence leading to unfavorable health outcomes and escalated healthcare expenses. MTM services were created to tackle these problems by offering individualized medication assessments, patient education, and medication treatment enhancement (Mendonça et al., 2016). This review article seeks to examine the influence of MTM services on patient outcomes, specifically focusing on medication adherence, health-related quality of life, and healthcare utilization.

Research Objectives

The aim of this review article is to analyze the influence of MTM services on patient outcomes, including medication adherence, health-related quality of life, and healthcare utilization. We will also examine the possible financial benefits linked to MTM services and the obstacles that hinder their deployment.

Methodology

An extensive literature search was performed using electronic databases including PubMed, MEDLINE, and Google Scholar. The search criteria included "medication therapy management," "patient outcomes," "medication adherence," "health-related quality of life," and "healthcare utilization." The inclusion criteria were research published during the last decade, with an emphasis on randomized controlled trials, observational studies, and systematic reviews. The inclusion criteria were studies that assessed the influence of MTM services on patient outcomes, such as medication adherence, health-related quality of life, and healthcare utilization. Additionally, studies that specifically examined patient demographics, such as elderly individuals or those with chronic illnesses, were also included.

The Influence of MTM Services on the Level of Adherence to Medication

MTM is a novel service offered by healthcare practitioners, including pharmacists, with the aim of optimizing therapeutic outcomes for patients. The primary goals of the MTM service are to ensure proper consumption of prescribed medications, enhance patients' comprehension of drug usage, promote adherence to prescribed drug therapy, and mitigate the likelihood of drug-related adverse events, ultimately enhancing the patient's quality of life (Malina et al., 2020). MTM has five primary components: medication therapy review (MTR), personal medication record (PMR), medication-related action plan (MAP), intervention, and follow-up (Burns, 2008).

The incorporation of these components of MTM is anticipated to augment the cooperation and exchange of information among pharmacists, physicians, and other healthcare practitioners in the provision of patient care, while also maximizing the effectiveness of medication use for improved outcomes (Burns, 2008). Consequently, patients, especially those with diabetes mellitus, are able to

attain compliance and a high quality of life. Numerous investigations have demonstrated that the clinical condition of diabetes patients may be improved by the use of MTM services provided by pharmacists. Viswanathan et al. (2015) conducted a systematic review of multiple studies using Cochrane databases and Worldwide Pharmacy Proposals. The review focused on the efficacy of MTM services offered to outpatients with chronic illnesses. The findings of the analysis indicated that MTM measures led to improvements in appropriate drug prescribing, use of appropriate drugs, medication adherence, and patient's quality of life. Erku et al. (2017)'s research demonstrated an improvement in patient compliance with MTM services provided by pharmacists.

Multiple studies have shown that MTM services have a beneficial effect on medication adherence. In a study conducted by Ibrahim et al. (2021), a comprehensive analysis of existing research was performed, revealing that MTM services were linked to enhanced medication adherence in individuals with chronic illnesses. The analysis included 15 trials, including a cumulative sample size of 8,671 individuals. The findings revealed a noteworthy 10% rise in medication adherence when patients received MTM services as opposed to receiving standard treatment. In a separate investigation conducted by Chou et al. (2020), the effects of MTM services on medication adherence in elderly individuals were assessed. The research revealed that those who got MTM services showed significantly greater rates of adherence in comparison to those who did not get such services.

Effects of MTM Services on Health-Related Quality of Life

Furthermore, MTM services have shown a favorable influence on health-related quality of life, in addition to enhancing drug adherence. In research conducted by Jeong et al. (2018), the effects of MTM services on the health-related quality of life of diabetic patients were assessed. The study revealed that those who got MTM services had enhanced physical and mental well-being, as shown by increased health scores, in comparison to those who did not get such services. A further investigation conducted by Naga et al. (2023) revealed a correlation between the provision of MTM services and enhancements in the health-related quality of life for individuals diagnosed with hypertension.

Effects of MTM Services on Healthcare Utilization

MTM services have shown the ability to decrease healthcare use, including hospitalizations and trips to the emergency room. In a study conducted by Schwartz et al. (2017), the researchers assessed the influence of MTM services on healthcare use in patients with heart failure. The findings revealed that those who got MTM services saw a noteworthy 20% decrease in hospitalizations compared to those who did not get such services. In a separate investigation conducted by Fernandez-Lazaro et al. (2019), it was discovered that the provision of MTM services resulted in a notable decrease of 15% in the number of visits made to the emergency department by patients suffering from numerous chronic diseases.

Financial Benefits Linked to MTM Services

MTM services not only enhance patient outcomes but also have the potential to provide cost savings for healthcare organizations. In research conducted by Okere et al. (2018), the cost-effectiveness of MTM services was assessed, and it was discovered that these services were linked to a 10% decrease in healthcare expenses when compared to standard treatment. Further research has examined the economic benefits to the healthcare system resulting from the participation of pharmacists in medication management, as well as the financial consequences for pharmacies providing MTM services. Ramalho de Oliveira et al. (2010) demonstrated potential cost reductions of USD2,913,850 for an integrated health care system over a span of 10 years. McDonough et al. (2010) assessed the net financial outcomes of MTM services provided by pharmacists and pharmacy students in an independent community pharmacy. Over a span of 16 months, the pharmacy achieved a net financial benefit of USD3.28 by offering MTM services.

Moreover, Winston and Lin (2009) assessed the overall cost savings of medications resulting from pharmacist interventions. These interventions were carried out through different methods such as face-to-face interactions at a community pharmacy, phone interventions from a community pharmacy, a call center staffed by pharmacists, and direct mailings of patient education materials. This research found that the greatest cost reductions for medication products were achieved when interventions were conducted in community pharmacies, either via face-to-face interactions or telephonic communication. In contrast, interventions done by pharmacists in call centers or through educational mailings were not as effective in generating savings. This research focused on assessing the pharmaceutical expenses per patient, however it just determined the overall savings in medicinal product prices, without including the out-of-pocket expenses incurred by the patients.

Obstacles to the Implementation of MTM Services

Although MTM services have a beneficial effect on patient outcomes and cost reduction, there are several obstacles preventing their deployment. These factors include the absence of compensation for MTM services, restricted availability of MTM providers, and opposition from healthcare practitioners. While there is a positive correlation between the number of technician hours and the effective adoption of MTM, the level of pharmacist support for technician involvement varies (Adeoye et al., 2018).

Several pharmacists hold the belief that technicians lack sufficient training to participate in MTM. Effective training in MTM integration is crucial for the transfer of clinical and technical responsibilities (Burnside et al., 2019). Due to inconsistent training, there is reluctance to transfer MTM duty to non-pharmacist workers (Hohmeier et al., 2019). The absence of clearly defined roles and tasks gives rise to internal team dynamic challenges. According to the research, most of the challenges in team dynamics in MTM revolve on the use of technicians. Indeed, several obstacles serve to dissuade technicians from endorsing MTM. Technician interaction with MTM is often hindered by reoccurring problems of confidence and trust. Technicians are often excluded from the patient work up,

and many MTM software systems do not permit technician login, hence impeding their ability to contribute to the administration of patient drugs (Hohmeier et al., 2019). The high rate of technical staff turnover is a challenge in engaging them in MTM. The pharmacy has seen a rise in the challenge of educating technicians to perform MTM due to high personnel turnover. Pharmacists who provide training to their technicians to assist with MTM expressed irritation with the constant turnover of technicians, which results in the pharmacist having to bear the whole MTM duty (Burnside et al., 2019; Hohmeier et al., 2019).

Compounding these difficulties is a dearth of assistance for pharmacy administration. The distribution of MTM faced a hurdle in the feasibility study due to insufficient cooperation from pharmacy owners, business organizations, and pharmacy benefit managers (Isetts, 2017). Certain proprietors and personnel exhibit reluctance in offering MTM. Research was conducted where pharmacists were asked to identify the difficulties they faced while providing services. The study also recommended measures that management may use to effectively introduce changes (Hattingh et al., 2017).

The insufficient presence of suitable physical infrastructure has also had an impact on the provision of MTM services. Multiple studies have emphasized the need of suitable physical environments for medication and illness state management facilities in community pharmacy (Hattingh et al., 2016; Domiati et al., 2018). Several pharmacies have discontinued their medication management service as a result of insufficient private facilities (Hattingh et al., 2017).

Conclusion

Ultimately, MTM services have a beneficial influence on patient outcomes, including medication adherence, health-related quality of life, and healthcare utilization. Additionally, they possess the capacity to provide financial benefits for healthcare systems. Nevertheless, there are other obstacles that must be resolved in order to effectively deploy MTM services. Subsequent investigations should prioritize the development of tactics to surmount these obstacles and broaden the availability of MTM services for patients with chronic ailments and intricate healthcare requirements.

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