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THE EFFECTIVENESS OF MEDICATION THERAPY MANAGEMENT PROGRAMS TO OPTIMIZE PATIENT OUTCOMES

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Abstract

Medication treatment management (MTM) services are a technique that may successfully enhance patients' circumstances, but the effectiveness of economic and humanistic results is still uncertain. This study aims to assess the many advantages of Medication Therapy Management (MTM) services by analyzing economic, clinical, and humanistic results using a systematic review and meta-analysis. A comprehensive review and meta-analysis was performed by accessing PubMed, EMBASE, the Cochrane Library, and ClinicalTrial.gov from their establishment until April 2022. Two reviewers independently screened the records, extracted the data, and assessed the quality of research. Our systematic review and meta-analysis revealed that MTM services significantly enhanced patients' clinical conditions. However, the effectiveness of economic and humanistic outcomes varied considerably, indicating the need for further studies to establish more robust evidence due to potential publication bias and heterogeneity in the results.

Keywords: Medication treatment management (MTM), review, patients' clinical conditions, patient.

1. Introduction

Medication treatment management (MTM) services refer to a range of medical services provided by pharmacists. Ever since the idea of Medication Therapy Management (MTM) was first suggested in the 1990s by Hepler and Strand, it has garnered significant interest as a unique and comprehensive approach to enhancing the quality of life for patients. The US government provided significant funding for the implementation of MTM services in order to promote the establishment of a comprehensive healthcare system called Fairview Health Services, which has benefitted millions of patients over time (Burns, 2008). A 2014 meta-analysis determined that medication therapy management (MTM) services were effective in reducing drug-related issues, lowering healthcare expenses, and decreasing the overall cost of healthcare. However, there was insufficient evidence to support the claim that MTM services improved health outcomes

(Viswanathan et al., 2015). This study conducted a meta-analysis to examine the effectiveness of Medication Therapy Management (MTM) services. The findings demonstrated that the progress of MTM services was impeded by the absence of robust evidence and highlighted the need for thorough and rigorous investigations in the coming years.

The Economic, Clinical and Humanistic Outcomes (ECHO) model offers a comprehensive perspective on drugs and medical treatments (Reeder, 1995). The text highlights the significance of integrating pharmaceutical services with conventional clinical results, using modern measurements of economic efficiency and quality (Kozma et al., 1993). The methodology utilizes economic, clinical, and humanistic outcomes to thoroughly evaluate the effectiveness of medical intervention. While many studies have extensively assessed the impact on patients and medical interventions using the ECHO model, including measures of refill adherence and STOPP/START criteria (Reeder et al., 2000; Jeremy et al., 2011; Hill-Taylor et al., 2013; Zhao et al., 2019; Chua et al., 2020), only a limited number of studies have evaluated the effectiveness of MTM services utilizing the complete ECHO model.

Although descriptive studies have shown that MTM services have improved patients' clinical conditions, quality of life, and potentially reduced healthcare disparities (Bunting and Cranor, 2006; Shrestha et al., 2022), there have been few studies that have analyzed all three parts of the ECHO model in a single assessment (Singhal et al., 1999; Cheng et al., 2013; Johnson et al., 2018). The lack of thoroughness in the analysis may lead to shallow findings and less accurate consequences.

Using the ECHO model, our meta-analysis categorized results into economic, clinical, and humanistic outcomes in order to assess the effectiveness of MTM services. The objective of our research was to clarify the advantages of MTM services and to provide strong evidence endorsing the effectiveness of MTM services.

2. Medical results

The meta-analysis showed that MTM services were beneficial in improving clinical outcomes by reducing the likelihood of readmission, emergency department visits after discharge, adverse drug events, drug-related problems, hospital length of stay, and the score of medication appropriateness. The clinical outcomes of this study were in line with the findings of a prior meta-analysis conducted in 2014 (Viswanathan et al., 2015). Additional research has also validated the practical effectiveness of MTM services, such as decreasing the need for patients to make repeat trips to the emergency department (Hayes et al., 2012) and enhancing the immediate results for patients with diabetes and cardiovascular problems (Babar et al., 2018).

Additionally, data obtained from Minnesota's Fairview Health System indicated that around 85% of patients had at least one Drug-Related Problem (DRP), whereas the health conditions of 55% of patients showed improvement after the administration of complete medication management (McFarland et al., 2021). Although MTM services have shown exceptional success

in treating patients' short-term illnesses, our meta-analysis revealed that the impact of MTM services on long-term outcomes, namely death, was not significant. The lack of significant results in reducing mortality rates has been attributed by some randomized controlled trials (RCTs) and reviews to insufficient follow-up time (Christensen and Lundh, 2016; Lea et al., 2020).

However, our meta-analysis, which was larger than previous studies, included a greater number of studies with a follow-up time exceeding 1 year, and still yielded the same non-significant results. The main goal of MTM services was to enable patients to independently manage their health issues, rather than immediately healing the illness and increasing their life expectancy. As a result, the MTM treatments had a greater impact on alleviating patients' immediate problems, but their long-term impacts were limited to a year.

3. Economic results

The implementation of MTM services resulted in a reduction in the need for extra medicine, leading to a direct decrease in pharmaceutical expenses. The intervention decreased adverse drug events (ADEs), promoted compliance with evidence-based recommendations, promptly implemented pharmaceutical therapy, and enhanced the use of cost-effective pharmacological therapies (Morgan et al., 2018). Another analysis by Moczygemba et al. (2019) revealed that MTM treatments had a benefit-cost ratio ranging from 2.1:1 to 2.6:1, and substantially decreased rates of readmission and visits to the emergency department (ED). A research conducted by Isetts et al. (2008) found that MTM services led to a significant decrease of 57.9% in facility expenses and 11.1% in professional claims. However, there was a 19.7% rise in prescription medication expenditures. While multiple studies (Campbell et al., 2018; Ni et al., 2018; Chung et al., 2020; Bezerra et al., 2022) have reached similar conclusions regarding the effectiveness of saving partial costs through MTM services, it is important to note that there are other costs associated with delivering MTM services, apart from medication costs, that may actually increase and undermine the overall cost reduction efficacy.

4. Humanistic outcomes

The findings from the humanistic outcomes indicated that MTM treatments were more successful in enhancing physical outcomes, specifically in terms of SF (physical) compared to mental outcomes, such as adherence and SF (mental). The findings suggest that MTM services prioritize the patients' physical well-being above their emotional well-being. Several studies have consistently found similar findings, indicating the need for more study with more rigorous methodology to acquire data that supports mental health (Finley et al., 2003; Rubio-Valera et al., 2014; Hattingh et al., 2016; Silva et al., 2018). Unlike a Cochrane review that evaluated various pharmaceutical interventions in older individuals and found minimal or modest improvements in patients' adherence, appropriateness of polypharmacy, and quality of life (Rankin et al., 2018), our meta-analysis showed that MTM services have some effectiveness in improving humanistic outcomes.

Although the Cochrane review specifically examined the usage of many medications in older individuals, our meta-analysis was not limited to a particular demographic, therefore increasing the applicability of our findings. In addition, being a widely-used tool for assessing the general population (Rabin and de Charro, 2001), EQ-5D may lead to a less accurate assessment of a patient's state when it comes to a particular illness. Utilizing both a general instrument and disease-specific scales, such as the global registry of acute coronary events (GRACE) risk score, would provide more advantages for a thorough examination. These factors emphasize the need for enhanced methods to assess the quality of life of patients.

The percentage of adherence in patients with chronic diseases varies between 43% and 78% owing to discrepancies in the concept of "adherent" and the absence of a universally accepted diagnostic criterion (Osterberg and Blaschke, 2005). Nevertheless, those who undergo various pharmacological therapy have a greater level of adherence, estimated to be about 72% (DiMatteo, 2004). Therefore, despite the findings of poor adherence and significant variability in our meta-analysis, the effectiveness of MTM services in enhancing patients' adherence was unquestionable.

5. Conclusion

The research findings provide data that demonstrates the efficacy of MTM services across many outcome indicators. The results indicate that MTM services have a positive impact on enhancing immediate patient outcomes. However, given the significant variability and inconsistent findings in many economic and humanistic measures, more research is needed to determine their effectiveness in lowering patient expenses and improving their overall well-being. Additional assessment and standardization of economic result metrics are required to enhance the efficiency of the study. Furthermore, it is crucial to emphasize the significance of mental healthcare in enhancing the overall welfare of patients.

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