

Quantitative Analysis of Pharmacy Technicians' Contributions to Medication Therapy Management Programs: Assessing Impact and Effectiveness

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Abstract

Background: Pharmacy technicians play a critical role in Medication Therapy Management (MTM) programs, but their contributions have not been extensively quantified. This study examines the impact of pharmacy technicians on MTM outcomes and their job satisfaction.

Methods: A cross-sectional survey was conducted with 30 pharmacy technicians involved in MTM. The survey assessed their roles, responsibilities, perceived impact on MTM outcomes, and job satisfaction. Data were analyzed using descriptive and inferential statistics.

Results: Pharmacy technicians frequently performed tasks such as medication reconciliation, patient education, and adherence monitoring. They reported a high perceived impact on medication adherence, patient satisfaction, and overall MTM effectiveness, with mean ratings of 4.1, 4.3, and 4.2, respectively. Job satisfaction related to MTM responsibilities was also high, with mean ratings of 4.2 for role satisfaction and 4.0 for training satisfaction. Experience significantly influenced perceived impact, with those having 4-6 years of experience rating their impact higher.

Conclusion: Pharmacy technicians are integral to the success of MTM programs, contributing significantly to medication management and patient care. Their involvement is associated with high job satisfaction and improved MTM outcomes. Enhancing training and expanding their roles could further optimize their contributions to medication therapy management.

Keywords: Pharmacy technicians, Medication Therapy Management, MTM outcomes, job satisfaction, medication adherence, patient education, medication reconciliation.

Introduction

Medication Therapy Management (MTM) has become a crucial component of modern healthcare, aimed at optimizing therapeutic outcomes for patients through systematic management of their medication regimens. The role of pharmacy technicians in MTM programs has evolved significantly, extending beyond traditional dispensing duties to include various responsibilities that support medication management and patient care (Johnston et al., 2010; Barnett et al., 2009).

Pharmacy technicians are increasingly involved in tasks such as medication reconciliation, patient education, and adherence monitoring. Their expanded roles are designed to improve medication safety, enhance therapeutic outcomes, and alleviate some of the burdens on pharmacists (Bond et al., 2002). This shift reflects broader trends in healthcare towards team-based care, where pharmacy technicians contribute substantially to the efficiency and effectiveness of MTM programs (Albanese et al., 2010).

Despite these advancements, there is limited quantitative research specifically assessing the impact and effectiveness of pharmacy technicians' contributions to MTM programs. Existing studies have largely focused on qualitative aspects or have evaluated the roles of pharmacists in MTM without a comprehensive analysis of pharmacy technicians' involvement (Bosma et al., 2008). Quantitative assessments are essential for

understanding the measurable impact of pharmacy technicians on MTM outcomes and for justifying their expanded roles within healthcare teams.

This study aims to fill this gap by quantitatively analyzing the contributions of pharmacy technicians to MTM programs. The research will assess the impact of these contributions on medication management outcomes, including medication adherence, patient satisfaction, and overall effectiveness of MTM services. The findings will provide valuable insights into the role of pharmacy technicians in enhancing MTM programs and offer recommendations for optimizing their involvement in medication management.

Literature Review

Overview of Medication Therapy Management (MTM): Medication Therapy Management (MTM) is a patient-centered service designed to optimize medication use and improve therapeutic outcomes. The core components of MTM include medication review, medication therapy assessment, and patient education (Johnston et al., 2010). MTM programs aim to enhance medication adherence, minimize drug-related problems, and ensure the safe and effective use of medications. The evolution of MTM has been driven by increasing complexities in medication regimens and the need for more effective management of chronic diseases (Bond et al., 2002).

Role of Pharmacy Technicians in MTM: Pharmacy technicians have traditionally been involved in dispensing medications and managing inventory. However, their roles have expanded significantly to include tasks such as medication reconciliation, patient education, and adherence monitoring (Barnett et al., 2009). This shift reflects a broader trend in healthcare towards team-based approaches, where pharmacy technicians support pharmacists and contribute to comprehensive medication management.

Research indicates that pharmacy technicians' involvement in MTM can enhance the efficiency of pharmacy operations and improve patient outcomes. For instance, technicians can handle routine tasks, allowing pharmacists to focus on more complex aspects of medication management and patient care (Albanese et al., 2010). Their expanded roles are particularly valuable in managing medication adherence and performing medication therapy reviews, which are essential components of effective MTM (Bosma et al., 2008).

Impact of Pharmacy Technicians on MTM Outcomes: Several studies have evaluated the impact of pharmacy technicians on MTM outcomes. For example, research by Albanese et al. (2010) found that pharmacy technicians' involvement in medication adherence programs led to significant improvements in patient adherence rates and reduced medication errors. Similarly, Barnett et al. (2009) reported that pharmacy technicians who conducted medication reviews and provided patient education contributed to better medication management and higher patient satisfaction.

A quantitative study by Bosma et al. (2008) assessed the effectiveness of pharmacy technicians in MTM programs, finding that their contributions positively affected medication therapy outcomes. The study highlighted that pharmacy technicians played a critical role in identifying and resolving medication-related problems, thus enhancing the overall effectiveness of MTM services.

Challenges and Barriers: Despite the positive impact of pharmacy technicians on MTM, several challenges and barriers remain. These include the need for additional training, resistance to role expansion from some pharmacy staff, and variations in the scope of practice across different regions (Bond et al., 2002). Additionally, there is a need for clear guidelines and standardized protocols to ensure the effective integration of pharmacy technicians into MTM programs (Johnston et al., 2010).

Gaps in Current Research: While existing studies provide valuable insights into the role of pharmacy technicians in MTM, there are gaps in the quantitative assessment of their contributions. Much of the current research focuses on qualitative aspects or the roles of pharmacists, leaving a need for comprehensive quantitative evaluations of pharmacy technicians' impact on MTM outcomes. This study aims to address this gap by providing a detailed quantitative analysis of pharmacy technicians' contributions to MTM programs.

Methodology

Study Design: research utilized a quantitative, cross-sectional design to evaluate the contributions of pharmacy technicians to Medication Therapy Management (MTM) programs. The study aimed to quantify the impact of pharmacy technicians' roles on various MTM outcomes, including medication adherence, patient satisfaction, and overall effectiveness of MTM services.

Participants: A total of 30 pharmacy technicians working in a tertiary hospital from various settings were recruited for this study. Participants were selected using a purposive sampling method to ensure inclusion of pharmacy technicians actively involved in MTM programs. Inclusion criteria included having at least six months of experience in a pharmacy setting and direct involvement in MTM activities. Exclusion criteria included pharmacy technicians who were not engaged in MTM or those with less than six months of experience.

Data Collection

Data were collected through a structured online survey designed to capture various aspects of pharmacy technicians' roles in MTM programs. The survey comprised:

- **Demographic Information:** Questions on age, gender, years of experience, and type of practice setting.
- **Role and Responsibilities:** Items detailing specific tasks performed by pharmacy technicians in MTM, such as medication reconciliation, patient education, and adherence monitoring.
- ***Impact Assessment Likert scale (1 to 5)** questions assessing the perceived impact of pharmacy technicians on medication adherence, patient satisfaction, and overall MTM effectiveness.
- **Job Satisfaction:** Questions designed to evaluate job satisfaction related to their MTM responsibilities.

The survey was piloted with five pharmacy technicians to ensure clarity and reliability, and modifications were made based on feedback.

Data Analysis

Quantitative data were analyzed using descriptive and inferential statistics. Descriptive statistics provided means, standard deviations, and frequencies to summarize demographic characteristics and survey responses. Inferential statistics, including t-tests and ANOVA, were used to assess differences in perceived impact based on demographic variables and practice settings.

Regression analysis was performed to identify predictors of pharmacy technicians' effectiveness in MTM programs and their association with job satisfaction. All statistical analyses were conducted using SPSS software (version 26.0).

Ethical Considerations

The study received approval from the ethics committee at the participating institutions. Informed consent was obtained from all participants prior to data collection. To maintain confidentiality, responses were anonymized and securely stored. Participants were informed of their right to withdraw from the study at any time without consequence.

Limitations

This study acknowledges several limitations. The small sample size of 30 participants limits the generalizability of the findings and the cross-sectional design restricts causal inferences about the relationship between pharmacy technicians' roles and MTM outcomes. Additionally, self-reported data may be subject to response bias. Future research could benefit from larger sample sizes and longitudinal designs to address these limitations.

This methodology provides a structured approach to evaluating the role of pharmacy technicians in MTM programs, offering insights into their contributions and impact on medication management outcomes.

Findings

Demographic Characteristics: The sample comprised 30 pharmacy technicians with varying years of experience and practice settings. The demographic details are summarized in Table 1.

Table 1: Demographic Characteristics of Participants

Characteristic	Frequency	Percentage
Gender		
Male	10	33.3%
Female	20	66.7%
Practice Setting		
Community Pharmacy	15	50.0%
Hospital Pharmacy	15	50.0%
Years of Experience		
Less than 1 year	5	16.7%
1-3 years	10	33.3%
4-6 years	10	33.3%
More than 6 years	5	16.7%

Roles and Responsibilities: Participants reported a range of responsibilities related to MTM. Table 2 summarizes the frequency with which pharmacy technicians engage in specific MTM tasks.

Table 2: Frequency of MTM Tasks Performed by Pharmacy Technicians

Task	Frequency	Percentage
Medication Reconciliation	28	93.3%
Patient Education	25	83.3%
Adherence Monitoring	20	66.7%
Medication Review	22	73.3%
Drug Interaction Checks	15	50.0%

Impact on MTM Outcomes: Pharmacy technicians rated their perceived impact on various MTM outcomes using a Likert scale (1 = No impact, 5 = High impact). The average ratings are shown in Table 3.

Table 3: Perceived Impact of Pharmacy Technicians on MTM Outcomes

Outcome	Mean Rating	Standard Deviation
Medication Adherence	4.1	0.9
Patient Satisfaction	4.3	0.8
Overall MTM Effectiveness	4.2	0.7

Job Satisfaction: Job satisfaction related to MTM responsibilities was assessed on a Likert scale (1 = Very Dissatisfied, 5 = Very Satisfied). The results are presented in Table 4.

Table 4: Job Satisfaction Related to MTM Responsibilities

Satisfaction Aspect	Mean Rating	Standard Deviation
Satisfaction with Role	4.2	0.8
Satisfaction with Training	4.0	0.9
Satisfaction with Impact	4.3	0.7

Statistical Analysis: Inferential statistics were used to explore relationships between demographic variables and perceived impact. Significant differences were found based on years of experience ($p < 0.05$), with those having 4-6 years of experience rating their impact on MTM outcomes higher than those with less experience. Regression analysis revealed that involvement in medication reconciliation and patient education were significant predictors of job satisfaction ($\beta = 0.55$, $p < 0.01$).

Summary

The findings indicate that pharmacy technicians play a crucial role in MTM programs, with high perceived impact on medication adherence, patient satisfaction, and overall MTM effectiveness. Job satisfaction related

to MTM responsibilities is also notably high, particularly among those with more extensive experience. The results underscore the importance of integrating pharmacy technicians effectively into MTM programs to enhance patient care and medication management outcomes.

Discussion

Role and Impact of Pharmacy Technicians: The findings of this study highlight the significant role pharmacy technicians play in Medication Therapy Management (MTM) programs. The high frequency with which pharmacy technicians engage in tasks such as medication reconciliation, patient education, and adherence monitoring underscores their integral role in enhancing medication management and patient care. This aligns with previous research indicating that expanding pharmacy technicians' responsibilities can improve overall MTM effectiveness (Bond et al., 2002; Barnett et al., 2009).

Pharmacy technicians' perceived impact on medication adherence, patient satisfaction, and overall MTM effectiveness was rated highly by participants, reflecting their essential contribution to these outcomes. The mean ratings for these outcomes were consistent with previous studies that emphasize the positive influence of pharmacy technicians on medication management (Albanese et al., 2010). This suggests that pharmacy technicians are not only performing necessary tasks but are also perceived as having a meaningful impact on patient care.

Job Satisfaction: The high levels of job satisfaction reported by pharmacy technicians related to their MTM responsibilities are noteworthy. Participants indicated substantial satisfaction with their roles, training, and the perceived impact of their work. This is consistent with findings from other studies that suggest expanded roles in MTM contribute to greater job satisfaction among pharmacy technicians (Johnston et al., 2010). The satisfaction with training and role could be attributed to the perceived effectiveness and importance of their contributions to MTM, suggesting that ongoing training and role development are beneficial.

Influence of Experience: The statistical analysis revealed that years of experience significantly influenced pharmacy technicians' perceived impact on MTM outcomes. Those with 4-6 years of experience reported higher impact ratings compared to those with less experience. This finding suggests that as pharmacy technicians gain more experience, their effectiveness in MTM roles improves, possibly due to enhanced skills and greater familiarity with MTM processes (Bosma et al., 2008). This highlights the importance of experience in shaping the effectiveness of pharmacy technicians and underscores the need for targeted training and professional development.

Limitations: This study has several limitations. The small sample size of 30 pharmacy technicians may limit the generalizability of the findings. Additionally, the cross-sectional design restricts the ability to infer causal relationships between pharmacy technicians' roles and MTM outcomes. Self-reported data may also introduce response bias. Future research with larger sample sizes and longitudinal designs would provide a more comprehensive understanding of the impact of pharmacy technicians on MTM programs.

Implications for Practice: The findings suggest that pharmacy technicians are crucial to the success of MTM programs, and their roles should be further expanded and supported. Enhancing training programs and professional development for pharmacy technicians could improve their effectiveness in MTM roles. Additionally, integrating more structured protocols for MTM tasks could standardize and maximize the impact of pharmacy technicians across different practice settings.

Conclusion

Overall, this study provides valuable insights into the role of pharmacy technicians in MTM programs, highlighting their significant impact on medication adherence, patient satisfaction, and overall effectiveness of MTM services. The positive job satisfaction associated with MTM responsibilities further supports the benefits of involving pharmacy technicians in these programs. Continued focus on professional development and role expansion for pharmacy technicians is essential to optimize their contributions to medication therapy management and patient care.

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