

Pharmacist role chronic diseasemanagement

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Abstract

This is growing interest in pharmacist-led chronic disease management (CDM) for underserved populations such as those treated within Federally Qualified Health Centres (FQHCs). Objectives: To assess the impact of adding a pharmacist to the healthcare team within an FQHC for CDM. This is a non-randomized, 6-month prospective pilot study whereby any member of the healthcare team could refer a patient to receive CDM from a pharmacist. The primary outcome is change in disease control as measured by primary clinical endpoint. Primary clinical endpoints for the most common disease states include glycated haemoglobin (A1C) for type 2 diabetes mellitus (T2DM), systolic blood pressure (SBP) for hypertension, Generalized Anxiety Disorder-7 (GAD-7) score for anxiety, and Patient Health Questionnaire-9 (PHQ-9) score for depression. Primary clinical endpoints are compared using a paired test for the modified intention-to-treat population[4].

KEYWORDS

Chronic disease, Community Health Centers, disease management, patient care team, Patient outcome assessment, Prospective studies

INTRODUCTION

Chronic disease poses a significant healthcare burden in the United States, affecting six in ten adults and accounting for 90% of the nation's annual healthcare expenditures[9]. Addressing chronic illness is a major challenge in the United States (US); however, with appropriate management, morbidity and mortality can be mitigated. A common component of chronic disease management (CDM) is through long-term pharmacotherapy[8]. In 2018, nearly 70% of outpatient physician visits in the United States involved drug therapy, and over 860 million drugs were provided or prescribed in this setting.² Similarly, almost half of the US population reported using at least one prescription drug in the last 30 days,³ and retail outlet sales of prescription drugs totalled 456[5].

¹¹⁻¹⁷ Such studies are of variable quality and include limitations such as being retrospective, lacking comparison groups, being descriptive in nature without statistical analyses, focusing on only one disease state, and/or including a small number of patients.¹¹⁻¹⁷ As such, there is an ongoing need to provide additional evidence which describes the provision of CDM services by pharmacists to further define the ways in which they can impact care in the FQHC setting.

Medication Management:

Pharmacists are integral members of healthcare teams uniquely qualified to oversee medication management, ensuring the safe and effective use of medications in chronic disease management. They conduct comprehensive medication reviews, examining patients' medication regimens for appropriateness, efficacy, and safety[10]. This involves assessing the necessity of each medication, potential drug interactions, duplications, and adverse effects[3].

In diabetes management, pharmacists play a critical role in adjusting insulin doses and titrating oral antidiabetic medications to achieve optimal glycaemic control. They work closely with patients to monitor blood glucose levels, adjust medications as needed, and provide education on insulin administration techniques, injection sites, and rotation schedules.

Similarly, in hypertension management, pharmacists collaborate with patients to optimize antihypertensive therapy[4]. They monitor patients' blood pressure readings, assess medication efficacy,

and recommend adjustments to medication doses or formulations as necessary.

Adherence Support:

Non-adherence to medication regimens is a prevalent issue in chronic disease management, often leading to suboptimal treatment outcomes and increased healthcare costs[9]. Pharmacists employ various strategies to enhance medication adherence and support patients in adhering to prescribed treatment regimens[6]. This includes patient education on the importance of medication adherence, potential consequences of non-adherence, and strategies to overcome barriers to adherence.

Motivational interviewing techniques are utilized to explore patients' beliefs, attitudes, and concerns regarding their medications, fostering a collaborative approach to medication management. Pharmacists may also implement medication synchronization programs, aligning patients' prescription refills to a single monthly visit[7], simplifying medication routines and reducing the likelihood of missed doses. Additionally, adherence monitoring technologies such as medication adherence packaging, reminder apps, and electronic monitoring devices are employed to track patients' medication-taking behaviors and provide timely interventions when adherence issues arise.

Patient Education:

Patient education is essential for empowering individuals to take an active role in managing their chronic conditions and making informed decisions about their health. Pharmacists serve as valuable educators, providing patients with comprehensive information on their disease states, medications, self-management techniques, and lifestyle modifications. In diabetes management, for instance, pharmacists educate patients on the importance of blood glucose monitoring, carbohydrate counting, insulin administration, and hypoglycemia recognition and management [1].

Pharmacists also play a crucial role in asthma management by teaching patient's proper inhaler technique, including device priming, proper inhalation technique, and spacer use. They educate patients on identifying asthma triggers, such as allergens and irritants, and developing personalized asthma action plans to manage exacerbations effectively.

Collaborative Care:

Pharmacists collaborate closely with other members of the healthcare team, including physicians, nurses, dietitians, and psychologists, to deliver comprehensive care to patients with chronic diseases. Interprofessional collaboration allows for coordinated care, shared decision-making, and holistic management of patients' physical, emotional, and social needs. Pharmacists participate in multidisciplinary care teams, contributing their expertise in medication management, adherence support, and patient education to enhance treatment outcomes[9].

Through collaborative practice agreements and team-based care models, pharmacists expand their scope of practice and assume greater responsibility in patient care. They provide medication recommendations, monitor patients' progress, and adjust treatment plans in consultation with other healthcare providers. Pharmacists also facilitate communication among team members, ensuring continuity of care and promoting patient-centred approaches to chronic disease management.

Chronic Disease Prevention and Screening:

In addition to managing established chronic diseases, pharmacists play a proactive role in disease prevention and early detection through health promotion activities, screenings, and immunizations. Pharmacists conduct medication therapy reviews to identify patients at risk of developing chronic diseases due to medication-related adverse effects or drug interactions[7]. They assess patients' risk factors, such as obesity, smoking, and sedentary lifestyle, and provide personalized interventions to mitigate modifiable risk factors and prevent disease progression.

Pharmacists also administer vaccinations, including influenza, pneumococcal, and shingles vaccines, to protect patients from vaccine-preventable diseases and reduce disease burden in the community. They

conduct health screenings, such as blood pressure measurements, cholesterol tests, and diabetes screenings, to identify individuals at risk of developing chronic [9]diseases and provide appropriate interventions and referrals for further evaluation and management. Additionally, pharmacists promote healthy lifestyle behaviors, such as balanced nutrition, regular physical activity, stress management, and smoking cessation, to prevent the onset or progression of chronic diseases and improve overall health outcomes.

RESULTS

Between March 3, 2017, and February 21, 2020, 446 patients were referred to the pharmacist and assessed for enrolment. One hundred and one patients did not meet inclusion criteria, 45 declined to participate, and the remaining 300 met inclusion criteria and signed informed consent to participate in the study. Of those enrolled, 199 are included in the analysis, (Figure 1). Demographic information for patients included in the analysis is summarized in Table 2. Of enrolled patients, most were referred by their PCP, with 195 (65%) referred by a nurse practitioner (NP) and 80 (26.67%) by a physician. Fourteen were referred by a behavioural health consultant, five by a registered dietician, four by a behavioural therapist, and two by a nurse. 3.1 | Primary outcome The results of the primary outcome for the most commonly referred disease states (at least 20 participants) are summarized in records.

3.1 | Primary outcome

The results of the primary outcome for the most commonly referred disease [9] states (at least 20 participants) are summarized in Table. Statistically significant differences in the mean primary clinical end-point measures from baseline to the last observation carried forward were seen for T2DM ($n=96$, change in mean A1C from 10.8 ± 2.2 to 8.7 ± 2.3 , $P < 0.001$), hypertension ($n=32$, change in mean systolic blood pressure from 167.7 ± 24.7 to 138 ± 21.0 mmHg, $P < 0.001$), anxiety ($n=25$, change in mean Generalized Anxiety Disorder-7 score from 16.5 ± 3.7 to 9.5 ± 6.0 , $P < 0.001$), depression ($n=22$, change in mean Patient Health Questionnaire-9 score from 19.3 ± 6.6 to 8.2 ± 6.4 , $P < 0.001$), post-traumatic stress disorder ($n=6$, change in mean Short Post-Traumatic Stress Disorder Rating Interview score from 19.3 ± 6.6 to 8.2 ± 6.4 , $P=0.04$), and chronic pain ($n=4$, change in mean numerical severity score from 7.1 ± 1.7 to 3.3 ± 2.0 , $P=0.03$)

3.2 | Secondary outcomes

Statistically significant improvements in self-rated health and health-care utilization were not observed. Patients rated their health on a Likert scale from 1 ("Excellent") to 5 ("Poor"). The median score at both baseline and end of study remained 3 (baseline interquartile range [IQR]=1, end IQR=2). Similarly, median self-reported health-care utilization remained the same from baseline to end of study for all queries of healthcare services. Patient satisfaction with care is summarized in Figure 2. Patients consistently reported higher satisfaction scores for care received from the pharmacist as compared to the PCP. When considering each question individually, pharmacists received an ideal score from a higher percentage of respondents than the PCPs, which was statistically significant for all questions but one

Healthcare Utilization:

Healthcare Service	Baseline	End
Primary care visits	2(3.5)	2(3)
Emergency department visit	0(1)	0(1)
Hospitalizations	0(0)	0(0)
Total nights in hospital	0(0)	0(0)

CONCLUSIONS

When provided with prescriptive authority and working within an interdisciplinary primary care team, pharmacists at HJAHC were able to positively impact clinical and humanistic outcomes, leading to improved CDM for a variety of medical and mental illnesses. The types of disease states prompting referral were often those most frequently encountered at HJAHC, those associated with specific clinical outcome measures that were tracked and reported by HJAHC to outside agencies to ensure high standards of clinical care, those for which the pharmacy team had already demonstrated knowledge and skills, such as through previous studies and targeted presentations, and those poorly controlled at baseline.

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