PHARMACISTS' ROLE IN MENTAL HEALTH CARE: EXPLORING THE CURRENT STATE AND FACTORS IMPACTING SERVICE PROVISION

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Abstract

Pharmacists can have an essential role in providing care for patients with mental illness and addressing the significant and growing mental health care needs. There are gaps in the understanding of the current extent of Saskatchewan pharmacists' involvement in caring for patients with mental illness and of their readiness to effectively provide this care. This study describes the current practices of Saskatchewan pharmacists in providing care to individuals with mental illness and assesses factors that may impact these practices.

A cross-sectional, electronic survey was emailed to pharmacists in Saskatchewan, Canada. Pharmacists were recruited through the provincial advocacy bodies and were eligible if their current practice included direct patient care in any setting. Pharmacists were asked about their current extent of and attitudes toward providing specific clinical services for mental health patients. Other questions were asked to assess attitudes, beliefs, and potential barriers related to mental health care provision. Data was collected in Qualtrics XM and analyzed using descriptive statistics, Chi-Square tests for associations, and content analysis for free-text responses.

One hundred forty-six pharmacists responded to the survey (response rate 9.1%). Fewer than 20% of respondents are providing listed clinical services to most or all patients with mental illness, except for providing basic medication education (61%). However, most agree it is a pharmacist's role to provide these services, especially basic education (98%), monitoring therapy (94%), and performing comprehensive medication management (91%). Many pharmacists feel motivated to provide these services, and to a much higher degree than they currently are. The factors most frequently selected as having the greatest impact on service provision were insufficient knowledge (27%), competing priorities (19%), and inadequate staffing (15%). The majority of pharmacists had positive attitudes about providing mental health patient care and agree that pharmacists should have more of an active role.

Saskatchewan pharmacists are well-positioned to enhance the care of patients with mental illness, although several barriers impede their ability to regularly provide clinical services. Further research and targeted funding should be prioritized to support pharmacists in providing this care and bridging the gaps to address the mental health crisis.

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Dedication

To my brother, Nathan, who fought a long and hard battle against mental illness and addiction, who always stood up for the underdogs, and who was my silent cheerleader.

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CIHI: Canadian Institute for Health Information
CMM: Comprehensive medication management
CSHP: Canadian Society of Hospital Pharmacists
PAS: Pharmacy Association of Saskatchewan
WHO: World Health Organization

Chapter 1 Introduction

1.1 The Prevalence and Impact of Mental Illness

The astounding prevalence of mental health disorders has been gaining much attention worldwide as health systems struggle to find adequate and sustainable ways to meet the complex mental health care needs of individuals and communities. It has been estimated that 1 in 4 people will be affected by mental illness throughout their lifetime, and 1 in 5 North Americans are diagnosed with a mental illness every year.[1–3] In Canada, more than 7 million people are living with a mental illness in any given year, and approximately 1 in 2 Canadians over the age of 40 have had or will live with a mental illness at some point in their lifetime.[1] Specifically, mood and anxiety disorders account for approximately 60% of the annual mental health diagnoses in Canada, and they are the third most prevalent of all chronic diseases in adults.[1,4] Fourteen percent of Canadian children experience mental health problems throughout their lifetime, more than any other health problem for ages 4-17.[5]

Mental health is defined by the Public Health Agency of Canada as "the capacity of each and all of us to feel, think, act in ways that enhance our ability to enjoy life and deal with the challenges we face".[6] Mental health is affected by a complex mix of many factors, and if there is severe and persisting dysfunction, it can result in a variety of conditions such as mood disorders, schizophrenia, anxiety disorders, personality disorders, eating disorders, and addictions.[7] Although substance use disorders fall under the umbrella of mental illness and are listed as such in the Diagnostic and Statistical Manual of Mental Disorders, they are often considered to be specific conditions with unique treatment pathways.[8] When accounting for periods of sub-clinical symptoms of poor mental health in its various forms and the experiences of caring for family members or close friends with mental illness, these conditions affect almost everyone at some point in their lives.

The economic burden of mortality, disability, lost productivity, and resource utilization due to mental illnesses is equally as alarming. A 2004 World Health Organization (WHO) report found depression, bipolar disorder, schizophrenia, alcohol misuse, and other substance use disorders to be in the top 20 conditions having the highest prevalence of moderate to severe disability, with depression being among the leading causes of disability worldwide.[9] An analysis of the Global Burden of Disease Report performed by the WHO revealed that the disability from

neuropsychiatric conditions accounts for 12% of the global disability burden.[3] A more recent systematic review found that mental health and substance use disorders were fifth among the disorders contributing to global disability-adjusted life years, and were the leading cause of non-fatal burden of disease worldwide.[10] The cumulative global economic burden of mental illness was estimated in a World Economic Forum report to be $16.3 trillion (USD) between 2011 and 2030.[11] In Canada, the Mental Health Commission estimated the economic burden from mental illness to be at least $50 billion per year.[1]

Underneath the statistics of disability and total economic burden are people who have lower life expectancies, higher rates of concurrent medical conditions, and many interrelated factors that make successful treatment often feel like a losing battle. The literature consistently reports that people with severe mental illness have an all-cause mortality rate that is two to three times higher than the general population.[12,13] Associated causes are multifactorial and are most often related to disproportionately high rates of cardiovascular disease, diabetes, respiratory disorders, obesity, and poor physical health. Studies have found between 40-50% of people with mental illness have a medical comorbidity, and people with schizophrenia have been shown to have a two to three times higher risk of diabetes and cardiovascular disease.[13–15] Death from injury or suicide are other known contributors. It is well-established that the suicide risk for people with severe mental illness is around 10%, and suicide is among the top causes of death for all individuals under 35 years of age.[16,17] Worldwide, there are approximately 8 million deaths every year attributed to the mortality risk from mental illness.[16,17]

Further worsening global function and mortality rates is the high bidirectional associations of substance use and mental health disorders. Data from a large US survey revealed that adults with any mental illness were about 25% more likely to use illicit substances and drink higher than the recommended amounts of alcohol, and they were 60% more likely to smoke cigarettes than the rest of the population. The risk of substance use disorders was three times higher among adults with any mental illness compared to those without mental illness.[18] It is consistently cited that about half of adults with an initial diagnosis of a substance use disorder have a co-occurring mental illness and about one third of people with an initial diagnosis of mental illness have a substance use disorder.[18–20] Although the exact prevalence rates of concurrent mental illness and substance use disorders is difficult to establish due to heterogeneity in diagnostic tools, they have ranged between 20-80%.[19]

1.2 Treatment Challenges

The poor health outcomes among people with mental illness is fundamentally linked to discouragingly low rates of both health care utilization and treatment success. An extensive literature review supported by the WHO revealed that 32-60% of individuals age 15 and older requiring care for mental illness were not receiving treatment.[21] The number of Canadian children age 4-17 with mental health problems who are not utilizing specialized treatment has been as high as 75%.[5]

While receiving pharmacological treatment is often an essential part of recovery, it does not on its own automatically lead to treatment success. For people with schizophrenia who do receive first-line treatments, over half will continue to experience psychotic symptoms more than 10 years after onset, and 30% of people who show improvement will continue to have residual symptoms that impair functioning or quality of life.[22,23] For major depressive disorder, the prognosis is better, but still arguably unacceptable. For example, across all antidepressant trials there is a 40-60% symptom response rate, and between 30-60% of people will achieve sustained recovery from antidepressants and psychotherapy.[24–26] The various classes of approved psychotropic medications for each disorder and the expansive list of individual agents add to the challenge of finding the most successful therapy for patients, particularly in the unrelenting void of novel therapies, or established indicators predicting individual response.

The success of pharmacological treatment for mental illnesses is only partially dependent on medication efficacy; it is also contingent on tolerability, safety, and adherence. There are substantial rates of distressing, harmful, and sometimes fatal adverse effects from psychotropic medications, which often include cardio-metabolic side effects, movement disorders, hematologic disorders, and substantial anticholinergic effects. An assessment of psychiatric inpatients in Germany spanning 10 years revealed that 61% of patients experienced one or more adverse effects from psychotropic medications and 37% had adverse effects that impacted the treatment plan.[27] From a sample of 49 Australian adults taking medication for mental illness who received a home medication review by a pharmacist, 55% of patients experienced a suspected adverse drug reaction.[28]

Even if patients are able to find a psychotropic medication that is both sufficiently effective and tolerable for them, it will only work if they continue to take it. Adherence rates to psychotropic medication range between 30-80%, depending on the study and methodology used,

and it is without question that poor adherence is a major contributor to poor clinical outcomes and persisting treatment challenges.[29] One review found average adherence rates for psychiatric medication to be 58-65%, whereas adherence rates for people with physical conditions averaged 76%.[30] Addressing non-adherence and the many contributing factors has been a focus of researchers and clinicians for decades across all conditions, and many interventions are focused on promoting and removing barriers to adherence.

Further complicating psychotropic therapy, is an all too frequent occurrence that prescribing habits are not aligned with the clinical practice guidelines. For example, antipsychotic polypharmacy and high dosing, inappropriate sedative use in older adults, and other non-evidence based psychotropic use continues to be observed.[31–33] A large systematic review also found consistently high rates of prescribing errors and preventable adverse drug events in people taking psychotropic medication.[34] The psychiatrist shortage in Canada and the consequential demand on general physicians to prescribe and manage psychotropic medication outside of their expertise may also contribute to higher rates of avoidable adverse events.[32]

Just as it has become widely accepted that "there is no health without mental health", so too an acknowledgement of the impact of social determinants of health is becoming essential to mental health care.[35,36] It would be an oversight to not comment on how there are many complex and overlapping social, environmental, economic, and cultural factors that also contribute to poor clinical outcomes and the global mental health crisis. Medication therapy consistently falls short of desired outcomes in the absence of concurrent psychotherapy and strong support systems.[37–39] Strategies for holistic, empathic, individualized, trauma-informed, patient and family centred care with a focus on functional recovery and improved quality of life are at the forefront for policy makers and health professionals as continued attempts are made to address the growing need for optimized mental healthcare.

1.3 Governmental Calls to Action

The high prevalence and far-reaching impacts of mental health disorders, the complexity of factors influencing clinical outcomes, and the many challenges experienced by individuals living with mental illness have prompted formal responses from governmental bodies and advocacy organizations. At the heart of these action plans is a sobering acknowledgement that many deaths could be preventable and many issues are correctable. In 2013, the 66th World

Health Assembly adopted the WHO's comprehensive 7-year mental health action plan, which presented four major objectives: "more effective leadership and governance for mental health; the provision of comprehensive, integrated mental health and social care services in community-based settings; implementation of strategies for promotion and prevention; and strengthened information systems, evidence and research".[40] In 2014, the National Mental Health Commission of Australia published The National Review of Mental Health Programmes and Services – a four-volume report making recommendation for system reformation to support people with mental illness.[41] Governments in South Africa, the United Kingdom, China, and many other countries have set forth mental health strategic plans and policy frameworks within the last 20 years in line with the mandates and targets from the WHO's plan.[40,42–45]

As early as 2006, the Canadian Standing Senate Committee on Social Affairs, Science and Technology published a report that challenged the status quo and set forth a vision for an integrated, recovery-oriented system that listens to the voices of people living with mental illness and delivers effective and accessible services.[46] In 2012, the Mental Health Commission of Canada released the first mental health strategy for Canada to improve mental health and well-being and transform systems to meet the needs of everyone living with mental health problems and illnesses.[47] About a year later, this was followed up with an extensive report highlighting the economic impacts of mental illness and proposing a blueprint for future investments in Canada, and it was expanded in 2017 to include further analysis of what interventions provide the biggest impact.[1,48] Modelling in these reports showed that a 10% reduction in mental illness incidence and a 10% increase in remission rates would result in future annual savings of $22.4 billion and $5.3 billion respectively.[1]

The Saskatchewan government also responded to the call for change with a 10-year Mental Health and Addictions Action Plan in 2014 and a Suicide Prevention Plan in 2020.[49] The vision is that

> all residents of Saskatchewan will have access to appropriate and coordinated mental health and addictions services that promote recovery to the greatest extent possible, improve mental well-being, and ultimately enhance the overall health and vibrancy of our communities and our provinces.[50]

The Saskatchewan budget for 2021-2022 included a record high $458 million (CAD) investment toward community-based initiatives, harm reduction and addiction services, various mental

health care costs, and resources to implement strategies outlined in the action and suicide prevention plans.[51] Key themes in the Canadian and Saskatchewan recommendations, which are also reflective of the WHO action plan, stress the need for early intervention and prevention, dramatically improved accessibility and capacity of services, coordinated care, and specialized community resources to help promote recovery. Coordinated care requires collaboration and connectedness, concepts that have been emphasized throughout multiple levels of health care in recent years. For example, one of the prominent strategic initiatives of the Saskatchewan Health Authority is Connected Care: patients consistently receiving "the right care, at the right time, in the right place, with the right provider", for which team-based care and continuous communication are paramount.[52,53]

Embedded in the strategic recommendations, some of these reports introduce the idea that pharmacists should be recognized as key members of the mental health care team. The Mental Health Commission of Australia proposes pharmacists should be trained and incentivized to be integrated members of the mental health care team in order to help address complex medication needs, and they list pharmacists among the allied health professionals to whom patients should be referred.[54] Although the Mental Health Commission of Canada does not explicitly discuss the role of pharmacists, the need for a comprehensive and multi-disciplinary approach is stressed.[47] The Saskatchewan action plan includes pharmacists as members of the visionary mental health team and emphasizes the need for resources across all aspects of care to ensure the team members are working to full capacity and scope.[50]

1.4 Pharmacists' Expanding Scope of Practice

The scope of pharmacy practice has been transforming and expanding over recent decades. Pharmacists are trained as medication experts and are being increasingly recognized for their ability to provide pharmaceutical care and clinical services that go beyond traditional medication dispensing roles.[55] The International Pharmaceutical Federation sets forth policies and guidelines for the role of a pharmacist and states, "Pharmacists have the potential to improve therapeutic outcomes and patients' quality of life within available resources, and must position themselves at the forefront of the health care system".[55] The cornerstone of pharmaceutical care is pharmacist-delivered comprehensive medication management (CMM), defined as thoroughly

assessing each medication to ensure effectiveness and safety and to support patients in achieving their therapy goals.[56]

The Blueprint for Pharmacy taskforce was initiated in 2007 and was charged with developing a vision to strengthen pharmacy practice and implementing a plan for pharmacists to continue to advance and adapt as clinicians to meet the health care needs of Canadians.[57] As a subunit of this task force, a multi-stakeholder project advisory group was appointed in 2015 to assess the demand for pharmacist specialization in Canada and feasibility of various certification processes.[58] They found there was both interest in and demand for pharmacist clinical specialization with the ultimate goal of improving patient care and maximizing efficiencies in the health care system.[58] While this has not yet been widely implemented, the Canadian Society of Hospital Pharmacists have included opportunities for specialization in their 2020-2023 strategic priorities.[59] In addition to their expanding clinical scope and growing expertise, pharmacists are trusted and accessible health providers who often have regular points of contact with patients, and as such, could be well-utilized to help bridge transitions of care and enhance interdisciplinary communication.[60,61] As medication experts, pharmacists have an essential role in promoting rational, evidence-based, and optimal medication use. Pharmacists providing patient-care are perfectly positioned to help increase accessibility of health services, improve continuity and frequency of points of care, and support mental health patients with their medication management and adherence.

Chapter 2 Literature Review: Pharmacists' Role in Mental Health Care

It is within the context of the high prevalence and complexity of mental illnesses, the responsive government action plans being developed and implemented worldwide, and the opportunity for pharmacists to have a more active role in fulfilling the strategic recommendations that we now arrive at a very important question and one that is at the heart of this research: how can pharmacists help meet the health care needs of individuals with mental illness? The inclusion of pharmacists as essential members of the interdisciplinary health care team and the fact that clinical pharmacy interventions improve patient outcomes in chronic disease management is no longer up for debate.[62,63] Their specific and most impactful clinical roles in mental health care, however, are less established, and Canada is still at the early stages of recognizing and supporting pharmacists as integrated and essential members of the mental health care team.

A comprehensive literature review was performed to explore what is currently practiced, accepted, and proposed regarding pharmacists' role in mental health care. A discussion of the most relevant literature is presented here, outlining 1) political and organizational frameworks for pharmacists' provision of mental health care, 2) mental health care pharmacy practice examples, 3) evidence of impact and outcomes of pharmacists providing mental health care, 4) patient and public perspectives of pharmacists providing mental health care, 5) pharmacists' self-reported practices, attitudes, and barriers related to mental health care.

2.1 Political and Organizational Frameworks for Pharmacists' Provision of Mental Health Care

As the concept of pharmaceutical care and CMM becomes increasingly recognized as a fundamental aspect to pharmacy services, and there is a growing prevalence of mental health disorders, policy makers and advocacy bodies have developed frameworks for the role of pharmacists within the mental health team. The International Pharmaceutical Federation published a special issue with a focus on mental health care in 2015, stating that "pharmacists have a significant role to play if we are to make mental health for all a global reality".[64] In this report, they discuss how the following aspects of CMM can be applied to the care of patients with mental illness: triage, health promotion, early detection, optimal treatment outcomes through addressing and detecting medication related problems/needs, adherence support,

education and prevention, helping to shape public policies, interprofessional collaborative practice, and research.[64] In their professional standards of practice for mental health pharmacy, the Society of Hospital Pharmacists of Australia outlines foundational clinical activities pharmacists should undertake for patients with mental illness in hospital or community including: medication management, medication information services (to other health care professionals), informing medication policy, and patient education and counselling.[65]

To further support and advance the role of pharmacists in mental health care, processes for formal certification of specialized psychiatric pharmacy practice have been implemented internationally. Psychiatric pharmacy has been considered as a specific practice area since the early 1970s and has been recognized by the American Board of Pharmacy Specialties since 1992.[66,67] A common vision held by psychiatric pharmacists is "that all individuals receiving pharmacotherapy for a mental illness should be fully educated about their disorder and their drug therapy and have appropriate expectations of their treatment."[66]

A standardized pharmacist approach to medication therapy management, which emphasizes assessment, monitoring, and education, has been applied in diverse practice settings to help address and manage challenges with psychiatric medications such as high rates of non-adherence, alarming rates of medical comorbidities, inappropriate use of polypharmacy, high potential for adverse drug effects, difficulties obtaining cost coverage, and the growing need for individualized patient education.[67,68] Psychiatric pharmacists in Canada, whether board certified or not, work at a variety of practice sites including, but not limited to, mental health organizations such as the Centre for Addiction and Mental Health, psychiatric hospitals, acute mental health units, or specialty community pharmacies.[69–72]

2.2 Mental Health Care Pharmacy Practice Examples

The unique and valuable role of pharmacists in mental health care has been exemplified globally in numerous settings that include outpatient clinics or primary care teams, inpatient units, and community pharmacies. Eaves et al. describe an example of a large, urban, comprehensive mental health system in Australia that integrates clinical pharmacy specialists into all levels of care.[73] Clinical pharmacists provide services to patients in outpatient mental health clinics, inpatient psychiatric units, and an ambulatory cardiovascular risk reduction clinic within the primary psychiatric care team.[73] The pharmacists provide CMM to patients, which includes interventions such as: mental health assessments, monitoring for adherence, screening

for and managing adverse effects, providing focused education to patients, supporting drug coverage needs, facilitating transitions of care, participating in interdisciplinary meetings, and adjusting or deprescribing medications to continually optimize therapy.[73] The authors propose that the high level of clinical pharmacist engagement helps to optimize medication use by expanding the range and availability of specialized clinical pharmacy services.[73]

Two other teams report the success of integrating clinical pharmacists into outpatient mental health care teams. Moore et al. describe the integration of mental health clinical pharmacy specialists into the interprofessional team at Veteran Affairs outpatient mental health clinics in the USA.[74] Within this model, the clinical pharmacist performs CMM and has authority to prescribe and consult under collaborative practice agreements.[74] A system-wide and continuous evaluation of how the pharmacy specialists impact organizational process and outcome metrics revealed positive results related to access to care, continuity of care, suicide risk screening, continuous use of antidepressants, and client-reported care experience.[74] Gable and Stunson report on the impact of adding a psychiatric pharmacist to an Assertive Community Treatment team, a multidisciplinary team that provides intensive and integrated services as well as crisis intervention to patients living in the community with persistent and severe mental illness.[75] The pharmacist's role included: reviewing medications, providing focused and goal-directed education, monitoring for adverse effects, performing physical and mental health assessments, and facilitating continuity of care.[75] A retrospective review of this work concluded that the role of the psychiatric pharmacist on the community treatment team is beneficial for patient care and valued by other team members.[75]

There have also been successes in implementing mental health services in a community pharmacy context. McMillan et al. report on their experience developing and implementing a government-funded, community pharmacy medication support service in Australia.[76] A comprehensive online education program was delivered to participating pharmacists, who were then invited to implement the medication support service at their pharmacies and to recruit patients to receive the service.[76] Interventions were usually provided over a period of 3-6 months and included: comprehensive medication and health assessments; ongoing medication management; developing individualized and goal-directed care plans; helping patients progress through stages of readiness for change; and facilitating connected care between other health professionals.[76] After evaluating various outcomes, they found statistically significant and

potentially clinically meaningful improvements to perception of illness, global satisfaction of medication, and self-reported adherence in patients who completed the intervention compared to their baseline.[76]

In the province of Nova Scotia, there exists a Canadian-founded, community pharmacy-based program for people with mental illness. In response to the provincial government's mental health and addictions strategic plan, the growing mental health care needs, and the expanding scope and accessibility of community pharmacists, a team of clinician researchers in Nova Scotia created the Bloom Program.[71,77] The Bloom program is a community pharmacy partnership initiative designed to "increase and improve mental health and addictions care for Nova Scotians".[78] This program seeks to meet the overall health needs of people living in the community with a mental health or addictions diagnosis and with a self-identified medication-related issue through extensive pharmacist training, enhanced medication management, and support for positive behaviour changes.[77] Pharmacists providing care under the program requirements are provided monthly government reimbursement up to $450/patient.[77] An initial evaluation of the ongoing project by way of retrospective chart reviews was completed at the end of 2016. Pharmacist activities were comprised of medication management (48%), education (14%), health system navigation (12%), health professional collaboration (12%), triage (2%) and other (12%).[77] At discharge, 61% of patients reported their health problems to be improved, 17% were resolved, 21% were unchanged, and 2% were worse.[77] These noteworthy health outcomes exceed the response rates seen in the literature from proven pharmacological treatment, and are especially significant considering 80% of these patients enrolled with the primary concern of sub-optimal treatment effectiveness. These community-based examples demonstrate the opportunity pharmacists have to improve health outcomes for individuals with mental illness and affirm that pharmacist roles extending beyond the traditional scope of medication management can contribute to optimizing mental health outcomes.

2.3 Evidence of Outcomes and Impact of Pharmacists' Providing Mental Health Care

In response to the global mental health crisis, increased focus on community care, and growing appreciation for the role of pharmacists on the interdisciplinary health care team, there has been an expanding body of literature on the impact of pharmacists providing mental health care. There have been numerous studies undertaken to evaluate various outcomes and to determine the impact of pharmacy clinical services for people with mental illness. A selection of

the most relevant and significant studies is presented here, beginning with observational studies, followed by controlled trials, and concluding with systematic and narrative reviews.

The impact of pharmacist-delivered care has been demonstrated in several observational studies (Table 2.1). One study described a high occurrence of drug-related problems and opportunities for impact in patients taking medication for mental illness.[28] From a sample of 49 patients receiving pharmacist-led home medication reviews, 249 drug-related issues and 134 patient-related issues were reported.[28] In this same group of patients there were 360 recommendations made by a pharmacist, most often related to switching drug (for 49% of patients), discontinuing drug (33%), or dose changes (66%).[28] The referring general practitioners endorsed agreement with the recommendations 90% of the time.[28] A descriptive study of outpatients receiving CMM from psychiatric pharmacists reported similar findings.[79] From 154 patients and 256 clinical encounters, 861 drug therapy problems were identified and recommendations were made to resolve them.[79] Almost all (93%) of the patients who completed a survey reported the service being extremely or very helpful.[79]

Three studies examining clinical outcomes of pharmacist-managed care within mental health outpatient clinics demonstrated improvements in depression symptom rating scales.[80–82] Another study examining clinical outcomes for patients within a psychiatric hospital who received psychiatric pharmacist consultations found global effectiveness response rates of 35%.[83] Stuhec et al. implemented enhanced clinical pharmacist medication review and monitoring for nursing home patients with mental health disorders.[84] They found the proportion of medications that were potentially inappropriate was reduced from 10.6% to 8.4% ($p=0.025$) following clinical pharmacist involvement.[84]

Table 2.1 Summary of Observational Studies Investigating Impact of Pharmacist-Delivered Mental Health Care Services

Study	Setting & Design	Intervention	Outcomes	Findings
Barrett et al. 2020[85]	- transition to outpatients - USA - retrospective cohort study - n = 7	- pharmacist led telehealth clinic provided to patients being discharged from a psychiatric hospital	- adherence - health care utilization	- increased number of patients having medication possession ratios >0.80 within 90 days (100% vs 43%, p = 0.035) - increased number of patients seeing their mental health provider within 14 days (100% vs 43%, p=0.035)
Bell et al. 2006[28]	- outpatients - Australia - retrospective chart review - n = 49	- community pharmacists deployed to perform home medication review	- # medications - # and type of drug related problems - # recommendations and acceptance rate	- average # of medications per patient increased from 7.8 to 9.1 (p<0.001) - 403 issues (249 drug-related) - 306 recommendations, 90% acceptance rate
Caballero et al. 2008[80]	- outpatient clinic - Texas, USA - pre/post implementation study - n = 96	- psychiatric pharmacist performing medication management	- clinical rating scales	- depression and anxiety scores improved by about 50% each after 1 year
Cobb et al. 2014[79]	- outpatients - USA - retrospective chart review - n = 154	- CMM provided by clinical pharmacists with training in psychiatric disorders	- patient satisfaction - clinical outcomes - health care utilization - economic analysis	- 93% of those who completed a survey reported the service was extremely/very helpful - 861 drug therapy problems identified: 27% adverse drug effect, 20% unnecessary medication, 13% dose too high, 12% poor adherence - net cost avoidance of $90,484 USD for total patient population, or $586.55/patient

Dorevitch & Perl, 1996[83]	- psychiatric teaching hospital - Israel - retrospective chart review - n = 109	- clinical pharmacist interventions for inpatients based on psychiatrist consult	- # consults and recommendations - clinical (global effectiveness based on response scale)	- 229 recommendations, 88% acceptance rate - 35% had satisfactory or very satisfactory response, 33% unremarkable
Finley et al. 2011[82]	- outpatients - USA - pre/post implementation study - n = 130	- CMM provided by clinical pharmacists within collaborative care model (assessment and treatment recommendations to primary care providers, regular patient follow up)	- clinical outcomes - economic analysis	- 80% had a decrease in depression severity. Mean PHQ-9 scores were 11.5 at baseline and 5.3 at latest follow-up $p<0.0001$) - cost for enrolled patients was 11% less than projected values. Total savings = $48,881/year (USD)
Gunterus et al. 2016[86]	- psychiatric hospital - USA - retrospective chart review - n = 200 interventions	- clinical pharmacists making pharmacotherapy recommendations during multi-disciplinary rounds	- intervention type and acceptance rate - economic analysis	- 39% drug discontinuation, 14% med modification, 13% initiation of medication. Acceptance rate 92.5%. - total cost saving from drug related interventions = $6310.69; from health care utilization = $62,806.67 (USD)
Hazra et al. 2011[87]	- inpatients and ambulatory clinic patients - Toronto, CAN - pre/post cross-sectional prevalence study - n = 1426	- pharmacist-led discussions on risk, benefit, and evidence for antipsychotic polypharmacy	- presence of polypharmacy	- three-fold decrease in the prevalence of antipsychotic polypharmacy (18.3% in 2006 vs 6.6% in 2008; $p<0.001$)
Herbert & Winkler 2018[81]	- primary care mental health integration clinic - Texas, USA - retrospective chart review - n = 172	- cases managed by clinical pharmacy specialist	- clinical rating scales - adherence - health care utilization	- 46% achieved response and 31% achieved remission from depression symptoms - medication possession ratio* = 0.93 - 10% required referral to specialist; 26% lost to follow-up

Stuhec et al. 2019[84]	- nursing home - Slovenia - pre/post implementation study - n = 24	- clinical pharmacists conducting patient interviews and data collection, medication review, monitoring for 2 months	- clinical outcomes (appropriateness of therapy) - patient satisfaction	- potentially inappropriate medications were reduced from 10.6% to 8.4% (p=0.025) - increase in mean QoL scores after intervention = 8.5, but on a 100-point scale, this may not be clinically relevant
Wright et al. 2016[88]	- community pharmacy - USA - retrospective cohort analysis - n = 496	- opening a pharmacy within a community mental health centre	- adherence - health care utilization	- medication possession ratios* for all meds were higher for patients who obtained their medications at the in-house pharmacy compared with patients who filled their medications at an off-site pharmacy (0.96 vs 0.82, p<0.001) - statistically significant reductions in # hospitalizations (RR 0.88), # ED visits (RR 0.95), and total length of stay (RR 0.65) for any reason

#: number; ED: emergency department; CMM: comprehensive medication management; PHQ-9: patient health questionnaire; QoL: quality of life; RR: relative risk; USA: United States of America; USD: United States Dollars.
*Measure of adherence based on prescription fills and congruence of patients' medication supply where 1.0 suggests perfect adherence.

Two studies performed an economic analysis to determine net cost savings from drug regimen changes and reductions in health care utilization related to clinical pharmacist mental health care.[79,86] After pharmacist interventions and recommendations made during patient rounds at a psychiatric hospital led to 78 drug discontinuations and 28 drug modifications, among other therapy and monitoring adjustments, Gunterus et al. reported total cost savings of $69,117.36 USD within the 12-month study period.[86] In a retrospective review of pharmacist interventions made for 154 psychiatric outpatients through CMM services, the estimated net cost avoidance was $90,484 USD for the total patient population, or $586.55 USD per patient, due to avoidance of hospitalizations or emergency visits and drug cost savings.[79] These cost estimates were based on assumptions that the recommendations were followed and on projected hospital visit avoidance.[79] The impressive cost savings seen in both studies must be considered in the context of best possible estimates, lack of comparator groups, and questionable equipoise.

These observational studies, suggest that pharmacist involvement in mental health care may contribute to the optimization of medication therapy, as well as to improved psychiatric symptoms scores and overall treatment response rates comparable to psychiatric symptom response rates reported in the literature from standard care.[80,81,83] Although this evidence comes with inherent high risks of bias and low generalizability, it does provide valuable insight into the potential role of pharmacists in mental health care, exemplifying how pharmacist-delivered services might positively impact patient outcomes and presenting ideas for service development and implementation.

Numerous controlled trials have also been conducted to investigate outcomes of pharmacist interventions for mental health patients. Details are provided in Table 2.2 and are summarized according to outcome categories utilized by previous systematic reviews: (1) clinical outcomes, (2) humanistic outcomes, (3) economic outcomes.[89,90] Clinical outcomes can include adherence and appropriateness of therapy in addition to symptom improvement or global disease scores because of their strong positive correlation with good health outcomes. However, because pharmacists have an important role in promoting medication adherence and many of the controlled trials are focused primarily on adherence, these outcome measures are described separately for greater clarity. Humanistic outcomes include satisfaction scores, knowledge or perception of therapy, and quality of life. Economic outcomes include health care utilization (e.g. emergency visits, psychiatrist referrals, etc.) and cost analyses.

Table 2.2 Summary of Controlled Trials Investigating Outcomes of Pharmacist-Delivered Mental Health Care Services

Study	Setting & Design	Intervention (I) and Comparator (C)	Outcomes Assessed				Results**
			Adherence	Symptoms	Humanistic	Economic	
Adler et al. 2004[91] The impact of a pharmacist intervention on 6-month outcomes in depressed primary care patients	Primary care RCT N = 533 P: Patients taking ADs T: 18 mon	I: MTM and education (med history, med review for DRP, monitoring efficacy and AEs, educating about depression and ADs, encouraging adherence, facilitating communication with primary care provider.) C: Usual care	√	√			**Adherence: +** For intervention group, rates of AD adherence at 6 months were higher than for those getting usual care (57.5% vs 46.2%, p = 0.025). When results were analyzed separately based on prior AD use, the results were only significant for patients not on an AD at enrollment (32.3% vs 10.9%, p = 0.001). **Symptoms: no difference** There was no difference between groups on changes to depression severity for all patients or for patients not on AD at enrollment. Measured with modified BDI.
Al-Saffar et al. 2005[92] Effect of information leaflets and counselling on antidepressant adherence: open randomised controlled trial in a psychiatric hospital in Kuwait	Outpatient clinic RCT N = 278 P: depressive or affective disorder; taking single AD T: 18 mon	I: Education (PIL) with and without counselling) C: Usual care (dispensing)	√		√*		**Adherence: +** Likelihood of clinic attendance PIL group (OR 2.1, CI 1.3–3.2) or a PIL plus counselling (OR 3.2, CI 2.1–4.9). Likelihood of good medication adherence at 2 and 5 months PIL group (OR 3.0, CI 1.7–5.3) or a PIL plus counselling (OR 5.5, CI 3.2–9.6). **Humanistic: +**

							Patients in both groups reported improved knowledge of therapy. Proportion of patients who reported knowing how and why medicine is to be taken was greater for those who received an information leaflet (OR 4.7) and for those who also received counselling (OR 6.2).
Bosmans et al. 2007[93] Cost Effectiveness of a Pharmacy-Based Coaching Programme to Improve Adherence to Antidepressants	Primary care RCT N = 151 patients P: adults with new Rx for AD T: 6 mon	I: Education (3 contacts with pt, 13-20 min each, and take home video) C: Usual care	√	√*		√*	**Adherence: no difference** Measured by electronic pill counters **Symptoms: no difference** Depression sx measured by Hopkins Symptom Checklist **Economic: no difference** Self-reported resource utilization and absenteeism from work
Canales et al. 2001[94] Outcome assessment of clinical pharmacy services in a psychiatric inpatient setting	Psychiatric hospital Non-randomized controlled trial N = 93 P: pts on acute psychiatric units T: admission to discharge (range: 22-36 days)	I: MTM and education (baseline assessments, weekly reviews, recommendations, monitoring for AEs, conducting weekly medication education classes, and counseling patients before discharge) C: Usual care (centralized pharmacy services and responses to psychiatrist consultation)		√	√	√	**Symptoms: +** Reduced psychiatric sx, improved global impression, reduced akathisia (Mean % change I vs C: BPRS = 14.6 vs 32.4, p <0.001 CGI = 11.8 vs 32.7, p <0.001 BARS = 6.8 vs 27.0, p=0.042) **Humanistic: no difference** No differences in QOL scores, and pt satisfaction scores couldn't be analyzed due to small response rate.

							Economic: no difference No differences in medication costs between groups. (Variable lengths of stay.)
Capoccia et al. 2004[95] Randomized trial of pharmacist interventions to improve depression care and outcomes in primary care	Primary care RCT N = 74 P: pts with new dx of MDD and Rx for AD T: 1 year	I: Enhanced medication management and collaborative care (patient education, initiation and adjustment of antidepressant dosages, adherence monitoring, managing AEs) C: Usual care	√	√	√	√	**Adherence: no difference** **Symptoms: no difference** No differences in depression sx. Measured by Hopkins Symptom Checklist **Humanistic: no difference** No differences in QoL or patient satisfaction **Economic: no difference** No differences in depression-related health care service use
Crockett et al. 2006[96] Patient outcomes following an intervention involving community pharmacists in the management of depression	Community pharmacy RCT (randomized at pharmacy level) N = 106 P: Rural community pharmacists dispensing ADs T: 2 mon	I: Pharmacist training then dispensing with extra advice and support C: Usual care Outcomes: self-reported adherence, well-being scores, drug attitude scores	√	√	√		**Adherence: no difference** Measured by self-report only; high rates in both groups **Symptoms: no difference** Depression sx measured by K10 improved in both groups **Humanistic: no difference** No differences in patient reported satisfaction or attitudes toward ADs
Finley et al. 2002[97] Impact of a collaborative pharmacy	Primary care Controlled trial, non-randomized N = 220 P: Patients with new AD Rx	I: MTM with prescriptive authority (including frequent scheduled visits and phone follow up) by	√	√*	√	√	**Adherence: +** 76% vs 51% pts continued Rx beyond 3 months; MRP at 6 month = 0.81 vs 0.66 **Symptoms: +/?**

practice model on the treatment of depression in primary care	T: 6-12 mon	clinical pharmacy specialists C: Usual care					Improvements from baseline within intervention group in depression symptoms and CGI; not compared to controls **Humanistic: +** Greater levels of satisfaction in intervention group **Economic: +** Total clinic visits decreased by 39% vs 12% when comparing the 12 months pre/post Rx start date
Finley et al. 2003[98] Impact of a collaborative care model on depression in a primary care setting: a randomised controlled trial	Primary care RCT N=125 P: Patients with new AD Rx T: 6 mon	I: MTM within collaborative care model and education (case management for study subjects, including initial disease state and med assessment, med history review, patient education, titration of ADs, frequent follow up in person and by phone, assessing adherence, efficacy, AEs, establishing goal-directed therapy for remission) C: Traditional counselling from community pharmacist	√	√	√	√	**Adherence: +** 67% vs 48% completed the continuation phase (OR 2.17, CI 1.04–4.51, p=0.038) **Symptoms: no difference** Measured by BIDS and WSDS **Humanistic: +** Greater degrees of patient satisfaction for all measures compared to controls, significant for 6 of 11 **Economic: no difference** No difference between groups on health care utilization or institutional drug costs
Marques et al. 2013[99]	Outpatient clinic RCT N = 58	I: MTM at monthly visits (assessment of clinical status and med history, identifying any		√	√		**Symptoms: +** Depression sx improved by 13.5 points vs 2.5 points (p = 0.03) on BDI; anxiety sx

Assessment of the Effectiveness of Pharmacotherapy Follow-up in Patients Treated for Depression	P: female patients with new Rx for AD (Brazil) T: 3 mon	DRPs or negative outcomes and communicating with prescribers, monitoring therapy to meet pt goals, providing education) C: Monthly visits for assessment (no MTM offered)					improved by 13 points vs 2.5 points (p = 0.02) on BAI. **Humanistic:** Only assessed for patients receiving intervention. Mean satisfaction scores were high for all domains.
Mishra et al. 2017[100] Impact of pharmacist-psychiatrist collaborative patient education on medication adherence and quality of life (QOL) of Bipolar Affective Disorder (BPAD) patients	Outpatient clinic RCT N = 75 P: adults treated for BPAD in outpatient clinic in S India T: 6 mon	I: Education (pharmacist-delivered education and leaflets, 3 follow up visits with education) C: Usual psychiatrist care without pharmacist	√		√		**Adherence: +** Significantly greater improvement in adherence scores in intervention group, but small effect sizes **Humanistic: +** QoL scores were significantly more improved in intervention group (13.8 point difference on World Health Organization Quality of Life questionnaire)
Rickles et al. 2005[101] Pharmacist Telemonitoring of Antidepressant Use: Effects on Pharmacist-Patient Collaboration	Community pharmacy RCT N = 63 P: adults with unipolar depression and new Rx for AD T: 6 mon	I: MTM and education (3 monthly phone calls for education and monitoring, using a specific tool that guided assessment and responses to help manage medication therapy and promote adherence)	√	√	√		**Adherence: +/no difference** Pts who completed intervention missed fewer doses than control group at 6 months ($p \leq .05$). Not significantly different in ITT analysis. **Symptoms: no difference** No significant changes in depression scores from baseline as measured by BDI 2nd edition

		C: Usual education and monitoring from community pharmacy					**Humanistic: +** Intervention group compared to control: - had better knowledge and perceptions of medication and progress - were more likely to communicate with the pharmacist - were more likely to have positive and accurate perceptions of antidepressant use - had higher overall knowledge scores about medication treatment for depression.
Rubio-Valera et al. 2013[102] Evaluation of a pharmacist intervention on patients initiating pharmacological treatment for depression: A randomized controlled superiority trial	Community pharmacy RCT N = 179 P: adults with new Rx for AD T: 6 mon	I: MTM and education (education about illness and medication; monitoring for sx efficacy, AE; addressing pt questions) C: Usual community pharmacist care (dispensing and basic instruction)	√	√	√		**Adherence: no difference** Intervention group more likely to remain adherent both at 3 mon (67.7% vs. 83.3%) and 6 mon (46.3% vs. 67.3%) but not statistically significant (OR=2.24; p=0.209). **Symptoms: no difference** Depression severity improved in both groups on PHQ-9 **Humanistic: no difference** Patient satisfaction and health related QoL rating increased in both groups.
Valenstein et al. 2011[103] Using A Pharmacy-Based	Outpatient clinic RCT N = 118	I: Meds Help (blister packaging with refill reminders and notifications of failure to fill; pharmacist-	√	√*	√*		**Adherence: +** Proportion of patients meeting adherence criteria at 12 months (as validated by pharmacy records, self-report,

Intervention To Improve Antipsychotic Adherence Among Patients With Serious Mental Illness	P: pts taking ≥ 1 APs; Dx of schizophrenia or affective disorders; T: 12 mon	delivered pt education) plus usual care C: Usual care					and blood levels) 34% vs 17.7% (p = 0.06) **Symptoms: no difference** Measured PANSS scores **Humanistic: no difference** Measured QoL scores
Wolf et al. 2015[104] Pharmacist-Led Medication Reviews to Identify and Collaboratively Resolve Drug-Related Problems in Psychiatry: A Controlled, Clinical Trial	Psychiatric hospital Controlled trial, non-randomized N = 269 P: adults admitted to two non-acute wards and taking at least 1 psychotropic medication T: 3 months post discharge	I: Usual care +immediate communication of DRP, pt education with leaflets, discharge care plans, and two follow up phone calls C: Usual care (pharmacist medication reviews and weekly monitoring)					**Other:** There were 1.8 less unresolved DRPs in intervention group (CI: 1.5–2.1, p < 0.001) No significant difference in medication appropriateness scores between groups at end of study period

AD: antidepressant; AE: adverse effects; AP: antipsychotic; BARS: Barnes Akathisia Scale; BAI: Beck anxiety inventory; BDI: Beck depression inventory; BIDS: Brief Inventory for Depressive Symptoms; BPRS: brief psychiatric rating scale; C: control group; CGI: clinical global impression; CI: confidence interval; DRP: drug-related problem; Dx: diagnosis; I: Intervention group; ITT: intention-to-treat; K10: Kessler Psychological Distress Scale; MRP: medication possession ratio; MTM: medication therapy management; N: sample size; OR: odds ratio; P: population; PANSS: positive and negative symptom score; PHQ-9: patient health questionnaire; PIL: patient education leaflet; Pt: patient; QoL: quality of life; Rx: prescription; Sx: symptoms; T: duration of study; WSDS: Work and Social Disability Scale

*Not a primary outcome measure **Only considered positive (+) if met statistical significance

Eleven of the 14 studies measured the impact of pharmacist interventions on adherence to psychiatric medications, with nine of them being specific to antidepressant therapy.[91–93,95–98,100–103] Pharmacist-delivered services varied in practice setting and clinical protocol, but they generally included structured patient education, medication therapy management, or both. Seven of the trials resulted in statistically significant improvements to adherence, though one of the trials was only significant in the analysis of patients who completed the intervention.[91,92,97,98,100,101,103] It is important to note, however, that accurately measuring medication adherence is a difficult undertaking, and many of these trials had a moderate to high risk of bias.[91,97,98,101]

Another common and important outcome measure is changes in symptom scores or global disease status changes. Eleven of the 14 controlled studies included in this review measured clinical outcomes by symptom scoring tools or clinical global impression scales.[91,94–99,101–103] While only two of these trials resulted in statistically significant improvements in clinical status, the effect sizes are considered to be moderate, and there is a high likelihood of clinical relevance in both of them.[94,99] The pharmacist interventions in these positive trials included CMM with regular follow-up and provision of patient education.

Eleven of the 14 controlled trials evaluated humanistic outcomes such as self-reported satisfaction, quality of life, or knowledge and perception of therapy.[92,94–103] Only one of the five studies evaluating quality of life resulted in statistically significant improvements from baseline between groups, although other studies reported positive trends for all patients.[94,95,100,102,103] Five studies measured patient satisfaction, with two of them resulting in significantly greater changes from baseline in the intervention group and again reporting positive trends in both groups.[95–98,102] Two studies measuring patient knowledge and perception of drug therapy reported significant improvements in the intervention groups after pharmacist-delivered education.[92,101]

A few controlled trials also performed an economic analysis to evaluate the potential cost savings from pharmacist interventions for patients with mental illness.[94–98] Only one study found implied cost savings that were statistically different from the control group, reporting an absolute reduction in clinic visits of 27% compared to pre-study date rates.[97] There was no monetary value calculated for this reduction in health care utilization. The other four studies found no difference between groups in total medication costs or health care utilization trends – a notable finding compared to the reported cost savings from observational studies.

Several researchers have conducted systematic and narrative reviews to evaluate the overall impact of pharmacist interventions for patients with mental illness, describing various roles and services that appear to have value. A total of 10 systematic reviews were identified; six reviews included any practice setting, three included only outpatients, and one included only inpatients. Consistent with the select evidence presented above, the reviewers discovered positive outcomes related to adherence, clinical symptoms, evidence-based medication use, and quality of life, although the results were not always consistent or clinically meaningful, particularly in controlled trials.[89,90,105,106]

Davis et al. analyzed nine studies reporting outcomes of pharmacists having a role on collaborative mental health teams.[107] Their findings highlighted a pattern that patients had consistently better clinical outcomes when pharmacists working in collaborative primary care settings provided medication therapy management.[107] Hattingh and colleagues performed a narrative review to explore how community pharmacists can and have provided professional services to patients with mental illness to improve the use of medications.[108] They identified three themes associated with beneficial services provided by pharmacists in community mental health care: 1) pharmacist coaching and multi-faceted education, 2) ongoing monitoring, and 3) home visits.[108] These types of services were predictive of consumer satisfaction, increased adherence, and improved quality of life.[108]

Four systematic reviews have explored the impact of mental health pharmacists' interventions primarily or exclusively on medication adherence to antidepressants.[109–112] Throughout all of the included studies, nine controlled trials discussed above in this thesis and eight additional trials, the various authors affirm that pharmacist-provided education and therapeutic monitoring can improve adherence. Two of the systematic reviewers also performed a meta-analysis for similar studies and reported pooled odds ratios of 1.64-2.50 for patients remaining adherent to antidepressants 6 months after receiving pharmacist education and monitoring when compared to no pharmacist intervention.[111,112]

This overview of the existing studies and confirmation from the corresponding reviews provides valuable insight to the potential roles for pharmacists in the provision of mental health care in a variety of settings. There is evidence supporting positive outcomes associated with clinical pharmacists providing medication therapy management and patient education, particularly within collaborative teams and comprehensive protocols. Whether from

observational or controlled trials, there are clear trends in pharmacist interventions leading to improved adherence, reduction in symptom severity, optimization of therapy, increased quality of life, and higher patient satisfaction. In many cases when a comparator group was included, these trends reached statistical significance.

It is important to note that clinical outcomes in mental health care are often difficult to measure based on the waxing and waning nature of mental illness progression, the subjectivity of clinical assessment, and the limitations of measurement-based care rating scales. Therefore, when analyzing the impact of clinical pharmacist interventions in mental health care, one must also consider the appropriateness of the outcome measures used. It is important to identify services that result in value so that sustainable funding models can be established; it is equally as important to identify definitions of value that reflect attainable outcomes that matter to patients. As stated by two psychiatric pharmacists:

> Psychiatric pharmacy presents the opportunity to increase access to evidence-based care, which should help ensure optimal outcomes for patients in acute and ambulatory care settings. It is well-known that psychiatric patients do not always fit neatly into treatment algorithms or clinical pathways and often encounter barriers along their road to recovery. … Only when pharmacy aligns performance and productivity metrics with the goals and priorities of our patients and organizations will we be able to show our true value.[113]

2.4 Patient and Public Perspectives of Pharmacists Providing Mental Health Care

Through the review of surveys and interviews that explore the perspectives of individuals with mental illness or caregivers of individuals with mental illness, it is possible to gain further insight into services and outcomes that meet their needs and align with their values (Table 2.3). A theme that repeatedly emerges in these studies is that people using pharmacy services for mental health care strongly value the establishment of good relationships with their pharmacists, built on trust, open-engagement, and regular contact.[114–121] Another recurring theme is a concern about having a lack of privacy for discussions with the pharmacist.[114,117,118,120,121]

Table 2.3 What People with Mental Illness Want from Their Pharmacists

- Good relationships
- Sufficient privacy during interactions
- Medication-related information (written and verbal)
- Mental-health related information
- Being offered sufficient time for discussion
- Being shown respect
- Facilitation of communication with other health providers

When asked about the expectations people with mental illness have for their pharmacists or pharmacy services that are viewed as important, many common responses have been reported. A consistent and somewhat expected finding is that people utilizing pharmacy services for mental health care value being given written or verbal medication-related information.[116,118,119,122] In one of these surveys involving Canadian patients, only 8% of respondents reported being satisfied with the information the pharmacist provided about how new medications could help them, and there was a strong positive correlation between the services provided by the pharmacist and its perceived importance.[119] Patients and caregivers also report wanting pharmacists to demonstrate respect and professionalism and to facilitate communication between other mental health providers.[116,119,122]

Results from an American national survey representing just over 1000 people who were taking mental health medications or caring for people who were further confirms and supplements these findings.[117] Forty-three percent of individuals reported not having strong professional relationships with their community pharmacists, and 58% reported a lack of privacy for conversation being a primary concern. Although a large majority (91%) reported being comfortable going to community pharmacies, an alarming three-quarters reported they seldom or never received pharmacist monitoring for effectiveness or safety. Only 54% reported often or always being given information about medication, and only 47% when it came to being offered general assistance with medications. These results not only highlight pharmacy mental health services that are valuable to patients, but also the gaps that remain in sufficiently meeting these needs.

2.5 Pharmacists' Self-reported Practices, Attitudes, and Barriers Related to Mental Health Care

Practicing pharmacists from across the world have been surveyed to explore current practices, attitudes, and barriers related to the provision of mental health care, and these results provide information that is essential for the development of this study. Looking first at pharmacists' practices offers a foundational idea of their roles and activities for patients with mental illness, many of which are based on CMM activities and patient education. The previous surveys also expose variable extents of participation in these practices across different locations, as well as discrepancies in service provision between patients with mental health conditions and patients with other health conditions. Several surveys report pharmacists' levels of comfort, confidence, or motivation toward mental health services and perceived barriers in effectively providing this care.

Scheerder et al. surveyed 69 community pharmacists in Belgium about their practices in depression care.[123] Greater than 85% of respondents agreed or strongly agreed that each of the nine survey items related to practices should be provided by the pharmacist for patients with depression.[123] Unfortunately, this willingness did not translate to current practice realities. The only services that more than 50% of pharmacists reported providing to all or most of their patients with depression were knowing the patient's medication history; providing support and listening to the patient; advising the patient to consult a doctor when the pharmacist recognizes symptoms; and advising the patient to consult a doctor when symptoms worsen.[123] Practice items that fewer than half of the pharmacists reported consistently providing to their patients with depression included: providing information on depression; providing information on the medication; and following up on symptoms, side effects and, adherence.[123]

Looking specifically at psychiatric pharmacy practices in the USA, Silvia et al. surveyed 334 psychiatric pharmacists to explore the current state for either inpatient or outpatient care.[124] Forty-six percent of psychiatric pharmacists performed CMM for at least half of their patients with mental illness.[124] Other clinical activities regularly performed by 30-40% of respondents included initiating or discontinuing meds, adjusting doses, ordering labs or other tests, completing chart reviews, and general disease state management.[124] Three-quarters reported receiving referrals for medication management from various professionals.[124]

In a large American survey of community pharmacists (n=239) assessing practice characteristics toward individuals with mental illness, 28% reported often or always providing medication therapy management for any patient, but this dropped down to 8% for medication therapy management involving mental illness.[125] The mean scores for willingness and interest to provide care for individuals with mental illness were high for all items and were higher than mean scores for comfort and confidence for 5 of 6 items related to the provision of specific clinical pharmacy services.[125] Items with highest level of comfort and confidence included asking patients about side effects from and therapeutic response to mental illness medication.[125]

These discrepancies in practices and confidence levels between patients with mental health conditions and other health conditions have been reported in other surveys. Scheerder et al. found that dramatically more pharmacists reported providing medication education, follow up, and support to most or all patients with other, physical conditions compared to patients with depression, even though pharmacists agreed they should provide the service for patients with depression.[123] These findings align with an earlier survey of 283 community pharmacists in Ontario, Canada.[126] While 71% of pharmacists felt comfortable talking to patients about their symptoms of mental illness, this was significantly lower than reported comfort talking to patients about cardiovascular symptoms (93%, $p<0.001$).[126] Furthermore, significantly fewer pharmacists agreed that they were comfortable discussing indication of psychiatric medication or that they routinely monitored for side effects or compliance with psychiatric medication compared to cardiovascular medications (absolute differences ranging from 17-29%).[126] Several years later, pharmacists in North Carolina and in the United Kingdom reported lower extents of clinical care and lower comfort levels for users of psychiatry medication compared to cardiovascular medication.[127,128] Similarly, pharmacists in North-East United States were more willing to provide various pharmacy services for and felt significantly more comfortable talking to patients with asthma than to patients with mental illness.[129] Conversely, for each of the items related to pharmaceutical care, a greater number of Alabama pharmacists responded they were more confident, comfortable, interested, and likely to provide care for mentally ill patients relative to medically ill patients.[130]

When it comes to beliefs about people with mental illness or motivation to providing mental health care, pharmacists generally have positive attitudes and willingness. From a survey of 465 community pharmacy staff in Australia, 83% agreed to being motivated to work with

mental health consumers and carers, and 94% agreed that advice about mental health medication will make a difference to those taking them.[131] Several surveys found that pharmacists generally had non-stigmatizing attitudes toward people with mental illness, and there were no overly concerning beliefs that were inhibiting care.[128–130] One survey discovered the presence of stigma and negative attitudes exists, particularly among pharmacists without personal experience of mental illness or specialized training.[125] Regardless of the level of stigmatizing attitudes, there remains an obvious gap in care for patients with mental illness when compared to non-mental health conditions, and the underlying beliefs may be a component of these observed behaviours.

There are many potential barriers that also influence pharmacists' behaviours and practices in the provision of mental health care. Pharmacists in Canada, America, Australia, Belgium, Ghana, and Malaysia all agree that inadequate training or knowledge is a primary barrier to providing care for patients with mental health conditions.[123,126,127,129,131–134] Large proportions of pharmacists consistently report other barriers such as lack of privacy for discussions, lack of time for individual patients, and lack of support from or communication with prescribers.[123,126,129,132]

2.6 Summary of Findings and Remaining Knowledge Gaps

The literature reveals an abundance of support for pharmacists to provide care for individuals with mental illness and offers many international examples of various clinical services and practice models that are associated with positive outcomes. As educated, accessible health professionals, pharmacists are well-positioned to support early identification of mental health concerns, facilitate connectedness of care, help meet complex medication management needs, promote recovery and well-being, and enhance patient-centred care for individuals living with mental illness. Despite limitations and occasional inconsistencies in results, the findings from observational and controlled trials establish a foundation for understanding, and hopefully expanding, the scope of pharmacists in the provision of mental health care. Especially when taken in the context of pharmacy practice literature affirming the role of pharmacist care in other health conditions, there are strong arguments for not only the impact but also the necessity of pharmacist involvement in mental health care.

The above review and critique of published literature reveals meaningful trends that can be used to guide further research and service initiatives. However, because both clinical practice and patient demographics can differ significantly across locations, and because health care

services are determined at the provincial level in Canada, there is a need to investigate the mental health care related practices and attitudes specifically of Saskatchewan pharmacists. This information will also help to expose any organizational discrepancy between current practice and a more desirable state.[135] To date, there is only an anecdotal understanding of what services Saskatchewan pharmacists are currently providing for individuals with mental illness and of various factors impacting their readiness to expand these practices. Before any development or implementation of provincial pharmacy service initiatives, we must first fully understand the current state of Saskatchewan pharmacists' role in mental health care. There is an urgent need to know what Saskatchewan pharmacists are doing, what they want to be doing, and what might be preventing them from providing evidence-based clinical services for individuals with mental illness.

Chapter 3 Objective

To describe the current practices of Saskatchewan pharmacists in providing care to individuals with mental illness and assesses factors that may impact these practices.

Research Questions:

1. What are the types and extent of clinical services provided by Saskatchewan pharmacists for individuals with mental illness?
2. What are the beliefs and attitudes of Saskatchewan pharmacists related to the provision of clinical services for individuals with mental illness?
3. What are the barriers Saskatchewan pharmacists experience that prevent them from providing clinical services to individuals with mental illness?

Chapter 4 Methods

4.1 Study Design and Ethical Considerations

To answer the research questions, an electronic, cross-sectional survey was used to assess current practices, attitudes, and barriers of pharmacists in the provision of mental health care. Licensed pharmacists in Saskatchewan whose current practice included at least some direct patient care were eligible to complete the survey. A certificate of ethics approval was obtained on June 8, 2021 from the University of Saskatchewan Behavioural Research Ethics Board.

4.2 Patient Oriented Research

This research was supported and partially funded by the Saskatchewan Centre for Patient Oriented Research.[136] This organization promotes and equips researchers to engage patients, defined as anyone with lived experience, in every phase of the research process. A commitment to incorporate patients as partners helps ensure the research and outcomes ultimately matter to the patients and public. A small project team of people with lived experience of mental illness was involved in the development of the research questions and survey planning, and they were invited to be involved in information sharing to the degree they were able.

4.3 Questionnaire Development

Evidence from the literature on the existing and most impacting roles of pharmacists in mental health care, as well as tools from previous surveys were used to inform the questionnaire as referenced below. To further enhance usability of the data collected, survey constructs were underpinned by literature describing theories of behaviour change and factors that influence readiness for practice change.[135,137] Where large sections of the survey items or overarching concepts were adapted from published literature, expressed permission of the authors was granted. The questionnaire also reflected expert consultation, stakeholder input, and opinions of people with lived experience of mental illness. The constructs and phrasing were chosen to obtain the most meaningful and relevant information to address knowledge gaps in Saskatchewan mental health pharmacy practice. Although substance use disorders are highly prevalent in these patient populations and are by diagnostic definition psychiatric disorders, concepts related to substance use disorders were excluded to maintain a focused and manageable scope for this research.[138] A copy of the questionnaire can be found in Appendix B.

The first section of the questionnaire contained a series of demographic questions to determine respondent characteristics and prior experience with mental health related services. Section two assessed the pharmacists' current practices and attitudes regarding the provision of clinical services for patients with mental illness (i.e. receiving a prescription for a mental health medication and/or diagnosed with a mental illness). Three separate constructs with Likert rating scales were asked for a repeating set of pharmacy clinical services, assessing 1) their extent of current service provision, 2) the extent to which they feel motivated to provide the services, and 3) the extent to which they agree it is a pharmacist's role to provide specific services (Table 4.1).[123,125,130,139,140] The list of pharmacist clinical services was developed from the over-arching, evidence-based principles of pharmaceutical care.[55,141] The concepts of medication therapy management and patient education were included, and some items were adapted from previous surveys (Table 4.2).[76,90,105,110,123,125,128,130,142] Additionally, the term "comprehensive medication management" (CMM) was utilized to capture what is becoming accepted as the standard for clinical pharmacy practice, introduced in the United States as early as 2006 and utilized by Canadian provinces to varying degrees.[67,141,143,144] Although some of the clinical services listed fall within the concept of CMM, the term CMM was specifically included to represent the all-encompassing medication therapy management services employed by pharmacists when regularly and thoroughly assessing medications and providing recommendations to optimize treatment. To add clarity regarding the clinical service definitions, examples were provided within the questionnaire (Table 4.2).

Table 4.1 Questionnaire Constructs for Section Two: The Provision of Clinical Services

1. To what extent do you <u>currently provide</u> the following services:
   (1 = to no patients, 2 = to some patients, 3 = to most patients, 4 = to all patients)

2. To what extent do you <u>feel motivated to provide</u> the following services:
   (1 = not motivated at all, 2 = somewhat un-motivated, 3 = motivated, 4 = very motivated)

3. To what extent do you <u>agree it is a pharmacist's role to provide</u> the following services:
   (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree, 5 = I don't know)

Table 4.2 Questionnaire Items for Section Two: The List of Clinical Services

a) **Thorough assessment of patient's clinical status**
(e.g. Obtaining relevant history, confirming mental health diagnosis, evaluating patient's current mental status)
b) **Providing basic education for mental health medication(s)**
(e.g. Counselling on indication, benefits, adverse effects, appropriate use)
c) **Providing advanced education for mental health medication(s) or illnesses**
(e.g. Counselling on psychiatric conditions, self-management, risk avoidance, motivational interviewing, relapse prevention)
d) **Providing active follow up (e.g. phone calls) when changes to mental health medication therapy is made**
e) **Monitoring mental health medication therapy**
(e.g. Regularly assessing medication efficacy, safety, and adherence. Supporting resolution of active issues.)
f) **Performing CMM for mental health medications**
(e.g. Medication reviews, assessing for drug therapy problems, and recommending changes to optimize therapy)
g) **Facilitating health-system navigation and collaboration for mental health care**
(e.g. Screening for high risk mental state, referring to other professionals where appropriate, assisting patients to connect with additional supports or community resources)

Questionnaire sections three and four provided additional information about pharmacists' attitudes and beliefs regarding mental health care, as well as various factors that have potential to impact practice behaviours.[135,137] Section three had 10 items to assess attitudes and beliefs about the provision of general mental health patient care (Table 4.3) using a 5-point Likert scale rating level of agreement or disagreement (1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree, 5 = I don't know).[126,130–132] Finally, section four evaluated on a 4-point Likert scale the degree to which various potential barriers impact pharmacists' readiness to regularly provide clinical services to patients with mental illness (1 = no impact, 2 = slight impact, 3 = moderate impact, 4 = significant impact, or not applicable) (Table 4.4).[117,123,125,126,129,133,139] Respondents were also asked to select from the same list the single factor they believed to have the largest impact. The survey concluded with a single, optional open-ended question to capture any additional information enlightening the essence of this research: How do you think pharmacists can make a difference for patients with mental illness?

Table 4.3 Questionnaire Items for Section Three: Assessing Attitudes and Beliefs

a) I find it uncomfortable to discuss medication therapy with patients with mental illness
b) I believe patients with mental illness do not want to talk to a pharmacist about their symptoms or medications
c) Pharmacists are qualified to recommend mental health medication changes to psychiatrists
d) Pharmacists are qualified to recommend mental health medication changes to family physicians
e) Pharmacist involvement does not add value to the interdisciplinary mental health care team
f) Patients benefit from pharmacist involvement in providing care for their mental illness
g) There is a need for pharmacists to have more of an active role in providing medication management for patients with mental illness
h) Pharmacists should be as involved in mental health management as they are in chronic disease management for diabetes or cardiovascular conditions
i) I feel confident in my ability to regularly provide clinical services to patients with mental illness
j) I currently have adequate knowledge and training to regularly provide clinical services to patients with mental illness

Table 4.4 Questionnaire Items to Assess Impact of Potential Barriers

a) Inadequate privacy in the work or patient environment
b) Inadequate staffing
c) Competing priorities
d) Insufficient training opportunities
e) Insufficient knowledge
f) Inadequate reimbursement
g) Lack of access to medical histories, diagnostic information, or treatment plans
h) Limitations in communication with prescribers
i) Insufficient administrative support to prioritize services
j) Lack of clinical tools to provide support to patients with mental health conditions
k) Lack of information about existing social supports or community resources
l) Other: (open)

A 4-point ordinal scale was chosen to eliminate the option of neutrality for the more objective items and increase usability of results.[145] For items with greater ambiguity or subjectivity, respondents had an additional option of choosing “I don’t know” or “not applicable”, which was coded as missing data rather than being integrated with the ordinal scale.[146,147] Likert scale labels were placed in ascending order to reduce the risk of left-sided selection bias.[148] Statements in section three and four were in randomized order for each

participant to help ensure responses were not influenced by the order of questioning.[145] Section three also incorporated a mix of favourable and unfavourable response options to further attempt to reduce response bias.[145]

Respondents were not forced to answer any question except for consent and confirming eligibility in order to mitigate emotional distress, requiring an opinion when there may be none, or answering of questions unthoughtfully.[147] However, if any questions were left blank, they were prompted to answer before moving on in case the question might have been unintentionally missed. This technique has been recommended to minimize instances of missing survey data.[147,149]

4.4 Questionnaire Validation

The questionnaire underwent pre-field validation and field testing. During the pre-field phase, there was consultation with content experts (e.g. psychiatric pharmacists, pharmacy practice researchers), survey specialists, and stakeholders (e.g. provincial pharmacy advocacy bodies) to assess and optimize the questionnaire. As described above, individuals with lived experience of mental illness were also involved in this phase. These consultations focused on establishing criterion and construct validity, evaluating the meaning, accuracy, reliability, and inclusion of concepts. The survey was then pilot tested with six pharmacists practicing outside of Saskatchewan in order to not remove any eligible participants from the data collection. Pilot testers were asked to provide feedback about questionnaire length, organization, ease of completion, and phrasing of question items. Validity and reliability were further evaluated through discussion with the pilot testers, ensuring that each item would accurately and consistently collect the desired information and correspond with the research questions. Internal consistency was not analyzed during field testing since the intention was not for the constructs to be measuring any one single concept. Survey amendments were made as necessary, and it was then built into the online survey software program Qualtrics XM to prepare for dissemination.

4.5 Survey Dissemination

Using purposive sampling, the survey invitation was sent to the pharmacist members of the two primary provincial advocacy bodies, Pharmacy Association of Saskatchewan (PAS) and Canadian Society of Hospital Pharmacists (CSHP) Saskatchewan Branch (Appendix A). Survey invitations were emailed directly by the PAS and CSHP communications teams. An initial

notification describing the survey was sent between November 10-12, 2021, an email containing a link to the survey was sent one week later, and follow up reminders containing the survey link were emailed on weeks three and four.[150,151] The survey invitation was also advertised on the CSHP social media platforms (Facebook and Instagram). Within the online survey, participants were asked to provide explicit consent, and they were assured their participation was voluntary and could be discontinued at any time by exiting the survey. Survey links were anonymous and no personal identifying information was collected or retained from respondents. Multiple visits to the survey webpage were permitted to allow for completion of the survey at a later date. Due to the anonymity of the survey responses and the permission of multiple visits, there was no way to ensure each person only completed the survey once.

To encourage completion of the questionnaire, participants were offered the opportunity to enter into a random draw for one of three $50 Starbucks gift cards for completing the questionnaire.[150] Contact information collected for the draw was separate from the results of the questionnaire. The draw participants' names were exported into an Excel spreadsheet and assigned a number from 1 to 81. A random number generator was used to provide three unique random numbers, and the winners were contacted and mailed their gift card.

4.6 Data Collection

Data was collected using Qualtrics XM Platform and was analyzed using Qualtrics and IBM Statistical Package for the Social Sciences (SPSS) v28.0.1. These were accessed through Master's Advisory Committee members' licenses and the University of Saskatchewan graduate student SPSS base package.

4.7 Statistical Analysis

For each section of the questionnaire, descriptive statistics were used to determine the count frequency of each response within each variable. All provided responses were included for analysis wherever possible, regardless of whether or not the entire survey was completed by each participant. The proportions of respondents selecting each answer were calculated based on the total number who answered each question, and summative comparisons were made across various items. Missing counts were excluded from frequency data on a case by case basis, but the characterization of missingness and the number of responses for each question is specified.[147,152]

Data was considered to be either nominal (e.g. demographic variables) or ordinal (e.g. Likert scales) rather than continuous, as the intervals between each scaled response could not be assumed to be equivalent. Although some have argued that reliable conclusions can be made from treating Likert scale data as continuous, it is difficult to obtain meaningful effect sizes or to accurately compare between respondents on non-validated, non-interval rating scales, which were employed in this study.[145,152] Additionally, because this study was intended to be exploratory, there were no pre-determined dependent variables to analyze through regression models. Therefore, mean rating scores were not used for the primary analysis in this study.

However, because each item in section three was intended to be measuring the same concept, namely, the degree of positive attitudes toward general mental health patient care, these Likert scale responses were summed for each participant. Total scores of 30 or higher were considered to be more positive attitudes, since that would have required the respondent to rate every item as somewhat or strongly agreeing (or disagreeing where item was unfavourably worded). The mean scores for each item are also reported. Internal consistency was analyzed to ensure this approach was valid for these survey items. This common survey analysis approach was deemed appropriate specifically for this section, and having total attitude scores provided useful information, especially when testing for associations between variables.

Inferential statistical tests were performed to determine if there were significant associations between any variables. Variables were recoded into exactly two levels, with "I don't know" and "not applicable" responses being excluded from the data. This strategy avoided the necessity of post-hoc analysis to determine where significant associations were, and meaningful conclusions could be made from only two levels per variable. Pairwise comparisons between variables and the two levels of responses are presented in Table 4.5. These were chosen based on either relationships that were expected to exist, or relationships that could provide meaningful information. Cross tabulation tables were produced, and the Pearson's Chi-Square test for independence was performed. Although there are some arguments for using the more powerful parametric tests for associations, even with Likert scale data and where all population assumptions are not met, the Chi-Square test was chosen to be the most appropriate analysis for this study, and data was treated exclusively as categorical for this section. Where 20% or greater of the cells in the cross-tabulation had an expected count value of less than five, Fisher's Exact test is also reported. Both tests were two-tailed, and the level of significance was set to 5%.

Table 4.5 Pairwise comparisons tested for independence

Demographics - Years in practice (< 10 years or > 10 years) - Role/position (staff pharmacist or manager/owner/director) - Practice location (large urban or smaller urban/rural) - Practice setting (community pharmacy or acute care) - Type of community pharmacy (independently owned or non-independently owned) - Clinical practice area (psychiatry/substance use disorders selected or not) - Personal relationship/experience with mental illness (yes or no)	Current provision of each clinical service - to no/some patients - to most/all patients
	Motivation to provide each clinical service - not motivated at all/somewhat unmotivated - motivated/very motivated
	Agreement that it is a pharmacist's role to provide each clinical service - strongly disagree/disagree - agree/strongly agree
	Total attitude scores from all ten attitude items - less positive attitude - more positive attitude
	Degree of impact of each of the potential barriers - no/slight impact - mod/significant impact
Current provision of each clinical service - to no/some patients - to most/all patients	Motivation to provide each clinical service - not motivated at all/somewhat unmotivated - motivated/very motivated
	Agreement that it is a pharmacist's role to provide each clinical service - strongly disagree/disagree - agree/strongly agree
	Total attitude scores from all ten attitude items - less positive attitude - more positive attitude
	Currently staffing - adequate for optimal patient care - not adequate
	Currently offer structured screening - never/sometimes - regularly
	% work house doing pharm care - $\leq$ 50% - > 50%
	COVID-19 impact - none to moderate - significant
Level of agreement with each attitude statement - strongly/somewhat disagree - somewhat/strongly agree	Current provision of each clinical service - to no/some patients - to most/all patients
	Motivation to provide each clinical service - not motivated at all/somewhat unmotivated - motivated/very motivated
	Agreement that it is a pharmacist's role to provide each clinical service - strongly disagree/disagree - agree/strongly agree

Total attitude scores from all ten attitude items - less positive attitude - more positive attitude	Motivation - not motivated/somewhat unmotivated - somewhat motivated/very motivated
	Agreement that it is a pharmacist's role to provide each clinical service - strongly disagree/disagree - agree/strongly agree
I feel confident in my ability to regularly provide clinical services to patients with mental illness. - strongly/somewhat disagree - somewhat/strongly agree	Factors impacting readiness: Insufficient training - no/slight impact - moderate/significant impact Factors impacting readiness: Insufficient knowledge - no/slight impact - moderate/significant impact Factors impacting readiness: Lack of clinical tools - no/slight impact - moderate/significant impact
I currently have adequate knowledge and training to regularly provide clinical services to patients with mental illness. - strongly/somewhat disagree - somewhat/strongly agree	Factors impacting readiness: Insufficient training - no/slight impact - moderate/significant impact Factors impacting readiness: Insufficient knowledge - no/slight impact - moderate/significant impact Factors impacting readiness: Lack of clinical tools - no/slight impact - moderate/significant impact

Content analysis was applied to the open-ended question by using a systematic approach to identify trends and describe themes in respondents' free-text answers. As there are various methodologic approaches in qualitative research, and because this was not a mixed-methods study, but rather a single question, a simple content analysis approach was identified by combining processes outlined in several references and is summarized in Appendix C.[153–155] Both principal investigators used the same process to independently review responses and categorize into themes and sub-themes. Analysis was compared and differences were reconciled to produce a final list of themes with frequency counts of associated responses. For increased validity, an external reviewer with a background in epidemiology research but not in pharmacy practice analyzed the content using the same process, and differences were reconciled. Selected verbatim responses are also reported.

To evaluate whether or not there may be a high degree of non-response bias impacted by a low survey response rate, two additional analyses were done. First, respondents were categorized into two independent groups, 1) those who started the survey before December 8,

and 2) those who started the survey within the last week of it being open (on or after December 8, after receiving two reminder emails). Similarly, respondents were categorized into two independent groups based on their level of completion of the survey (100% completion vs non-completion). As has been done in other studies, these groupings were analyzed because of the theory that people who answer the survey at the latest opportunity or who do not complete the survey in its entirety may be statistically different than their comparator groups and could more closely represent people from the total population who do not respond to the survey.[125,152] Survey responses for section two and three were compared between these two responder groups and the two completer groups using the Mann-Whitney U test, since the Likert scale data could be considered ordinal and the distributions of these two groups across all variables were shown to be not normally distributed. Second, demographic characteristics of the survey respondents were compared to population characteristics of Saskatchewan pharmacists based on 2020 statistics presented by Canadian Institute for Health Information (CIHI).[156]

Chapter 5 Results

5.1 Response Rate

The survey invitation was sent to pharmacist members of PAS and CSHP. After accounting for PAS members who were listed as having a joint membership with CSHP, a total of 1596 unique survey invitations were sent. One hundred forty-six pharmacists began the survey, leading to a response rate of 9.1%. The exact response rate based only on those eligible to participate in the survey (i.e., whose practice included at least some direct patient care) was unable to be determined as the total number of Saskatchewan pharmacists with a practice including some component of direct patient care is unknown. However, 2020 CIHI data reports 88% of registered pharmacists in Canada are employed in direct patient care[156] There also may have been some cases where a pharmacist purchased both a CSHP and PAS membership separately (rather than through the joint membership option offered by PAS), further reducing the amount of unique survey invitations sent.

Eighty seven percent of those who started the survey provided responses for every question. For survey sections two and three, beyond the demographic and characterizing variables, there were 18 cases of missing data, further reducing the response rate to 8.0%. The response rates for the section rating the impact of multiple potential barriers were variable, but the missing data for the question requiring a single selection of the barrier with the most impact was almost the same as for sections two and three with 19 cases missing. The breakdown of missing data is reported in Table 5.1. Missing data is theorized to be missing at random, that is, due to other variables rather than due to the administration of the survey or each variable itself.[147] The variable rates of completion of each survey question are specified within the results that follow; no case-level or item-level deletions were made.

Table 5.1 Frequency and Patterns of Missing Data (total responders n = 146)

Variable	Missing *n*, (%)
Practice location	2 (1.4)
Type of community pharmacy	2 (1.4)
Primary role	9 (6.2)
% work hours providing clinical pharm care	2 (1.4)
Currently adequately staffed?	4 (2.7)
Degree of COVID-19 impact?	2 (1.4)
Degree COVID-19 increased mental health care need?	2 (1.4)

Offer structured screening?	19 (13)
Personal experience/relationship	7 (4.8)
Extent of current provision of services	18 (12.3) (first three services = 17 (11.6))
Extent of role agreement to provide services	18 (12.3)
Extent of motivation to provide services	18 (12.3)
Agreement with attitude statements	18 (12.3)
Rating of impact of barriers	
Inadequate privacy	23 (15.8)
Inadequate staffing	21 (14.4)
Competing priorities	20 (13.7)
Insufficient training	19 (13)
Insufficient knowledge	20 (13.7)
Inadequate reimbursement	29 (19.9)
Lack of access to information	20 (13.7)
Limitation in communication with Dr	19 (13)
Insufficient admin support	21 (14.4)
Lack of clinical tools	20 (13.7)
Lack of info re social supports	19 (13)
Selection of barrier with largest impact	19 (13)
Open-ended question	53 (36)

5.2 Sample Characteristics

The characteristics of the responding pharmacist sample are reported in Table 5.2. Respondents were 73% females with a mean age of 40 years. About half (44.6%) have been practicing for 10 years or fewer, 96% were trained in Saskatchewan, 3.4% had post-baccalaureate degrees, and 12.7% completed an accredited Canadian Pharmacy Residency. Almost half (48.6%) were practicing in larger urban centres (i.e. with a population of 100,000-300,000) and the rest in smaller urban centres or rural settings. Two thirds (63%) were practicing in community pharmacy, 22% in acute care institutions, and the rest in other settings. The representation between independently or non-independently owned community pharmacies was equally divided. Sixty-seven percent of respondents reported their position or role to be that of a staff pharmacist, 28.5% were managers, owners, or directors, and the rest had other roles such as: collaborative outpatient care, correctional service pharmacy, consulting, and clinical coordinating.

Table 5.2 Select Sample Characteristics

Respondents (n = 146)*		
Gender, n (%)*		
	Male	39 (26.7)
	Female	107 (73.3)
	Other	0 (0)
Age, mean (SD, range)		40 (12, 24-73)
# years practicing		
	< 5	32 (22.0)
	6-10	33 (22.6)
	11-15	23 (15.8)
	16-20	11 (7.5)
	> 20	47 (32.2)
Location of undergrad degree		
	Saskatchewan	140 (95.9)
	Other Canadian province	1 (0.7)
	International	5 (3.4)
Other credentials		
	Accredited Canadian Pharmacy Residency	18 (12.3)
	Master's	4 (2.7)
	PhD	0 (0)
	PharmD (post-bac)	1 (0.7)
Primary practice location (n = 144)		
	Large urban (population > 100,000)	70 (48.6)
	Smaller urban (population 1,000-99,999)	55 (38.2)
	Rural (population < 1,000)	19 (13.2)
Primary practice setting		
	Community pharmacy	92 (63.0)
	Acute-care institution	32 (21.9)
	Primary care or out-patients	10 (6.9)
	Academia	6 (4.1)
	Other	6 (4.1)
Type of community pharmacy (if applicable) (n = 90)		
	Independently owned	45 (50.0)
	Franchise or chain	33 (36.7)
	Grocery	12 (13.3)
Primary role (n = 137)		
	Staff pharmacist	91 (66.4)
	Manager, owner, or director	39 (28.5)
	Other	7 (5.1)
Primary practice area		
	Psychiatry	13 (8.9)
	Substance Use Disorder	16 (11.0)
Have close relationship with someone with mental illness, or personally have mental illness (n = 139)		
	Yes	111 (79.9)
	No	28 (20.1)
Received any specialized training related to mental health or psychotropic drugs (n = 143)		
	Yes	11 (7.7)
	No	132 (92.3)
Offer structured screening for mental health conditions (n = 127)		
	Regularly	2 (1.6)
	Sometimes	13 (10.2)
	Never	112 (88.2)
Provide any specialized mental health services (n = 142)		
	None	42 (29.6)

*Unless otherwise specified

From an extensive list of options with no choice limitations, 9% selected psychiatry and 11% selected substance use disorders as a primary practice area. Ninety-two percent had no specialized training or certification related to mental health or psychotropic drugs. The listed examples of such training were: Board Certification in psychiatric pharmacy, post-undergraduate training with rotation(s) in mental health, post-undergrad training with a primary focus in mental health, or other. Eighty percent of respondents reported having a close personal relationship with someone with diagnosed mental illness or having personal experience with diagnosed mental illness.

Information was also provided about respondents' current work situation. About one third (36%) reported that less than 25% of their work hours were spent providing clinical pharmacy care, and only 15% reported clinical care making up greater than 75% of their work hours. Likewise, about one third (39%) currently felt their pharmacy team was adequately staffed to provide optimal patient care. When asked about the degree of impact COVID-19 was having on their ability to provide clinical services to patients with any health condition, 7% reported no change from baseline, 58% reported moderate impact, 35% said it was having a significant impact.

5.3 Primary Questionnaire Data: Descriptive Statistics

Results are presented in the form of tables and figures. For increased readability, the figures contain abbreviated phrasing of the listed pharmacy clinical services, as outlined in Table 5.3.

Table 5.3 Legend of abbreviated phrasing

Original Phrasing	Abbreviated Phrasing
Thorough assessment of patient's clinical status	Thorough assessment
Providing basic education for mental health medication(s)	Basic education
Providing advanced education for mental health medication(s) or illnesses	Advanced education
Providing active follow up (e.g. phone calls) when changes to mental health medication therapy is made	Active follow up
Monitoring mental health medication therapy	Monitoring medication therapy
Performing comprehensive medication management for mental health medications	CMM
Facilitating health-system navigation and collaboration for mental health care	Health system navigation

5.3.1 Research Question 1

What are the types and extent of clinical services provided by Saskatchewan pharmacists for individuals with mental illness?

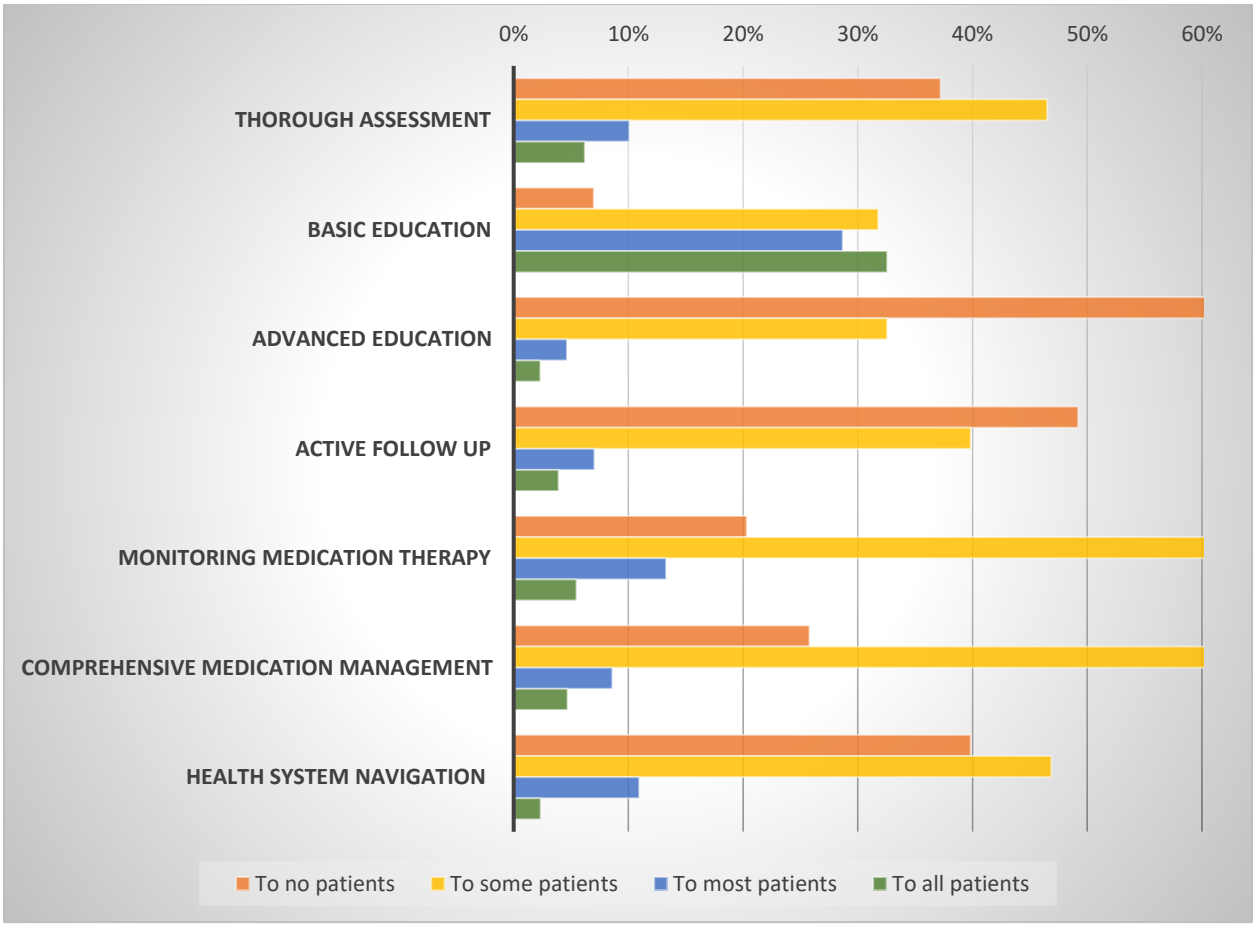
As found in the baseline characteristics of the sample (Table 5.2), 88.2% (112/127) never offer structured screening for mental health conditions, and 29.6% (42/142) do not currently provide any specialized mental health and addictions medications/services. The list of specialized services respondents had to select from included: administration of long acting injectable antipsychotics; dispensing clozapine; dispensing opioid agonist therapy; dispensing naloxone kits; psychotherapy (non-medication treatment of insomnia, motivational interviewing, psychoeducation); prescriptive authority under collaborative practice agreements (for mental health medications); modified dispensing for psychotropic medication (i.e. 1 week fills, supervised administration); other (free-text to specify).

The extent to which respondents are currently providing each of the clinical services specified in the survey is reported in Table 5.4 and displayed graphically in Figure 5.1. Of the 128 pharmacists who responded to this question, 61.2% reported to be currently providing basic education about mental health medication to most or all patients, and 7% are providing this to no patients. All other service types had less than 20% of respondents providing them to all or most patients, with the lowest frequency reported for providing advanced education (7.0%) and providing active follow up (10.9%). The descending order of services provided to most or all patients is presented in Table 5.5. There were high frequencies of pharmacists providing the specified services to no patients, specifically for providing advanced education (60.5%), providing active follow up (49.2%), facilitating health system navigation and collaboration (39.8%), and thorough assessment of patient's clinical status (37.2%).

Table 5.4 Extent to which clinical services are currently provided by pharmacists (n = 128)

n (%)	To no patients	To some patients	To most patients	To all patients
Thorough assessment of patient's clinical status*	48 (37.2)	60 (46.5)	13 (10.1)	8 (6.2)
Providing basic education for mental health medication(s)*	9 (7.0)	41 (31.8)	37 (28.7)	42 (32.6)
Providing advanced education for mental health medication(s) or illnesses*	78 (60.5)	42 (32.6)	6 (4.7)	3 (2.3)
Providing active follow up (e.g. phone calls) when changes to mental health medication therapy is made	63 (49.2)	51 (39.8)	9 (7.0)	5 (3.9)
Monitoring mental health medication therapy	26 (20.3)	78 (60.9)	17 (13.3)	7 (5.5)
Performing CMM for mental health medications	33 (25.8)	78 (60.9)	11 (8.6)	6 (4.7)
Facilitating health-system navigation and collaboration for mental health care	51 (39.8)	60 (46.9)	14 (10.9)	3 (2.3)

*n = 129



*n = 129

Figure 5.1 Extent to which clinical services are currently provided by pharmacists (n = 128)

Table 5.5 Proportion of respondents providing the specified clinical service to most or all patients (n = 128)

Providing basic education*	61.2%
Monitoring medication therapy	18.8%
Thorough assessment of patient's clinical status*	16.3%
Performing CMM	13.3%
Facilitating health-system navigation and collaboration	13.3%
Providing active follow up when changes to medication therapy are made	10.9%
Providing advanced education*	7.0%

*n = 129

5.3.2 Research Question 2

What are the beliefs and attitudes of Saskatchewan pharmacists related to the provision of clinical services for individuals with mental illness?

For the same list of clinical services, respondents rated the extent of their agreement that it is a pharmacist's role to provide each service and the extent of their personal motivation to provide each service. These results are reported in Tables 5.6 and 5.7 and displayed graphically in Figures 5.2 and 5.3.

Table 5.6 Extent of agreement that it is a pharmacist's role to provide clinical services (n = 128)

	Strongly disagree	Disagree	Agree	Strongly agree	I don't know
Thorough assessment of patient's clinical status	6 (4.7)	36 (28.1)	54 (42.2)	24 (18.8)	8 (6.3)
Providing basic education for mental health medication(s)	1 (0.8)	0 (0)	23 (18.0)	102 (79.7)	2 (1.6)
Providing advanced education for mental health medication(s) or illnesses	3 (2.3)	29 (22.7)	65 (50.8)	19 (14.8)	12 (9.4)
Providing active follow up (e.g. phone calls) when changes to mental health medication therapy is made	3 (2.3)	9 (7.0)	71 (55.5)	36 (28.1)	9 (7.0)
Monitoring mental health medication therapy	0 (0)	2 (1.6)	60 (46.9)	60 (46.9)	6 (4.7)
Performing CMM for mental health medications	0 (0)	7 (5.5)	55 (43.0)	62 (48.4)	4 (3.1)
Facilitating health-system navigation and collaboration for mental health care	4 (3.1)	21 (16.4)	68 (53.1)	22 (17.2)	13 (10.2)

Table 5.7 Extent to which pharmacists feel motivated to provide clinical services (n = 128)

	Not motivated at all	Somewhat unmotivated	Motivated	Very Motivated
Thorough assessment of patient's clinical status	15 (11.7)	44 (34.4)	51 (39.8)	18 (14.1)
Providing basic education for mental health medication(s)	1 (0.8)	10 (7.8)	69 (53.9)	48 (37.5)
Providing advanced education for mental health medication(s) or illnesses	22 (17.2)	46 (35.9)	47 (36.7)	13 (10.2)
Providing active follow up (e.g. phone calls) when changes to mental health medication therapy is made	17 (13.3)	46 (35.9)	44 (34.4)	21 (16.4)
Monitoring mental health medication therapy	6 (4.7)	24 (18.8)	78 (60.9)	20 (15.6)
Performing CMM for mental health medications	12 (9.4)	31 (24.2)	64 (50.0)	21 (16.4)
Facilitating health-system navigation and collaboration for mental health care	18 (14.1)	35 (27.3)	51 (39.8)	24 (18.8)

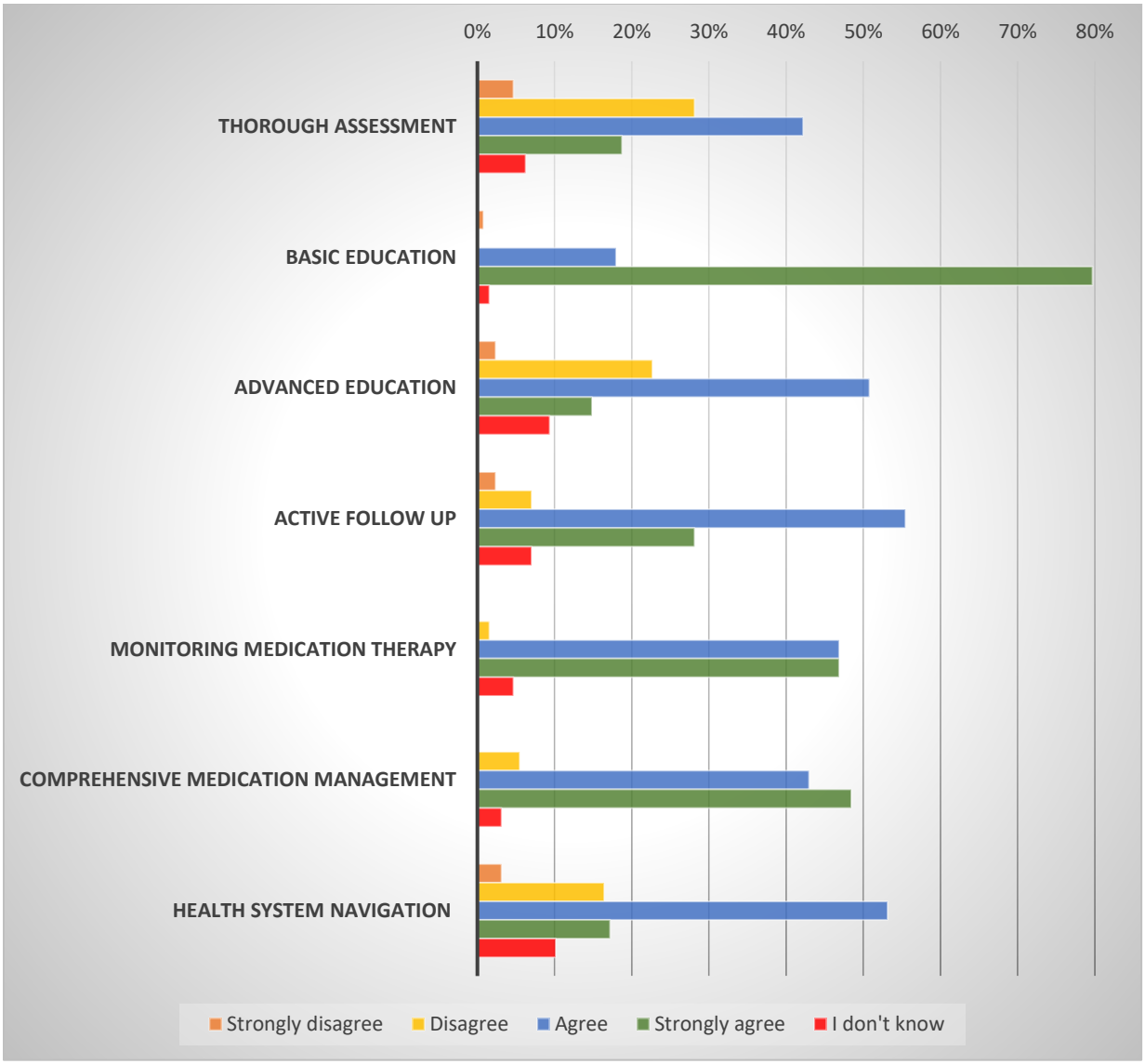


Figure 5.2 Extent of agreement that it is a pharmacist's role to provide clinical services (n = 128)

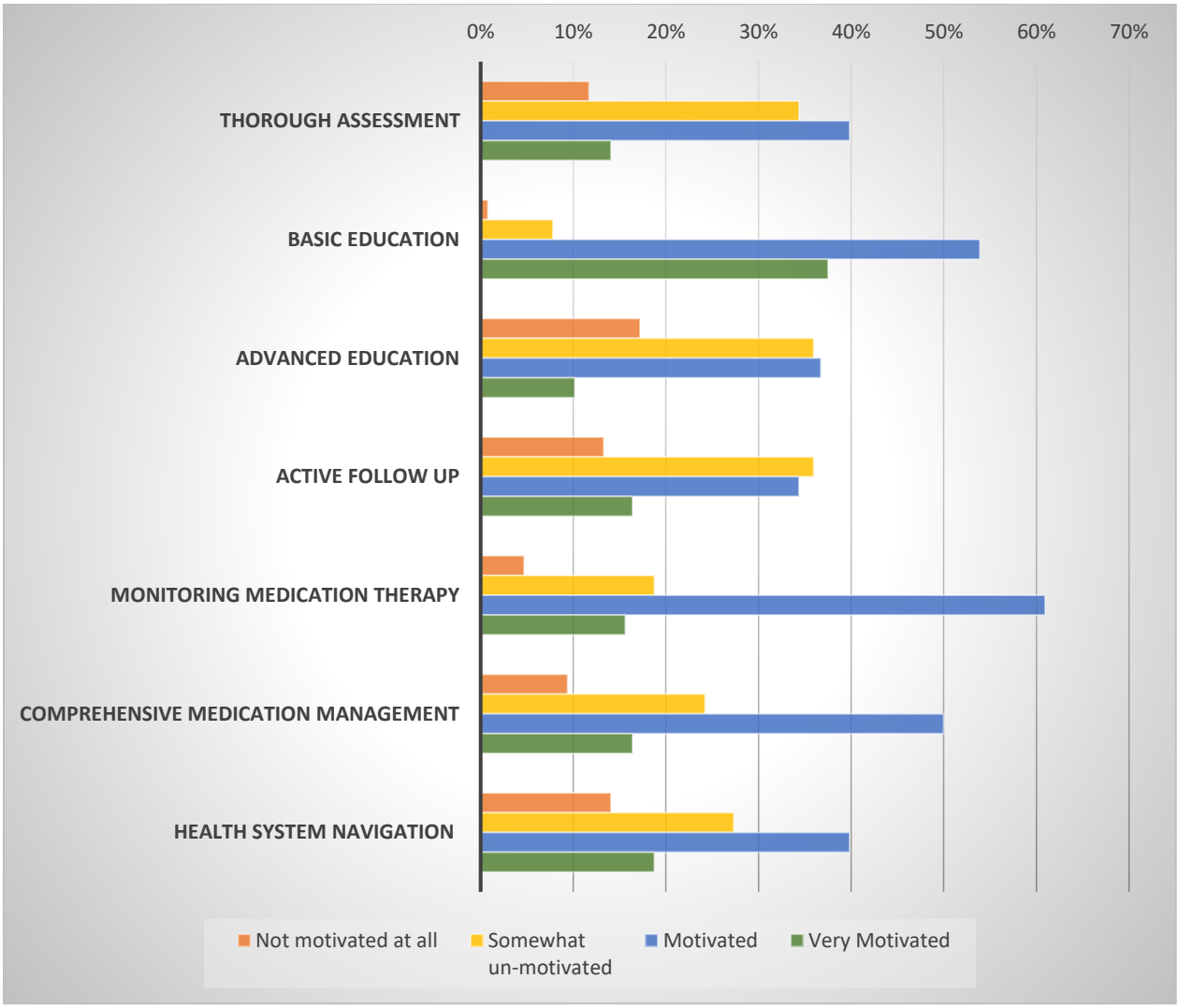


Figure 5.3 Extent to which pharmacists feel motivated to provide clinical services (n = 128)

In stark contrast to the results describing the extent of current provision of each service (Table 5.4), most pharmacists agreed or strongly agreed it is a pharmacist's role to provide every clinical service in the list. Notably, 97.7% of respondents agreed that it is a pharmacist's role to provide basic education, 93.8% for monitoring mental health medication therapy, and 91.4% for performing CMM. Services for which respondents most frequently strongly disagreed or disagreed that it is a pharmacist's role to provide were doing a thorough assessment of patient's clinical status (39.1%) and providing advanced education (34.4%). Between 1-10% of respondents stated they did not know if each service is a pharmacist's role to provide, and this response was highest for facilitating health-system navigation and collaboration (10.2%) and

providing advanced education for mental health medications (9.4%). The descending order of extent of role agreement is reported in Table 5.8.

Table 5.8 Proportion of respondents who agree or strongly agree it is a pharmacist's role to provide the specified clinical service, in descending order (n = 128)

Providing basic education	97.7%
Monitoring medication therapy	93.8%
Performing CMM	91.4%
Providing active follow up when changes to medication therapy are made	83.6%
Facilitating health-system navigation and collaboration	70.3%
Providing advanced education	65.6%
Thorough assessment of patient's clinical status	60.9%

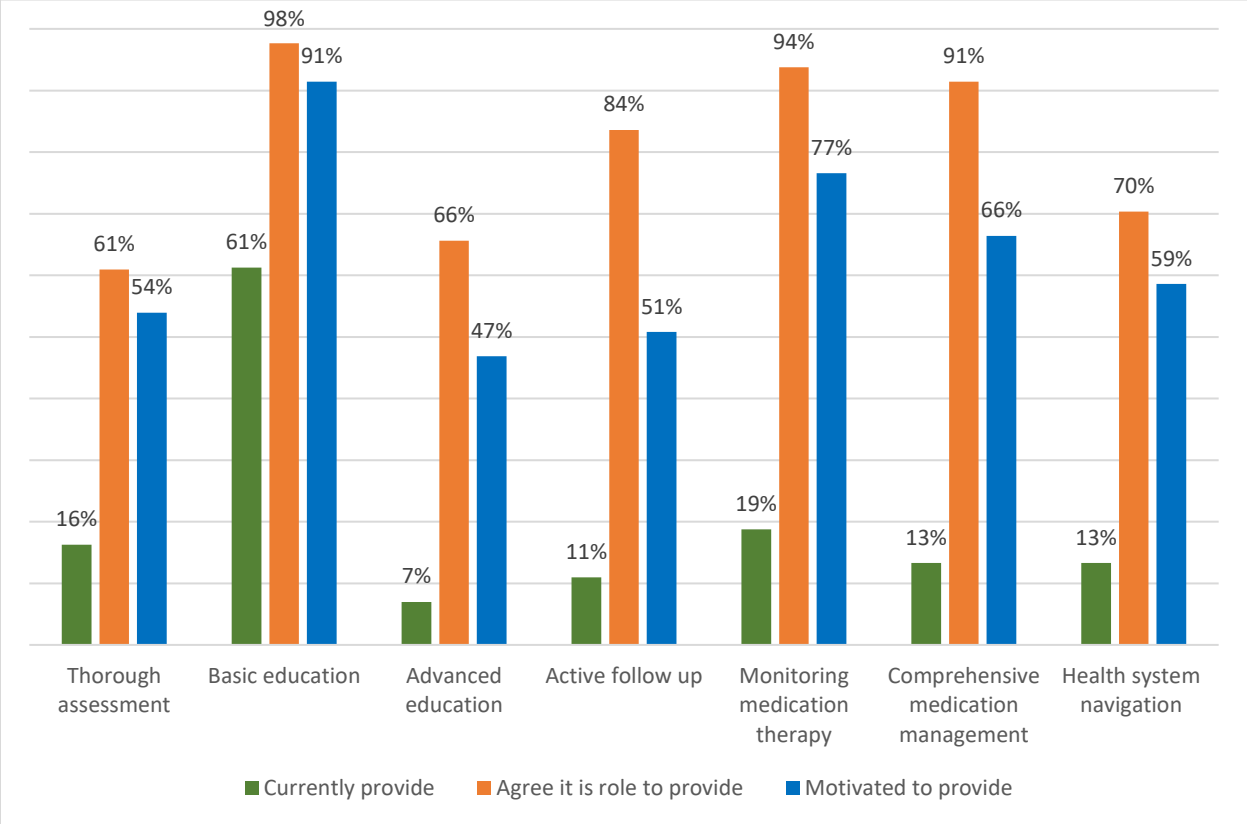
Motivation remained high for providing basic education for mental health medications, with 91.4% of respondents feeling motivated or very motivated to do so. This was followed by motivation to monitor mental health medication therapy (76.6%) and perform CMM (66.4%). The services for which pharmacists most frequently reported that they are not motivated at all or somewhat un-motivated were providing advanced education (53.1%) and providing active follow-up (49.2%). The descending order of extent of motivation is reported in Table 5.9.

Table 5.9 Proportion of respondents feeling motivated or very motivated to provide the specified clinical service, in descending order (n = 128)

Providing basic education	91.4%
Monitoring medication therapy	76.6%
Performing CMM	66.4%
Facilitating health-system navigation and collaboration	58.6%
Thorough assessment of patient's clinical status	53.9%
Providing active follow up when changes to medication therapy are made	50.8%
Providing advanced education	46.9%

Across all clinical service types, respondents were currently providing services much less than the extent to which they agreed it was a pharmacist's role or felt motivated to provide them. While fewer than 20% of respondents were regularly providing every service except basic education, between 60-94% agreed or strongly agreed it was a pharmacist's role to provide, and between 46-77% felt motivated or very motivated to provide them. The magnitude of these differences is displayed in Figure 5.4. The service with the least discrepancies between all three

categories was providing basic education for mental health medications. There were high discrepancies between extent of current provision and extent of role agreement for providing active follow up (73%), monitoring mental health medication therapy (75%), and performing CMM (78%). The discrepancies between extent of current provision and extent of motivation to provide were similar for all services (38-58%), except for providing basic education (30%). The services with the highest degree of discrepancies between extent of current provision and motivation were again for monitoring mental health medication therapy (58%), and performing CMM (53%). There were varying degrees of discrepancies between extent of role agreement and motivation, with the largest being for providing active follow up (33%) and CMM (25%).



Currently provide: to most or all patients; agree or strongly agree it is role to provide; motivated or very motivated to provide. N = 128, except for the first three services under the currently provide concept.

Figure 5.4 Pharmacists' current practices, role agreement, and motivation related to specified clinical services

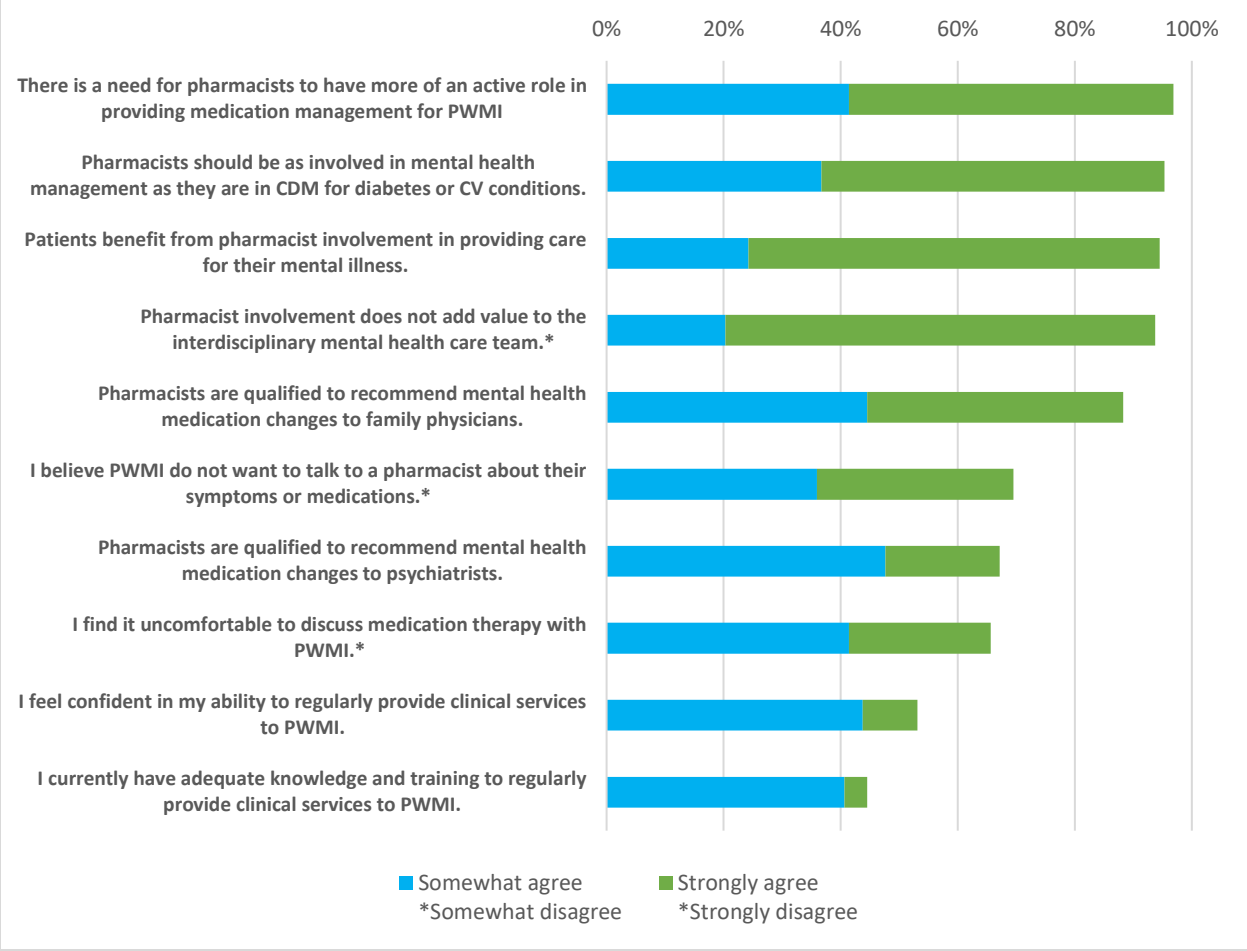
Pharmacist respondents ranked their level of agreement or disagreement to 10 statements assessing attitudes and beliefs about qualification, confidence, scope of practice, and value of

pharmacist involvement in general mental health patient care (Table 5.10). The statements for which the 128 respondents most frequently somewhat or strongly agreed were: there is a need for pharmacists to have more of an active role in providing medication management for patients with mental illness (96.9%), pharmacists should be as involved in mental health management as they are in chronic disease management for diabetes or cardiovascular conditions (95.3%), patients benefit from pharmacist involvement in providing care for their mental illness (94.5%). There was also a high frequency of pharmacists somewhat or strongly disagreeing to the unfavourably worded statement: pharmacist involvement does not add value to the interdisciplinary mental health care team (93.8%).

Table 5.10 Pharmacists' attitudes related to mental health patient care (n = 128)

	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	I don't know
I find it uncomfortable to discuss medication therapy with patients with mental illness	31 (24.2)	53 (41.4)	39 (30.5)	2 (1.6)	3 (2.3)
I believe patients with mental illness do not want to talk to a pharmacist about their symptoms or medications	43 (33.6)	46 (35.9)	30 (23.4)	7 (5.5)	2 (1.6)
Pharmacists are qualified to recommend mental health medication changes to psychiatrists	7 (5.5)	31 (24.2)	61 (47.7)	25 (19.5)	4 (3.1)
Pharmacists are qualified to recommend mental health medication changes to family physicians	3 (2.3)	11 (8.6)	57 (44.5)	56 (43.8)	1 (0.8)
Pharmacist involvement does not add value to the interdisciplinary mental health care team	94 (73.4)	26 (20.3)	5 (3.9)	3 (2.3)	0 (0)
Patients benefit from pharmacist involvement in providing care for their mental illness	1 (0.8)	2 (1.6)	31 (24.2)	90 (70.3)	4 (3.1)
There is a need for pharmacists to have more of an active role in providing medication management for patients with mental illness	1 (0.8)	1 (0.8)	53 (41.4)	71 (55.5)	2 (1.6)
Pharmacists should be as involved in mental health management as they are in chronic disease management for diabetes or cardiovascular conditions	1 (0.8)	4 (3.1)	47 (36.7)	75 (58.6)	1 (0.8)
I feel confident in my ability to regularly provide clinical services to patients with mental illness	14 (10.9)	44 (34.4)	56 (43.8)	12 (9.4)	2 (1.6)
I currently have adequate knowledge and training to regularly provide clinical services to patients with mental illness	27 (21.1)	43 (33.6)	52 (40.6)	5 (3.9)	1 (0.8)

More pharmacists somewhat or strongly agree they are more qualified to recommend mental health medication changes to family physicians than to psychiatrists (88.3% vs 67.2%). Although 33.6% of respondents strongly disagreed that patients with mental illness do not want to talk to a pharmacist about their symptoms or medications, only 24.2% strongly disagreed that they find it uncomfortable to discuss mental health medications with patients. The statements for which pharmacists were least likely to somewhat or strongly agree were: "I feel confident in my ability to regularly provide clinical services to patients with mental illness" (53.1%) and "I currently have adequate knowledge and training to regularly provide clinical services to patients with mental illness" (44.5%), with only 9.4% and 3.9% respectively strongly agreeing to these statements. Figure 5.5 further illustrates these results.



CDM: chronic disease management; CV: cardiovascular; PMWI: patients with mental illness

Figure 5.5 Descending order of pharmacists' agreement (or disagreement) to the attitude and belief statements (n = 128)

The internal reliability of this section was analyzed and found to be acceptable (Cronbach's Alpha = 0.77). Therefore, results are also reported in terms of mean scores from a 4-point Likert scale (1 = strongly disagree, 4 = strongly agree), with reverse coding for the applicable statements (Table 5.11). Of a total possible score of 40, indicating maximal positive attitudes, the mean score was 30.8 (SD = 4.6, range 16-39). The statements with the highest mean scores indicating positive responses were that pharmacist involvement adds value to the interdisciplinary mental health care team (3.65), patients benefit from pharmacist involvement (3.58), and pharmacists should be as involved in mental health management as they are in chronic disease management for diabetes or cardiovascular conditions (3.52). Seventy-nine pharmacists (62%) had a total score from all ten statements of 30 or higher, which was considered to be an overall positive attitude, and the remaining pharmacists (49/128) had a total score between 10-29.

Table 5.11 Mean rating scores for the attitude and belief statements

	Mean	SD
Pharmacist involvement does not add value to the interdisciplinary mental health care team*	3.65	0.671
Patients benefit from pharmacist involvement in providing care for their mental illness	3.58	0.838
Pharmacists should be as involved in mental health management as they are in chronic disease management for diabetes or cardiovascular conditions	3.52	0.676
There is a need for pharmacists to have more of an active role in providing medication management for patients with mental illness	3.48	0.71
Pharmacists are qualified to recommend mental health medication changes to family physicians	3.28	0.783
I believe patients with mental illness do not want to talk to a pharmacist about their symptoms or medications*	2.95	0.966
I find it uncomfortable to discuss medication therapy with patients with mental illness*	2.84	0.894
Pharmacists are qualified to recommend mental health medication changes to psychiatrists	2.75	0.939
I feel confident in my ability to regularly provide clinical services to patients with mental illness	2.48	0.869
I currently have adequate knowledge and training to regularly provide clinical services to patients with mental illness	2.26	0.863

*Indicates reverse scoring, so higher numbers reflect positive responses. 1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree, 0 = I don't know.

5.3.3 Research Question 3

What are the barriers Saskatchewan pharmacists experience that prevent them from providing clinical services to individuals with mental illness?

When asked to independently rate the extent of impact each potential barrier has on their readiness to regularly provide clinical services, almost every item was rated as having either moderate or significant impact by over two-thirds of pharmacists who responded to this question (Table 5.12). The two exceptions were inadequate privacy or "other". The top five rated as having either moderate or significant impact were: competing priorities (88.1%); lack of access to medical histories, diagnostic information, or treatment plans (81.7%); lack of clinical tools to provide support to patients with mental health conditions (81.0%); lack of information about social supports or community resources (79.5%); and insufficient training opportunities (79.5%). The factors most frequently rated as having "no impact" were inadequate privacy in the work or patient environment (26.8%) and inadequate reimbursement (20.5%). Ten of 21 respondents who selected "other" also provided a free-text specification, which is reported in Table 5.13.

Table 5.12 The degree to which various potential barriers impact readiness to regularly provide clinical services to patients with mental illness

n (%)	No impact	Slight impact	Moderate impact	Significant impact	Total *(n)*
Inadequate privacy in the work or patient environment	33 (26.8)	21 (17.1)	43 (35.0)	26 (21.1)	123
Inadequate staffing	6 (4.8)	22 (17.6)	32 (25.6)	65 (52.0)	125
Competing priorities	4 (3.2)	11 (8.7)	25 (19.8)	86 (68.3)	126
Insufficient training opportunities	3 (2.4)	23 (18.1)	44 (34.7)	57 (44.9)	127
Insufficient knowledge	2 (1.6)	33 (26.2)	42 (33.3)	49 (38.9)	126
Inadequate reimbursement	24 (20.5)	13 (11.1)	24 (20.5)	56 (47.9)	117
Lack of access to medical histories, diagnostic information, or treatment plans	5 (4.0)	18 (14.3)	31 (24.6)	72 (57.1)	126
Limitations in communication with prescribers	8 (6.3)	33 (26.0)	46 (36.2)	40 (31.5)	127
Insufficient administrative support to prioritize services	11 (8.8)	17 (13.6)	49 (39.2)	48 (38.4)	125
Lack of clinical tools to provide support to patients with mental health conditions	1 (0.8)	23 (18.3)	57 (45.2)	45 (35.7)	126
Lack of information about existing social supports or community resources	3 (2.4)	23 (18.1)	54 (42.5)	47 (37.0)	127
Other	11 (52.4)	0 (0)	3 (14.3)	7 (33.3)	21

Table 5.13 Free text provided for “other” potential barriers

Free text "other"	**Impact Rating**
Currently unable to visit inpatient mental health unit due to COVID	Not rated
Lack of organizational awareness of pharmacist's abilities	4
Potential liability	4
COVID-19 vaccination program	4
Lack of meeting/talking to patient directly	4
Patient unreadiness	4
Extreme barriers to mental health services in the community for patients.	3
Mental illness is sometimes not #1 priority while admitted to hospital for other reasons	4
Lack of interest from patients	4
Patient/society reluctance	3

1 = no impact; 2 = slight impact; 3 = moderate impact; 4 = significant impact

To further determine which factors pharmacists believe have the greatest impact on their readiness to provide clinical services, respondents were asked to select a single factor from the list of potential barriers. The 127 respondents most frequently chose insufficient knowledge (26.8%), competing priorities (18.9%), and inadequate staffing (15.0%) as having the most significant impact on their readiness to regularly provide clinical services to patients with mental illness (Table 5.14, Figure 5.6). The comparison between responses based on the two different ways this question was asked is illustrated in Figure 5.7.

Table 5.14 Factors selected as having the most significant impact on pharmacists' readiness to regularly provide clinical services to patients with mental illness (n = 127)

Potential Barrier	Respondents selecting each	
	%	n
Insufficient knowledge	26.8%	34
Competing priorities	18.9%	24
Inadequate staffing	15.0%	19
Lack of access to medical histories, diagnostic information, or treatment plans	11.8%	15
Insufficient training opportunities	7.9%	10
Inadequate reimbursement	7.9%	10
Lack of clinical tools to provide support to patients with mental health conditions	3.9%	5
Insufficient administrative support to prioritize services	3.2%	4
Limitations in communication with prescribers	2.4%	3
Other (please specify)	2.4%	3
Inadequate privacy in the work or patient environment	0%	0
Lack of information about existing social supports or community resources	0%	0

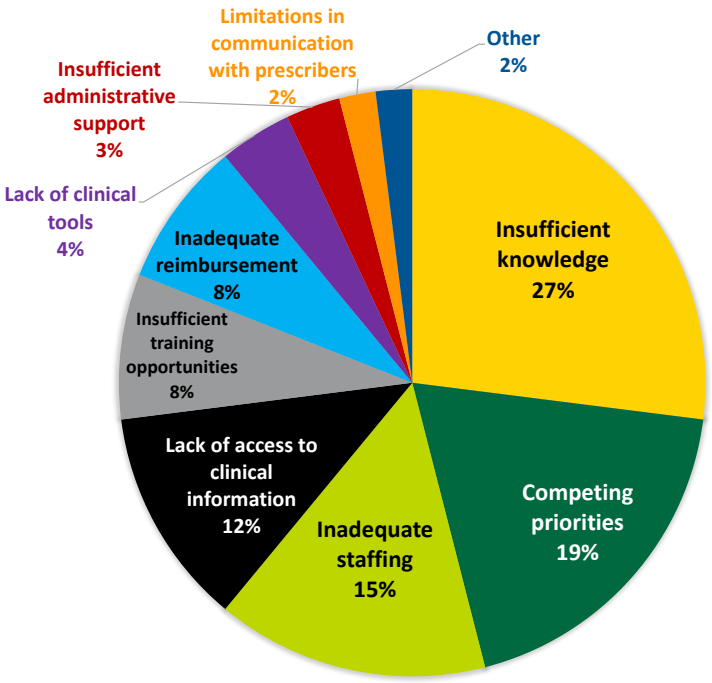
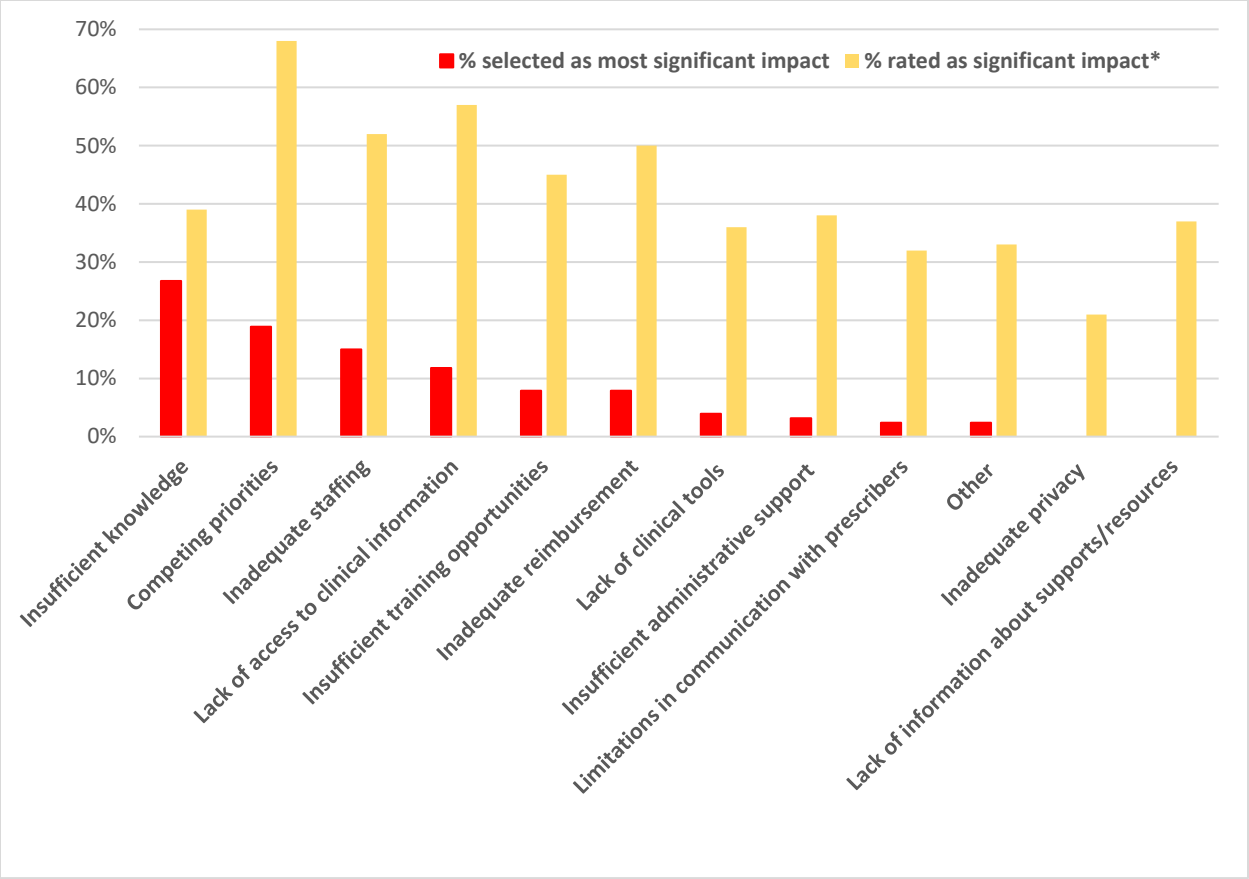


Figure 5.6 Proportion selecting each factor as having the most significant impact on readiness to provide clinical services to patients with mental illness (n = 127)



*total count variable (n = 117-127)

Figure 5.7 The degree of impact various factors have on pharmacists' readiness to regularly provide clinical services to patients with mental illness (n = 127)

5.4 Free-text Questionnaire Responses

To end the survey, participants were asked "How do you think pharmacists can make a difference for patients with mental illness?", and they responded with free-text. Ninety-three responses were provided and were systematically analyzed for consistent themes (Appendix C). Eight primary themes were identified, and respondents' statements were categorized accordingly (Table 5.15). The emergent themes having the most frequently associated statements were: providing pharmaceutical care (49), addressing barriers (37), and building relationships with patients (27). Other themes that were identified from repeated statements were: accessibility (24); being integrated, valued members of the health care team (19); facilitating health-system navigation (18); providing patient-centred care (17); and optimizing adherence (10). When compared to the content analysis performed by an external, independent reviewer, many of the same over-arching themes were identified, with only slight variations in the wording or sub-

theme categorization. Therefore, the original theme categories were not modified. The themes identified by the external reviewer that were most consistent with the initial categorization and that were easily integrated with the data were: accessibility, gain trust, listen, monitor patients, provide education, be a part of the medical team, and direct patients to supports. A sample of direct quotes from the responses in this section is provided in Table 5.16.

Table 5.15 Identified themes from the open-ended question and the number of statements fitting into each category

Theme	Sub-themes	Frequency of associated statements
Accessibility	Being frequent, accessible, available, and first point of contact TOTAL	**24**
Building relationships with patients	Being someone patients can trust	5
	Listening to patients	8
	Showing caring (empathy, support, openness)	11
	Being approachable	3
	TOTAL	**27**
Providing patient-centred care	Using shared decision making	3
	Advocating for patients' needs	5
	Providing individualized care	3
	Taking the time to interact with patients	6
	TOTAL	**17**
Optimizing adherence	Improving medication adherence	4
	Identifying and addressing barriers to adherence	6
	TOTAL	**10**
Addressing barriers	Limitations of community pharmacy environment setting (e.g. physical space, policies, workflow)	2
	Inadequate reimbursement	7
	Lack of time	11
	Competing priorities	2
	Insufficient knowledge or training	10
	Lack of access to clinical information	3
	Not enough resources	4
	TOTAL	**39**
Providing pharmaceutical care	Providing patient education	15
	Providing regular monitoring (i.e. efficacy, safety)	14
	Providing active follow-up	7
	CMM (med reviews, assessments, optimization, recommendations)	12
	Thorough assessment (clinical status, history)	1
	TOTAL	**49**
Facilitating health-system navigation	Recommending resources and services	4
	Screening and referring as appropriate	6
	Triaging	5
	Supporting transitions of care	3
	TOTAL	**18**

Being integrated, valued members of the health care team	Collaborative care	11
	Actively supporting appropriate prescribing	5
	Liaising between health care providers (communication)	3
	TOTAL	**19**

Table 5.16 Sample of direct quotes from open-ended question

Gain trust of patient
Listening to patients and validating them.
Asking how their week has been.
We can help them through the first couple of weeks when many medications cause undesirable side effects, encourage them to continue and give the medications time to work.
Pharmacists can improve patient adherence by developing a relationship built on trust whereby the patient is comfortable disclosing limitations impacting their therapy.
[I think that] the traditional pharmacy model, inhibits patients from feeling comfortable to talk to us. A kiosk in the back of a convenience/ grocery/ department store does not lend itself to in-depth consultations. … a kiosk type pharmacy, where the pharmacists are measured by prescriptions per man hour, does not lend itself to this.
If we were reimbursed for med reviews for patients on multiple medications for mental illness the same way we were if they are over the age of 65 then we would have the time and opportunities to offer those services.
If I had the time in my community practice I would love to talk to patients with mental illness. It takes a lot of time and virtually impossible to do in a busy retail pharmacy.
I think a lot of pharmacists aren't confident in this area so they shy away from it. However, I believe most pharmacists, with more training, are more than capable of assisting our patients with mental health disorders in a more impactful way.
If pharmacists had the proper time, resources, support (financial, administrative, clinical, collaborative, etc.), we could make a huge difference for patients with mental illness.
Actually assessing patients every time they come in.
I think assessment of mental illness and monitoring related changes to pharmacotherapy requires longitudinal follow up that can be challenging in an inpatient setting…. Without that follow up, it is nearly impossible to reasonably compare safety and efficacy in the real world and for real patients - outside of what we read in literature.
Pharmacists can provide their expertise in all areas of medication management. Patients are often looking for help - specifically someone to listen to them and point them towards other services from which they may benefit. Pharmacists are accessible but often under-trained for this role. Mental health has multiple variables that are not always powered by but often impacted by medications.
When I do positively impact a patient with mental illness, it is so very rewarding for both them and me. These interactions fuel an ongoing love for the profession and the impact we can have on our patients'. But they definitely take more time, effort, mental strength, and resources than some other patients, so sometimes I don't step into these interactions as readily. I know we are often the point of first care and we are the eyes and ears on the ground in the community. Our multi-disciplinary team values our participation highly in mental health related teams and often plan around our schedules for meetings and huddles.

I think education and empathy would be huge factors in making a positive difference for patients with mental illness. I believe pharmacists having more time to be able to do regular follow ups would make a positive difference as well.
I strongly believe that many pharmacists are capable and actually do make a huge positive difference in the lives of those afflicted with mental health challenges, and the biggest way is by being there to talk and to listen. We are…95% of the time the people that patients with such conditions seek out first, to address the entire spectrum of challenges they face in their daily lives. … Patients are wanting to talk, so priming them with a few questions usually will open the vessel and they will tell you what their concern is. Sure, time is important, but actually giving a damn is the most important.
Participation in a multidisciplinary team as medication therapy experts and strong advocates for our patients to get care free of stigma that meets patients where they are at.

5.5 Questionnaire Data: Inferential Statistics

Refer to methods section (Table 4.5) for a complete list of pairwise comparisons tested for independence. There were many instances of statistically significant associations between variables, which are recorded in the tables that follow. Because of the inferential limitation of low response rate and the exploratory nature of this research, not every significant association is explicitly discussed. A complete list of cross-tabulation tables and Chi-Square test results are available in Appendix D.

5.5.1 Variables Associated with Extent of Current Service Provision

The statistically significant associations between demographic variables and the extent of provision for specific services are presented in Table 5.17. Pharmacists practicing in community pharmacy tend to provide basic education, advanced education, active follow up, and facilitation of health system navigation to more patients than those in acute care settings. However, there was only statistically significant associations between practice setting and providing basic education, with 83.3% of community pharmacists providing to most or all patients compared to 15.6% of acute care pharmacists ($p<.001$). There were no significant associations related to the type of community pharmacy. A pharmacist's role or position was significantly associated with the extent of provision of three specific mental health clinical services. Ninety-three percent of pharmacy managers, owners, or directors reported currently providing basic education to most or all patients compared to only 51.2% of staff pharmacists ($p<.001$). Managers/owners/directors also reported a greater extent of service provision for providing active follow up (24.2% vs

6.2%; p=.010) and facilitating health system navigation and collaboration (28.2% vs 8.5%; p=.014).

Table 5.17 Demographics associated with current provision of clinical services

	Basic education	
Role (position)	No/some patients	Most/all patients
Staff pharmacist	40 (48.8%)	42 (51.2%)
Manager/owner/director	2 (6.1%)	31 (93.9%)
p-value (Test)	<.001 (F and PCS)	
	Active follow up	
Role (position)	No/some patients	Most/all patients
Staff pharmacist	76 (93.8%)	5 (6.2%)
Manager/owner/director	25 (75.8%)	8 (24.2%)
p-value (Test)	.010 (F) 0.006 (PCS)	
	Facilitating health-system navigation and collaboration	
Role (position)	No/some patients	Most/all patients
Staff pharmacist	75 (91.5%)	7 (8.5%)
Manager/owner/director	23 (71.0%)	9 (28.1%)
p-value (Test)	.014 (F) 0.007 (PCS)	
	Basic education	
Practice setting	No/some patients	Most/all patients
Community pharmacy	13 (16.7%)	65 (83.3%)
Acute care setting	27 (84.4%)	5 (15.6%)
p-value (Test)	<.001 (PCS)	
	CMM	
Clinical practice area	No/some patients	Most/all patients
Psychiatry/SUD selected	16 (69.6%)	7 (30.4%)
Psyc/SUD not selected	95 (90.5%)	10 (9.5%)
p-value (Test)	.007 (PCS)	
	Facilitating health-system navigation and collaboration	
	No/some patients	Most/all patients
Psychiatry/SUD selected	15 (65.2%)	8 (34.8%)
Psyc/SUD not selected	96 (91.4%)	9 (8.6%)
p-value (Test)	<.001 (PCS)	

Clinical practice area was also significantly associated with the extent of current provision for two services. Specifically, 30.4% of those who selected psychiatry or substance use disorder as a primary clinical practice area perform CMM to most or all patients compared to 9.5% of those who did not select this as a primary practice area (p=.007). Similarly, 34.8% of pharmacists with a psychiatry or substance use disorder practice area facilitate health system navigation for most or all patients compared to 8.6% of other pharmacists (p<.001). There were no associations between provision of any clinical service and pharmacists who reported having personal experience with mental illness.

There were many attitude-related factors significantly associated with the extent to which pharmacists are currently providing various clinical services to their patients (Table 5.18). The extent of role agreement was related to the extent of provision for doing thorough assessments (p<.001) and facilitating health-system navigation and collaboration (p=.023). More specifically,

100% of the pharmacists who did not agree it was their role to provide these services reported providing them to no or some patients. Alternatively, of the pharmacists who were doing a thorough assessment or facilitating health-system navigation to most or all patients, all of them agreed or strongly agreed it is a pharmacist's role to provide them. Likewise, total attitude scores had an impact on the extent to which pharmacists currently do thorough assessments (p=.047) and perform CMM (p=.017), with 91.8% and 95.8% respectively of those with less positive attitudes providing these services to no or some patients, and the large majority (>80%) of pharmacists who are providing them to most or all patients also having more positive attitudes.

The extent of motivation was significantly related to the extent of provision for every service except performing CMM. Greater than 96% of pharmacists who did not feel motivated to provide thorough assessment, advanced education, active follow up, medication therapy monitoring, and facilitation of health system navigation were currently providing these services to no or some patients. Furthermore, of the pharmacists who were providing services to most or all patients, almost all of them had reported feeling motivated or very motivated to do so. For example, of the pharmacists who were providing basic education, monitoring medication therapy, and facilitating health system navigation, those who also reported feeling motivated to do so were 96.2%, 95.8%, and 100% respectively, compared to those who reported feeling not motivated (p=.023, .013, and <.001). Even among pharmacists who report role agreement, higher motivation, and more positive attitudes, more of them were providing services to no or some patients compared to providing to most or all patients.

Table 5.18 Current provision of services associated with motivation, role agreement, and attitudes

	Thorough assessment	
Role agreement	No/some patients	Most/all patients
Strongly disagree/disagree	42 (100%)	0
Agree/strongly agree	59 (75.6%)	19 (24.4%)
p-value (Test)	<.001 (F) <.001 (PCS)	
	Facilitating health-system navigation and collaboration	
Role agreement	No/some patients	Most/all patients
Strongly disagree/disagree	25 (100%)	0
Agree/strongly agree	74 (82.2%)	16 (17.8%)
p-value (Test)	.023 (PCS)	
	Thorough assessment	
Motivation	No/some patients	Most/all patients
Not at all/somewhat unmotivated	57 (96.6%)	2 (3.4%)
Motivated/very motivated	50 (72.5%)	19 (27.5%)
p-value (Test)	<.001 (F) <.001 (PCS)	

	Basic education	
Motivation	No/some patients	Most/all patients
Not at all/somewhat unmotivated	8 (72.7%)	3 (27.3%)
Motivated/very motivated	42 (35.9%)	75 (64.1%)
p-value (Test)	.023 (F) .017 PCS	
	Advanced education	
Motivation	No/some patients	Most/all patients
Not at all/somewhat unmotivated	67 (98.5%)	1 (1.5%)
Motivated/very motivated	52 (86.7%)	8 (13.3%)
p-value (Test)	.012 (F) .009 (PCS)	
	Active follow up	
Motivation	No/some patients	Most/all patients
Not at all/somewhat unmotivated	61 (98.4%)	1 (1.6%)
Motivated/very motivated	52 (80.0%)	13 (20.0%)
p-value (Test)	.001 (F) <.001 (PCS)	
	Monitoring medication therapy	
Motivation	No/some patients	Most/all patients
Not at all/somewhat unmotivated	29 (96.7%)	1 (3.3%)
Motivated/very motivated	75 (76.5%)	23 (23.5%)
p-value (Test)	.014 (F) .013 (PCS)	
	Facilitating health-system navigation and collaboration	
Motivation	No/some patients	Most/all patients
Not at all/somewhat unmotivated	53 (100%)	0
Motivated/very motivated	58 (77.3%)	17 (22.7%)
p-value (Test)	<.001 (PCS)	
	Thorough assessment	
Total attitude score	No/some patients	Most/all patients
Less positive	45 (91.8%)	4 (8.2%)
More positive	62 (78.5%)	17 (21.5%)
p-value (Test)	.047 (PCS)	
	CMM	
Total attitude score	No/some patients	Most/all patients
Less positive	46 (95.8%)	2 (4.2%)
More positive	64 (81.0%)	15 (19.0%)
p-value (Test)	.017 (PCS)	

There were several other work-environment related factors associated with the extent of current service provision (Table 5.19). The proportion of pharmacists providing basic education was significantly related to their estimated proportion of work hours spent providing clinical pharmaceutical care (p=0.13) and the perceived impact of COVID-19 on their ability to provide clinical services (p=.005). Interestingly, of the pharmacists providing basic education to most or all patients, 55.7% were those who spent less of their work hours providing general clinical pharmaceutical care, compared to 44.3% who spent more than half of their work hours doing so. Furthermore, a greater proportion of pharmacists providing basic education to most or all patients reported COVID-19 having a significant impact on their ability to provide clinical services (79.5%) compared to those who reported no or moderate impact (51.8%). Having adequate staffing to provide optimal patient care was associated with a higher proportion of pharmacists providing active follow up to most or all patients (p=.002), and a greater number of

work hours spent providing clinical care was associated with a higher proportion of pharmacists doing a thorough assessment for most or all patients (p=.019).

Table 5.19 Current provision of services associated with current work environment

	Active follow up	
Current staffing	No/some patients	Most/all patients
Not adequate	72 (96.0%)	3 (4.0%)
Adequate for optimal patient care	41 (78.8%)	11 (21.2%)
p-value (Test)	.002 (PCS)	
	Thorough assessment	
% work hours providing clinical pharmaceutical care	No/some patients	Most/all patients
≤ 50%	75 (89.3%)	9 (10.7%)
> 50%	33 (73.3%)	12 (26.8%)
p-value (Test)	.019 (PCS)	
	Basic education	
% work hours providing clinical pharmaceutical care	No/some patients	Most/all patients
≤ 50%	26 (31.0%)	58 (69.0%)
> 50%	24 (53.3%)	21 (46.7%)
p-value (Test)	.013 (PCS)	
	Basic education	
COVID-19 impact on ability to provide clinical services	No/some patients	Most/all patients
None to moderate	41 (48.2%)	44 (51.8%)
Significant	9 (20.5%)	35 (79.5%)
p-value (Test)	.002 (PCS)	
	Advanced education	
Offer structured screening for mental health conditions	No/some patients	Most/all patients
Never	97 (97%)	3 (3%)
Sometimes/regularly	11 (73.3%)	4 (26.7%)
p-value (Test)	.005 (F) <.001 (PCS)	
	CMM	
Offer structured screening for mental health conditions	No/some patients	Most/all patients
Never	88 (88.9%)	11 (11.1%)
Sometimes/regularly	10 (66.7%)	5 (33.3%)
p-value (Test)	.036 (F) .021 (PCS)	
	Facilitating health-system navigation and collaboration	
Offer structured screening for mental health conditions	No/some patients	Most/all patients
Never	89 (89.9%)	10 (10.1%)
Sometimes/regularly	10 (66.7%)	5 (33.3%)
p-value (Test)	.027 (F) .013 (PCS)	

5.5.2 Variables Associated with Extent of Motivation to Provide Clinical Services

There were several demographic factors significantly associated with the extent of motivation to provide clinical services (Table 5.20). The motivation to provide active follow up was higher among managers/owners/directors than staff pharmacists (65.6% vs 45.1%; p=.049)

and higher among those working in community pharmacy over those working in acute care settings (59.8% vs 28.1%; p=.003). The number of years in practice had a significant relationship with the extent of motivation to perform CMM (≤ 10 years 78.7%, > 10 years 55.2%; p=.005) and to facilitate health system navigation and collaboration (≤ 10 years 72.1%, > 10 years 46.3%; p=.003).

Those having a close personal relationship with someone with diagnosed mental illness, or personally having a diagnosed mental illness tended to be more motivated to do a thorough assessment of a patient's clinical status (58.8% vs 33.3%; p=.024), to provide advanced education (52% vs 29.2%; p=.044), and to facilitate health system navigation and collaboration (63.7% vs 37.5%; p=.019) compared to those who stated they did not have this experience with mental illness.

Table 5.20 Demographics associated with extent of motivation to provide clinical services

	CMM	
Years in practice	Not at all motivated/somewhat unmotivated	Motivated/very motivated
≤ 10 years	13 (21.3%)	48 (78.7%)
> 10 years	30 (44.8%)	37 (55.2%)
p-value (Test)	.005 (PCS)	
	Facilitating health-system navigation and collaboration	
Years in practice	Not at all motivated/somewhat unmotivated	Motivated/very motivated
≤ 10 years	17 (29.7%)	44 (72.1%)
> 10 years	36 (53.7%)	31 (46.3%)
p-value (Test)	.003 (PCS)	
	Active follow up	
Role (position)	Not at all motivated/somewhat unmotivated	Motivated/very motivated
Staff pharmacist	45 (54.9%)	37 (45.1%)
Manager/owner/director	10 (34.4%)	21 (65.6%)
p-value (Test)	.049 (PCS)	
	Thorough assessment	
Practice location	Not at all motivated/somewhat unmotivated	Motivated/very motivated
Large urban	22 (36.1%)	39 (63.9%)
Smaller urban/Rural	37 (55.2%	30 (44.8%)
p-value (Test)	.030 (PCS)	
	Active follow up	
Practice setting	Not at all motivated/somewhat unmotivated	Motivated/very motivated
Community pharmacy	31 (40.3%)	46 (59.7%)
Acute care setting	23 (71.9%)	9 (28.1%)
p-value (Test)	.003 (PCS)	

	Thorough assessment	
Relationship/experience with mental illness	Not at all motivated/somewhat unmotivated	Motivated/very motivated
Yes	42 (41.2%)	60 (58.8%)
No	16 (66.7%)	8 (33.3%)
p-value (Test)	.024 (PCS)	
	Advanced education	
Relationship/experience with mental illness	Not at all motivated/somewhat unmotivated	Motivated/very motivated
Yes	49 (48.0%)	53 (52.0%)
No	17 (70.8%)	7 (29.2%)
p-value (Test)	.044 (PCS)	
	Facilitating health-system navigation and collaboration	
Relationship/experience with mental illness	Not at all motivated/somewhat unmotivated	Motivated/very motivated
Yes	37 (36.3%)	65 (63.7%)
No	15 (62.5%)	9 (37.5%)
p-value (Test)	.019 PCS	

Associations between total attitude scores and extent of motivation were significant for every clinical service except active follow up, which was also nearing significance (p=.095) (Table 5.21). When considering pharmacists with total attitude scores $\geq$ 30, indicating an overall positive attitude toward mental health patient care, there was greater than 50% absolute difference between those who reported feeling not motivated compared to those who were motivated to provide basic education (2.5% vs 97.5%; p=.003), monitor medication therapy (13.9% vs 86.1%; p<.001), and perform CMM (21.5% vs 78.5%; p<.001). Between 54-73% of pharmacists with less positive attitude scores were not motivated rather than motivated to provide CMM, facilitation of health system navigation, advanced education, and thorough assessment. Even among pharmacists with less positive attitudes, there was a greater proportion of those who were motivated to provide basic education (81.5% vs 18.8%) and of those motivated to monitor medication therapy (60.4% vs 39.6%).

Table 5.21 Total attitude scores associated with motivation

	Thorough assessment	
Total attitude scores	Not motivated	Motivated
Less positive	35 (72.9%)	13 (27.1%)
More positive	24 (30.4%)	55 (69.6%)
p-value (Test)	< .001	
	Basic education	
Total attitude scores	Not motivated	Motivated
Less positive	9 (18.8%)	39 (81.3%)
More positive	2 (2.5%)	77 (97.5%)
p-value (Test)	.003 (F) .002 (PCS)	
	Advanced education	
Total attitude scores	Not motivated	Motivated
Less positive	32 (66.7%)	16 (33.3%)
More positive	35 (44.3%)	44 (55.7%)
p-value (Test)	.014 (PCS)	

	Monitoring medication therapy	
Total attitude scores	Not motivated	Motivated
Less positive	19 (39.6%)	29 (60.4%)
More positive	11 (13.9%)	68 (86.1%)
p-value (Test)	< .001	
	CMM	
Total attitude scores	Not motivated	Motivated
Less positive	26 (54.2%)	22 (45.8%)
More positive	17 (21.5%)	62 (78.5%)
p-value (Test)	< .001	
	Facilitating health-system navigation and collaboration	
Total attitude scores	Not motivated	Motivated
Less positive	29 (60.4%)	19 (39.6%)
More positive	24 (30.4%)	55 (69.6%)
p-value (Test)	< .001	

5.5.3 Variables Associated with Extent of Role Agreement

The extent of agreement it is a pharmacist's role to provide specific clinical services was much less dependent on any demographic or characterizing variables. The only statistically significant association was found in that pharmacists having a close personal relationship with someone with diagnosed mental illness or personally having a diagnosed mental illness had a higher proportion of agreeing it is a pharmacist's role to perform CMM compared to those who stated they did not have this experience with mental illness (98% vs 83.3%; p=.014) (Table 5.22).

Table 5.22 Demographics associated with extent of role agreement for clinical services

	CMM	
Relationship/experience with mental illness	Strongly disagree/disagree	Agree/strongly agree
Yes	2 (2.0%)	96 (98.0%)
No	4 (16.7%)	20 (83.3%)
p-value (Test)	.014 (F) .003 (PCS)	

There were also fewer significant associations between total attitude scores and the extent of role agreement (Table 5.23). Only the level of role agreement for thorough assessment or CMM was associated with total attitude scores (p<.001 and .008 respectively), with a much greater proportion of those with more positive attitudes agreeing it is a pharmacist's role to provide these services compared to those with less positive attitudes. There were significant associations between the extent of role agreement and individual attitude statements. Agreement that it is a pharmacists role to provide thorough assessment, advanced education, CMM, and facilitation of health system navigation were repeatedly associated with attitude statements regarding the qualification of pharmacists to recommend medication changes to psychiatrists or

family physicians and the belief that pharmacists should be as involved in mental health management as they are in chronic disease management for diabetes or cardiovascular conditions.

Table 5.23 Total attitude scores associated with role agreement

	Thorough assessment	
Total attitude scores	Disagree	Agree
Less positive	25 (56.8%)	19 (43.2%)
More positive	16 (21.3%)	59 (78.7%)
p-value (Test)	< .001	
	CMM	
Total attitude scores	Disagree	Agree
Less positive	6 (13.6%)	38 (86.4%)
More positive	1 (1.3%)	78 (98.7%)
p-value (Test)	.008 (F) .005 (PCS)	

5.5.4 Variables Associated with Attitude Statements

Likert scale scores for each respondent were totaled for the 10 items related to attitudes and beliefs about pharmacists' role in mental health patient care. Total attitude scores of 30 or higher (more positive attitude) had a significant association with practice setting, as 78.1% of acute care pharmacists compared to 51.9% of community pharmacists had positive attitude scores (p=.011) (Table 5.24). No other characterizing variables had a significant relationship with attitude scores, including whether or not they had personal experience with mental illness.

Table 5.24 Demographics associated with total attitude scores regarding pharmacists' role in mental health patient care

	Total Attitude Scores	
Practice setting	Less positive attitude (score < 30)	More positive attitude (score ≥ 30)
Community pharmacy	37 (48.1%)	40 (51.9%)
Acute care setting	7 (21.9%)	25 (78.1%)
p-value (Test)	.011 (PCS)	

When analyzing the individual statements that assessed pharmacists' attitudes toward general mental health patient care, there were many significant associations with the extent of current provision, motivation, and role agreement for various clinical services. Each of the clinical services in the category of current provision and extent of motivation had a significant association with at least one attitude statement. Additionally, there were significant associations with every individual attitude statement except: "There is a need for pharmacists to have more of an active role in providing medication management for patients with mental illness". Where

respondents had positive attitudes regarding pharmacists' role and value in mental health patient care, they also tended to be more motivated to provide several of the specified clinical services. Details of these cross tabulations can be found in Appendix D.

The two attitude statements related to feeling confident and currently having adequate knowledge and training to provide clinical services for patients with mental illness were frequently associated with the extent of current provision and motivation. Pharmacists who agreed to feeling confident in their ability to regularly provide clinical services more frequently reported providing basic education to patients (83.3% vs 16.7%; p=.034). These pharmacists also made up a smaller proportion of those providing advanced education and active follow up to no/some patients. Similarly, most pharmacists (84-97%) who disagreed to currently having adequate knowledge and training to provide clinical services reported providing six of the seven services to no or some patients rather than to most or all patients, and almost all (96-100%) of the pharmacists who were providing these services to no/some patients disagreed to having adequate knowledge and training. The exception to this was the provision of basic education, which was not significantly associated with this attitude statement. The largest difference in proportions were for providing active follow up, advanced education, and thorough assessment (p<.001). There were no statistically significant associations between the rated impact of insufficient training, insufficient knowledge, or lack of clinical tools with pharmacists' responses to feeling confident or having adequate knowledge/training to regularly provide clinical services to patients with mental illness.

5.5.5 Variables Associated with Impact Rating of Perceived Barriers

Many demographic variables affected the respondents' rating of the degree of impact of various factors (Table 5.25). Inadequate reimbursement was rated as having moderate or significant impact significantly more frequently amongst managers/owner/directors over staff pharmacists (90.6% vs 61.1%), pharmacists practicing more than 10 years over those practicing for fewer years (82% vs 53.6%), and community pharmacists over acute care pharmacists (89.2% vs 20%). Having competing priorities was rated as having moderate or significant impact significantly more frequently amongst staff pharmacists over managers/owners/directors (92.4% vs 78.8%) and pharmacists practicing more than 10 years over those practicing for fewer years (95.5% vs 79.7%).

Lack of access to patient information was rated as having moderate or significant impact significantly more frequently amongst pharmacists practicing more than 10 years over those practicing for fewer years (92.4% vs 70%) and amongst community pharmacists over acute care pharmacists (88.3% vs 67.7%). Pharmacists practicing for more than 10 years more frequently rated 4 of the 11 barriers as having impact compared to those practicing fewer than 10 years, and pharmacists practicing in community more frequently rated 3 of the barriers as having impact compared to those in acute care settings. There were also significant associations between practice setting and the degree of impact of limitations in communication with prescribers, between years in practice and the degree of impact of lack of clinical tools, between type of community pharmacy and degree of impact of inadequate staffing or administrative support, and between having personal experience with mental illness and the degree of impact of inadequate privacy.

Table 5.25 Demographics associated with degree of impact of potential barriers

	Competing priorities	
Role (position)	No/slight impact	Moderate/significant impact
Staff pharmacist	6 (7.6%)	73 (92.4%)
Owner/Manager/Director	7 (21.2%)	26 (78.8%)
p-value (Test)	.054 (F) .040 (PCS)	
	Inadequate reimbursement	
Role (position)	No/slight impact	Moderate/significant impact
Staff pharmacist	28 (38.9%)	44 (61.1%)
Owner/Manager/Director	3 (9.4%)	29 (90.6%)
p-value (Test)	.002 (PCS)	
	Insufficient admin support	
Role (position)	No/slight impact	Moderate/significant impact
Staff pharmacist	13 (16.3%)	67 (83.8%)
Owner/Manager/Director	12 (38.7%)	19 (61.3%)
p-value (Test)	.011 (PCS)	
	Competing priorities	
Years in Practice	No/slight impact	Moderate/significant impact
≤ 10 years	12 (20.3%)	47 (79.7%)
> 10 years	3 (4.5%)	64 (95.5%)
p-value (Test)	.011 (F) .006 (PCS)	
	Inadequate reimbursement	
Years in Practice	No/slight impact	Moderate/significant impact
≤ 10 years	26 (46.4%)	30 (53.6%)
> 10 years	11 (18.0%)	50 (82.0%)
p-value (Test)	<.001 (PCS)	
	Lack of access to patient information	
Years in Practice	No/slight impact	Moderate/significant impact
≤ 10 years	18 (30.0%)	42 (70.0%)
> 10 years	5 (7.6%)	61 (92.4%)
p-value (Test)	.001 (PCS)	
	Lack of clinical tools	
Years in Practice	No/slight impact	Moderate/significant impact
≤ 10 years	16 (26.7%)	44 (73.3%)
> 10 years	8 (12.1%)	58 (87.9%)
p-value (Test)	.038 (PCS)	

	Inadequate reimbursement	
Practice Setting	No/slight impact	Moderate/significant impact
Community pharmacy	8 (10.8%)	66 (89.2%)
Acute care	20 (80.0%)	5 (20.0%)
p-value (Test)	<.001 (PCS)	
	Lack of access to patient information	
Practice Setting	No/slight impact	Moderate/significant impact
Community pharmacy	9 (11.7%)	68 (88.3%)
Acute care	10 (32.3%)	21 (67.7%)
p-value (Test)	.011 (PCS)	
	Limitations in communication with prescribers	
Practice Setting	No/slight impact	Moderate/significant impact
Community pharmacy	16 (20.6%)	61 (79.2%)
Acute care	19 (61.3%)	12 (38.7%)
p-value (Test)	<.001 (PCS)	
	Insufficient admin support	
Type of community pharmacy	No/slight impact	Moderate/significant impact
Independent	13 (38.2%)	21 (61.8%)
Other	3 (7.3%)	38 (92.7%)
p-value (Test)	.002 (F) .001 (PCS)	
	Inadequate staffing	
Type of community pharmacy	No/slight impact	Moderate/significant impact
Independent	12 (33.3%)	24 (66.7%)
Other	2 (5.0%)	38 (95.0%)
p-value (Test)	.002 (F) .001 (PCS)	
	Insufficient admin support	
Clinical practice area	No/slight impact	Moderate/significant impact
Psych/SUD	10 (43.5%)	13 (56.5%)
Non-Psych/SUD	18 (17.6%)	84 (82.4%)
p-value (Test)	.007 (PCS)	
	Inadequate privacy	
Relationship/experience with mental illness	No/slight impact	Moderate/significant impact
Yes	38 (39.2%)	59 (60.8%)
No	16 (66.7%)	8 (33.3%)
p-value (Test)	.015 (PCS)	

5.6 Non-response Bias

There were no statistically significant differences in the median responses between the groups of early responders (before December 8, 2021) or late responders (on or after December 8, 2021) with regards to any of the survey responses in section two or three. There were also no statistically significant differences in the median responses between the groups of survey completers or late non-completers with regards to any of the survey responses in section two or three.

The following table compares characteristics of survey responders with population characteristics of Saskatchewan pharmacists according to CIHI in 2020 (Table 5.26).[156] No statistical analysis was performed as there was no access to the raw data on the total population. An additional comparison can be made with national statistics as of Jan 2022, reporting 68.9% of SK pharmacists practicing in community and 19.3% practicing in hospital facilities.[157]

Table 5.26 Characteristics of survey responders and total population

	Survey responders	**Saskatchewan Pharmacists in 2020**
Gender	73.3% female	68.5% female
Mean age (yrs.)	40	40.8
0-10 yrs. practicing	44.6%	40.4%
11-20 yrs. practicing	23.3%	28.0%
> 20 yrs. practicing	32.2%	31.5%
Graduated in SK	95.9%	86.3%
Practice in urban settings	86.8%	78.4%
Practice in community pharmacy	63.0%	72.8%
Practice in acute care/facilities	21.9%	21.3%
Manager/owner	28.5%	25.1%
Staff pharmacist	66.4%	67.5%

Chapter 6 Discussion

In the context of highly prevalent mental health conditions, urgent calls for strategic health system action, and the essential role pharmacists have on the interdisciplinary care team, this study provides timely and valuable information about the practices and attitudes of Saskatchewan pharmacists with regards to mental health care. Patient-oriented research principles were applied throughout each phase of this project to ensure aspects of care meaningful to people with lived experience of mental illness were explored.

6.1 What are the types and extent of clinical services provided by Saskatchewan pharmacists for individuals with mental illness?

The key finding from this section of the study was that the survey responses indicated very low rates of pharmacist clinical service provision for patients receiving a prescription for a mental health medication and/or for patients with a diagnosed mental illness. For six of the seven evidence-supported clinical services, less than 20% of responding pharmacists were providing them to most or all patients. Active follow up when medication changes are made, a critical component of mental health care, was being provided to no patients by almost half of pharmacists. Additionally, it was revealed that large proportions of pharmacists do not offer structured screening or specialized services, even basic services such as dispensing clozapine or long-acting injectable antipsychotics, which are among the most evidence-based treatments for psychiatric conditions.

Despite the fact that there was no sub-group of pharmacist respondents who frequently provided any of the clinical services to most or all of the patients, there are several demographic factors that may be impacting the extent of current service provision, as discovered in the analysis for significant associations between variables. Pharmacists working in acute care settings tended to provide basic education less frequently than pharmacists working in community settings, a finding typical of the differing role-based priorities. Conversely, an unexpected result is that managers/owners/directors were more frequently providing basic education, active follow up, and facilitation of health system navigation as compared to staff pharmacists. Pharmacists who selected psychiatry or substance use disorders as a primary practice area were much more frequently providing CMM to patients, although this proportion was still less than a third, which further indicates there is a large gap in Saskatchewan pharmacy

practice for patients with mental illness and uncovers an opportunity to develop standards of care for this patient demographic.

Within all pharmacy practice and curriculum, a component of pharmaceutical care that is clearly defined and securely established is providing medication education, and the findings presented here support this reality.[55,64,65,158,159] Providing basic education about mental health medications is the clinical service for which the highest proportion of respondents reported to be currently providing, in agreement they should be providing, and are motivated to provide. It is also a theme that appeared frequently in the open-ended question responses. On the other hand, it is a very concerning observation that only about two thirds of responding pharmacists are regularly providing basic education to most or all patients about their mental health medication. This study has uncovered a massive gap in the clinical services provided by pharmacists in the Province of Saskatchewan. Very few pharmacists are regularly providing even basic clinical services for people living with mental health conditions, despite the evidence that supports the impact of these services and emphasizes the current public health needs. This information, which has not been previously documented, is critical for health policy decision makers and advocacy groups who aim to improve mental health services in Saskatchewan.

6.2 What are the beliefs and attitudes of Saskatchewan pharmacists related to the provision of clinical services for individuals with mental illness?

The key findings from this section of the study were the high degree to which respondents agreed that pharmacists should be providing the proposed clinical services and the high degree to which respondents were personally motivated to provide the services. These results, as well as positive responses to the attitude statements, reveal beliefs and attitudes that appear to be in favour of pharmacist involvement in clinical services for mental health patients. This is supported by the result that the majority of respondents agreed it is a pharmacist's role to provide every clinical service in the proposed list, with almost all respondents reporting role agreement for providing basic education, monitoring medication therapy, and performing CMM. This is an encouraging finding, especially as these services are among the most consistently employed pharmaceutical care standards. Likewise, the varying extent of role agreement provides helpful insight as to the clinical services that may be less defined or established.

The extent of motivation to provide the services in the proposed list was lower overall, but still arguably positive, with greater than half of respondents feeling motivated to provide all

services except for advanced education, and over three quarters motivated to monitor medication therapy and provide basic education. These, too, are in alignment with the components of pharmaceutical care that are more widely accepted and consistently defined across pharmacy settings, whereas providing advanced education or facilitating health system navigation might be reserved for those with a specialized practice or focused training.[64,143,159] Between all three concepts, current provision, role agreement, and motivation, the same two clinical pharmacy services remained at the top: providing basic education and monitoring medication therapy.

The dramatic differences between the current extent of service provision and the extent of role agreement or motivation is a striking observation and stands out as a key finding of this study (Figure 5.4). Between current provision and role agreement, absolute differences in the proportion of respondents' selections were above 50% for most of the specific services, with three of them reaching greater than 70%. In other words, between 50-70% of respondents agreed that each clinical service should be provided by pharmacists, but they were not actually providing the services on a regular basis. Between current provision and motivation, the absolute differences were less dramatic but still significant, with a range of 40-60% for most services. Across all services, the extent of role agreement was very high, followed by a slightly lower extent of motivation, compared to the very low rates of current provision. This observation suggests the principles of behaviour change theory are at play, namely, that multiple factors (i.e. psychological, structural, organizational) affect behaviour, and it is not merely believing one should do something or even wanting to do something that causes one to do it.[135,137]

An analysis of responses to the individual attitude statements also reveals key insights into factors that may be impacting pharmacists' provision of mental health care. In alignment with the trends of role agreement and motivation for the individual clinical services, greater than 90% of responding pharmacists agreed pharmacist involvement in the care of patients with mental illness is of benefit to the patient, adds value to the multidisciplinary team, and should be to the same extent as it is for other chronic disease management. Additionally, an astounding 97% agreed there is a need for pharmacists to have more of an active role in providing medication management for patients with mental illness. These strong, positive beliefs indicate there is willingness and opportunity to improve pharmacists' involvement in mental health care. Further questioning would be needed to assess the types and degree of stigma present in pharmacists' attitudes towards individuals living with mental illnesses, although there is no

alarming indication from this survey that significant negative or discriminatory attitudes are influencing current practice. On the other hand, the fact that around half of respondents disagreed to feeling confident in their ability to or having adequate knowledge/training to regularly provide clinical services to patients with mental illness does seem to impact current practice and may partially explain the discrepancy between wanting to provide and currently providing.

Responses from the open-ended question: "How do you think pharmacists can make a difference for patients with mental illness?" further illuminate beliefs and attitudes of Saskatchewan pharmacists. Numerous respondents confirmed pharmacists should be engaged in various aspects of pharmaceutical care. What is perhaps more impressive is the substantial number of responses that discussed the importance of building relationships with patients, listening, being available and accessible, showing empathy, providing support, and being committed to patient-centred care. These less technical aspects of clinical pharmacy services are especially essential for patients with mental health conditions, and it is reassuring that pharmacists recognize this.

Analysis for associations with non-demographic variables also reveals trends useful for evaluating factors that affect current practices. A noteworthy finding is that extent of motivation was significantly associated with the extent of current provision of every service except CMM, and total attitude scores were significantly associated with the extent of motivation to provide every service except active follow up. These relationships are not entirely surprising and further support the theory of behaviour change, namely, that psychological factors such as beliefs and motivation undoubtedly play a role in dictating behaviour.[135,137]

This study has identified a fascinating disconnect between the clinical services that pharmacists believe they should be providing or that they are motivated to provide for patients with mental health conditions and those services which they are actually providing. These findings suggest current practice is not only dependent on role identity and internal motivation or core beliefs, but also highly susceptible to the impact of external barriers. The indication that the pharmacist workforce in Saskatchewan is willing to change their practice if the barriers to change are mitigated presents a crucial next step for health care leaders and decision makers.

6.3 What are the barriers Saskatchewan pharmacists experience that prevent them from providing clinical services to individuals with mental illness?

The key finding in this section of the study was that, in addition to current practices being impacted by pharmacists' beliefs and attitudes, many external factors act as barriers impeding optimal service provision. When independently rating each potential barrier with no scale choice restrictions, the level of impact was selected by respondents as moderate or significant for almost every potential barrier listed. This could suggest pharmacists feel equally overwhelmed by many barriers or be a sign of survey fatigue. However, when asked to select a single factor as having the most impact on their readiness to provide clinical services to mental health patients, a clearer distinction was made, and some of the factors sitting at the top of the list changed. Having insufficient knowledge was most frequently selected as the single factor having most significant impact (27%), and it was largely separated from the rest, with competing priorities coming in second at 19%. Interestingly, when initially rated independently, insufficient knowledge had only 39% of respondents stating it has significant impact, and competing priorities was far out in first place with 68%. The other barriers that remained among the top four based on the results from both question phrasings were inadequate staffing and lack of access to clinical information. These findings are also consistent with the fact that just over one-third of respondents reported they currently feel their pharmacy team is adequately staffed to provide optimal patient care. Taken together, these two questions provide information that starts to fill in the gaps between current provision of and positive attitudes toward providing clinical services. For example, work could focus on enhancing pharmacists' knowledge by optimizing undergraduate education related to mental health, as this practice area has had a historical lack of dedicated curriculum and practicum and is prone to some ambiguity in therapeutic decisions.[160–162]

Captured within the concept of competing priorities and inadequate staffing was a barrier that was repeatedly mentioned in the open-ended responses: lack of time. Within the 93 free-text responses, 39 included comments related to barriers or challenges to their ability to make a difference for patients with mental illness, even though the open-ended question was not worded in a way that should have elicited these types of responses. Eleven of these responses specifically voiced not having enough time to provide optimal care or that having more time would allow them to do more, plus an additional two comments that mentioned the closely related concept of competing priorities. Other barriers that were frequently brought up in the free-text responses

included having inadequate reimbursement or insufficient knowledge/training, themes that are in alignment with the Likert scale ratings.

The Chi-Square tests for independence further reveal factors that may influence the degree to which potential barriers are impacting clinical practice, which could help explain root causes or at least direct future resources. For example, when examining the top three barriers for significant associations, competing priorities were rated more frequently as having impact among staff pharmacists (versus managers/owners/directors) and among those practicing for more than 10 years (versus those practicing for fewer). The barrier of insufficient knowledge had no significant associations with any demographic variable, a finding that may suggest this issue is of great magnitude for any pharmacist anywhere. This study has not only identified a dramatic disconnect between what Saskatchewan pharmacists believe they should be doing or want to be doing and what they are currently doing for patients with mental illness, but it has also provided some initial data that might begin to explain this disconnect. Mitigating these barriers could facilitate the expansion of pharmacist-led clinical services for mental health patients in Saskatchewan, which in turn could help address the unmet needs of these patients and positively impact the mental health care system.

6.4 Comparing to Previous Research

Although published studies and international policies as discussed in the literature review outline specific examples and standards of practice regarding clinical pharmacy services for mental health patients, and the survey tool itself was based on these proven, core elements of pharmaceutical care, prior to this study there has been little information made available as to the current practices of broad groups of Canadian pharmacists within mental health care. This study provides a valuable and unique glimpse into the mental health care practices of small subset of pharmacists practicing in Saskatchewan.

An evaluation of the Bloom Program in Nova Scotia provides some evidence of the types and extent of community pharmacists' practices for patients with mental illness, which can be compared to what Saskatchewan pharmacists reported in this study.[77] Bloom participating pharmacists reported providing medication management much more frequently than patient education (48% versus 14% of total activities), whereas the respondents of this survey report providing CMM to very few patients but are providing basic education to patients most

frequently. Considering the Bloom Program is a structured, government reimbursed medication management service for patients with mental health medications, this finding is both understandable and promising. While other practice examples provide insight into the types of clinical services performed by pharmacists for mental health patients and give evidence of positive patient or system outcomes, they do not report a relative breakdown of the time or extent given to each service.

The survey findings presented here can be compared to previous surveys of pharmacists in different countries with similarly discouraging results. Less than half of Belgian community pharmacists reported consistently providing medication education, follow-up, or monitoring for mental health patients, and only 8% of American community pharmacists in the Midwest reported to 'often' or 'always' be providing medication therapy management involving mental illness.[123,125] Even among psychiatric pharmacists practicing in any setting in the United States, only 46% of them reported performing CMM for at least half of their mental health patients.[124] A patient survey from the United States further confirms these trends in that approximately half of individuals taking mental health medications reported regularly being provided with information from a pharmacist about their medications.[117]

Another important piece of information from previous research to consider here is the extent of pharmacist involvement for mental health patients compared with their involvement for patients with other chronic medical conditions (e.g. cardiovascular disease, asthma). It has been repeatedly reported that pharmacists are more actively and comfortably providing clinical services such as medication counselling, monitoring, and management to patients with other medical conditions than they are to patients with mental illness.[123,125–129] Although this survey did not assess the extent of service provision for non-mental health conditions, this phenomenon adds context to the disturbingly low rates of Saskatchewan pharmacists' current involvement in the care of mental health patients.

Previous surveys have also explored pharmacists' attitudes, beliefs, and perceived barriers in this practice area, and there are many similarities to the findings presented in this study. Other investigators compared pharmacists' role agreement, willingness, and interest with the current extent of mental health service provision, and like this survey, found pharmacists agreed they should be providing certain services and were interested in providing those services more frequently than they were actually providing them.[123,125] Another area demonstrating

comparable results is the assessment of pharmacists' beliefs and attitudes. Like this study, previous surveys reported pharmacists generally have positive attitudes toward mental health patients, and they have high levels of motivation to work with patients with mental illness and beliefs that doing so would be valuable to the patients.[126,129–131]

As has been reported in this study, there are many barriers to the adequate provision of clinical pharmacy services for mental health patients, and these barriers are consistent across the literature. The most frequently selected factor having the most significant impact on respondents' ability to regularly provide clinical services was insufficient knowledge, and pharmacists across the globe agree that this is a primary barrier.[123,126,127,129,131–134] Lack of time is another barrier consistently reported from other surveys, which is likely analogous to the other top barrier in this survey: competing priorities.[123,126,129,132]

A look at patient and public perceptions about receiving care for mental health conditions confirms Saskatchewan pharmacists are on the right track and have an understanding of the type of mental health care patients need. As already discussed, numerous surveys of patients with mental illness or carers of patients with mental illness reveal themes about what is important to them (Table 2.3).[114–121] These themes are in close alignment with the themes that emerged from the open-ended question in this survey, namely, that patients and caregivers value good relationships with their pharmacists, being offered sufficient time for discussion, and being shown respect and empathy. These core values are an essential starting point from which to remove barriers and build structures that facilitate the delivery of high-quality pharmaceutical care in the area of mental health.

6.5 Limitations

The most apparent limitation to this research is the low response rate to the survey, which has implications for the generalizability of the results. Although every effort was made to obtain a high and complete unit response (i.e. pre-notification, reminder notifications, monetary incentives, and providing estimated survey time), the overall response rate remained low. While much lower than desirable for population representation, the response rate is comparable to similar surveys.[125,127] Additionally, the response rate may be higher than calculated when accounting for only the eligible pharmacists practicing in direct patient care, a number that is

unknown to investigators but may be approximately 88% of licensed pharmacists according to CIHI data.[156]

One of the most likely, uncontrollable factors affecting response rate is that the survey was delivered during one of the peaks of the COVID-19 pandemic, which put immense pressure on already exhausted pharmacists who were overwhelmed by continuous policy changes, mass amounts of clinical information, and increased healthcare system demands. In particular, community pharmacists were also busy with the task of administering COVID-19 and seasonal influenza vaccines, and acute care pharmacists were occupied with meeting the over-capacity demands on inpatient care. It makes a statement as to the importance of this topic to Saskatchewan pharmacists that 146 pharmacists took the time to respond and that 87% completed it. Regardless, the low response rate does reduce confidence in the external validity of the results because of the risk of non-response bias.

Aware of this limitation, survey results were compared between early responders and late responders, and the finding that there was no difference can replace some degree of confidence. To further evaluate generalizability, the characteristics of the survey sample were compared to Saskatchewan pharmacist data from CIHI 2020.[156] Most demographic variables were very similar, with the survey sample possibly being over-representative of urban settings and Saskatchewan graduates. The survey sample may also be under-representative of community pharmacists, although when comparing this to the national database statistics of Saskatchewan pharmacists as of January 2022, the difference becomes slightly less. Another notable characteristic of the sample is that 80% reported having a close relationship with someone with mental illness, or personally having mental illness, however this is likely more reflective of disease prevalence rather than response bias. Other than the possible discrepancy in practice areas and minor differences in proportions practicing in urban settings or community pharmacies, the ability to apply these results to the total population of Saskatchewan pharmacists practicing in direct patient care can be strengthened by the comparison of sample characteristics to provincial population data.

There was less of a threat to the internal validity of these results, but one that must be acknowledged is that the survey tool was not formally or statistically validated. Because this study was exploratory in nature and there was no intention of developing a tool to measure the same thing across different groups or times, formal validation was deemed unnecessary.

Consequently, some questionnaire items, for example facilitating health system navigation, CMM, and primary practice area, may have been interpreted differently between participants. This is also evident in the open-ended responses, where there was large variation in phrasing of the aspects of pharmaceutical care. Efforts were made to mitigate this by utilizing multiple pilot testers and by providing examples or definitions where applicable. Additionally, as discussed, the questionnaire was based on existing literature, previous survey tools, and extensive consultation.

There are also some limitations to the strength of conclusions based on the methods chosen for statistical analysis. While there were many instances of significant associations between variables, the statistical test used was not very powerful, and no additional testing was employed to evaluate relationships between multiple variables. There can be no definitive conclusions about the direction of associations or the degree of impact of one variable on another, nor can strong inferences about the total population be made. However, the associations do still generate hypotheses, and, especially in the cases of repeating trends, high statistical significance, and large differences in proportions, the results do provide meaningful information.

6.6 Implications and Future Directions

While the findings of this study do not uncover copious amounts of new information regarding practices and attitudes of pharmacists in the area of mental health care, the wide-spread similarities between Saskatchewan pharmacists and those in other locations do offer valuable confirmation. Furthermore, it is imperative for the progression of pharmacist involvement in mental health care to understand the current state and the various factors affecting practice in the context of this province. There is an undeniable opportunity to increase the extent to which pharmacists are providing evidence-based clinical services to patients with mental illness and to more fully integrate pharmacists in the interdisciplinary mental health care team. There is also a positive indication that Saskatchewan pharmacists are motivated to more regularly provide clinical services, as well as strongly agree it is their role and believe there is immense value in doing so, suggesting the main factors affecting readiness to change practice are primarily external at this time. The overwhelming evidence that having insufficient knowledge is a primary barrier is also very useful information, which may have disproportionately significant impact to pharmacists for this practice area. The lack of time or competing priorities, on the other

hand, is a universally accepted reality to pharmacy practice, although it does not make it any more excusable.

Emerging from these key results are several possible pathways to follow next. Gathering more focused data and performing deeper analysis on how various factors interact and affect the likelihood of pharmacists providing services could expand our knowledge, but may not necessarily increase the usability of the current results. Further exploration of which specific clinical services and operational structures are of most benefit in Saskatchewan to patients or the health system may also prove to be of value. Moreover, it seems the particular components of pharmaceutical care still need to be more clearly defined, and the core clinical standards need to be better established, especially for the practice area of mental health.

On the other hand, there may already be enough actionable data, supported by the literature, to commence strategic planning for the implementation of pharmacy services for mental health patients with adequate training and reimbursement. This step produces multiple branches to decide from as well. Do we first address the lack of knowledge and training that appears to be preventing the majority of pharmacists in any setting from regularly providing even basic clinical care for patients with mental illness? Do we develop a specialized mental health care program to implement into select community pharmacies? Or do we instead invest into a focused group of pharmacists to provide advanced training and deploy them onto collaborative mental health teams, whether in outpatient or inpatient settings? What might be the value and role for developing clinical post-graduate programs to enhance pharmaceutical care in psychiatry? While the final decision is outside the scope of this thesis, patients, caregivers, and clinicians alike are desperately waiting for it to be made.

Within all these considerations, from this research two conclusions can be made with moderate certainty. First, focused efforts are required to improve the self-perceived knowledge and confidence of Saskatchewan pharmacists in providing basic pharmaceutical care for patients with mental illness. Second, enforcing widespread training or increasing workload demands without system changes that support enhanced clinical pharmacy practice would likely prove to be futile. Instead, a specialized, community-based service that minimizes competing priorities and utilizes pharmacists to their full scope in patient-centred medication therapy management would be a promising place to start. The time is now to initiate conversation with patients and stakeholders to develop such services that meet the needs of individuals with mental illness.

Chapter 7 Conclusion

There is undoubtedly both an urgent need and a fortuitous opportunity to utilize Saskatchewan pharmacists in the delivery of mental health care. Much attention has been given to the mental health crisis in our nation, and the Saskatchewan government has devoted resources into addressing deficiencies in health service delivery, improving collaboration and connectedness of care, reducing excessive economic burdens, and promoting successful recovery. It is indisputable that pharmacist interventions improve patient and system outcomes in chronic disease management, and there is a growing body of international literature to support these impacts for patients with mental illness. The scope of practice, accessibility, patient-care training, and medication expertise of pharmacists is of great value to patients and the mental health care team, and fortunately, Saskatchewan pharmacists seem to agree.

This study reveals there are large gaps in providing evidence-based pharmacist services to Saskatchewan patients with mental illness. Pharmacists are not regularly providing services that adhere even to basic expectations of pharmaceutical care for patients with mental illness. However, most pharmacists do believe they should be providing these services, a majority of pharmacists would like to be providing these services, and almost all pharmacists agree there is a need for pharmacists to have more of an active role in providing medication management for patients with mental illness. These notable findings emphasize the degree of impact various factors are having on pharmacists' ability to provide mental health care, and many of the identified barriers, such as insufficient knowledge and competing priorities, are modifiable. This, in addition to the predictable discovery that beliefs and motivation are associated with current behaviour, accentuates the need for strategic action to address both external and internal barriers before implementing new requirements to change pharmacy practice. There is a critical need to focus efforts on engaging pharmacists in the delivery of evidence-based clinical services for patients with mental illness and to determine the most optimal health system processes to support and sustain this.

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Appendices

Appendix A: Survey Invitation

Appendix B: Questionnaire

Appendix C: Content Analysis Process

Appendix D: Crosstabulation Tables

Appendix A: Survey Invitation

1. Initial Notification (by Nov 12, 2021)

Survey Invitation for Saskatchewan Pharmacists!

Are you overwhelmed with the mental health care needs of your patients?
Do you feel you need more support or remuneration for clinical mental health care services?

There are opportunities for pharmacists to have more of a role in providing care to individuals with mental illness. **First, we need to know your opinion on these matters**.

You are invited to participate in a survey for a research project entitled:
Pharmacists' Role in Mental Health Care: Exploring the Current State and Factors Impacting Service Provision

Please see attached for a brief description of the survey, and watch your email for the survey link next week.

The survey should take *less than 10 minutes to complete* and is of great importance to continue to move toward addressing the mental health crisis in our province.

With sincere thanks,

Amy Soubolsky BSP
MSc Student, College of Pharmacy & Nutrition, University of Saskatchewan
Pharmacist, Sask Health Authority – North Battleford

2. Survey Go-Live (Nov 17, 2021)

Survey Invitation for Saskatchewan Pharmacists!

Are you overwhelmed with the mental health care needs of your patients?
Do you feel you need more support or remuneration for clinical mental health care services?

There are opportunities for pharmacists to have more of a role in providing care to individuals with mental illness. **First, we need to know your opinion on these matters**.

You are invited to participate in a survey for a research project entitled:
Pharmacists' Role in Mental Health Care: Exploring the Current State and Factors Impacting Service Provision

Please complete survey here:

The survey should take **less than 10 minutes** to complete and will close on Dec 15, 2021.

We recognize this is a season of prolonged and increased stress, with many demands on your time. Your response is of great importance to continue to move toward addressing the mental health crisis in our province.

With sincere thanks,

Amy Soubolsky BSP
MSc Student, College of Pharmacy & Nutrition, University of Saskatchewan
Pharmacist, Sask Health Authority – North Battleford

3. Reminders (Dec 1 and Dec 8, 2021)

Reminder of Survey Invitation for Saskatchewan Pharmacists!

You are invited to participate in a survey for a research project entitled:
Pharmacists' Role in Mental Health Care: Exploring the Current State and Factors Impacting Service Provision

If you have not already done so,
Please complete survey here:

The survey should take **less than 10 minutes** to complete and will close on Dec 15, 2021.

We recognize this is a season of prolonged and increased stress, with many demands on your time. Your response is of great importance to continue to move toward addressing the mental health crisis in our province.

With sincere thanks,

Amy Soubolsky BSP
MSc Student, College of Pharmacy & Nutrition, University of Saskatchewan
Pharmacist, Sask Health Authority – North Battleford

UNIVERSITY OF SASKATCHEWAN

You are invited to participate in a research study entitled:

Pharmacists' Role in Mental Health Care: Exploring the Current State and Factors Impacting Service Provision

Objective and Impact of the Research:

Objective: To describe the current practices of Saskatchewan pharmacists in providing care to individuals with mental illness and to assess factors that may impact these practices.

Purpose: Ultimately the results of the survey can help to inform future mental health pharmacy related research, education, and service initiatives in ways that guide practice change and improve outcomes that matter to patients.

Potential benefits: Although mental health can be a sensitive topic, it is a very important one. Having responses from pharmacists about their current practices and perceptions of their role will allow us to continue to work towards meeting the objectives of the national and provincial mental health action plans and optimizing care to improve patient outcomes.

Information and Consent:

Researchers:

Amy Soubolsky
MSc Student, College of Pharmacy & Nutrition, University of Saskatchewan
Pharmacist, Saskatchewan Health Authority, North Battleford, SK
amy.soubolsky@usask.ca

Dr. Katelyn Halpape
Assistant Professor, College of Pharmacy & Nutrition, University of Saskatchewan
katelyn.halpape@usask.ca
306-966-2814

Procedures:

- Cross-sectional, self-directed, online survey

Potential Risks:

- There are no foreseeable physical, social, or legal risks to participants. The only possible risk would be psychological or emotional based on the sensitive topic and sometimes personal nature of mental health, where survey questions could lead to respondents feeling stressed or upset. All information will be collected anonymously.
- The minimal risk of identification by response will be addressed by attempting to ask and structure the questions in a way that anonymity would be preserved. From the single open-ended question or free-text boxes it may be possible that we could identify individual pharmacists based on their responses. The data will

remain anonymous during analysis and results will be reported in aggregate. No questions will require a mandatory response.
- Pharmacists who may encounter emotional distress by seeing or answering questions have the ability to identify and obtain any necessary supportive services.

Confidentiality:
- The data collected will be shared in a thesis manuscript as well as journal publications or poster presentations. Participation and data will be guaranteed confidential, and will remain anonymous as well. If identifying information is included by survey participants by way of open-ended question responses, no possibly identifying information will be disclosed to anyone other than the investigators. Survey responses will be presented in aggregate which will also help to preserve anonymity.
- Qualtrics is a leading website survey platform that promises high end fire-wall security and adheres to strict privacy regulations.

Right to Withdraw:
- Participation in this survey is voluntary.
- You can decide not to participate at any time by closing your browser, or choose not to answer any questions you do not feel comfortable with. Survey responses will remain anonymous. Since the survey is anonymous, once it is submitted it cannot be removed.

Compensation:
- **Anyone who completes the survey is invited to enter a draw for one of three Starbucks gift cards with a value of $50.** The collected name and contact information will remain independent from responses.

Questions or Concerns:
- Contact the researcher(s) using the information at the top of the page.
- This research project has been approved on ethical grounds by the University of Saskatchewan Behavioural Research Ethics Board (ID 2671). Any questions regarding your rights as a participant may be addressed to that committee through the Research Ethics Office: ethics.office@usask.ca; 306-966-2975; out of town participants may call toll free 1-888-966-2975.

Note: You will be able to leave the survey and return to finish later using the same link you were provided.

Please only complete this survey ONCE

Estimated time to complete: Less than 10 min

Appendix B: Questionnaire

Pharmacists' Role in Mental Health Care: Exploring the Current State and Factors Impacting Service Provision

Consent question at beginning (must consent to continue to survey)

I. Demographics

Filtering question: Are you currently practicing in a role providing at least some direct patient care? (i.e. not solely administrative or operational roles) If no – end of survey

Series of open ended or categorial, multiple choice based questions:

- How do you describe your gender:
    - Male
    - Female
    - Prefer to self-describe (free text)____
    - Prefer not to say
- Age (years): ____
- Location where you obtained your undergraduate pharmacy degree
    - (option for each province with a pharm school and international)
- Number of years practicing
    - (≤ 5, 6-10, 11-15, 16-20, > 20)
- Credentials
    - (BSc, MSc, PhD, PharmD(first degree), PharmD(post-bac), accredited residency, other)
- In which practice setting do you spend the majority of your time?
    - (community pharmacy, acute-care institutions, long-term care institutions, primary care centre or out-patient clinics, compounding pharmacy, academia, government, other)
        - If community: In what type of community pharmacy do you spend the majority of your time? (independent, franchise or chain, grocery, other)]
- Primary clinical practice area(s), if applicable
    - Ambulatory, cardiology, compounding, critical care, general medicine, emergency, geriatric, infectious diseases, nutritional and natural products, oncology, pediatric, psychiatric, perioperative, diabetes, anticoagulation, medical cannabis, drug information, palliative care, neurology, substance use disorders, other (free-text)
    - + a "not applicable" option that is excluded from analysis
- What best describes your primary role? (do not show if academia or gov't is answered)
    - Staff pharmacist, clinical coordinator, manager, director, owner
- Where is your practice setting located?
    - (Rural Area; Small Population Centre (population: 1,000 - 29,999); Medium Population Centre (population: 30,000 - 99,999); Large Urban Population Centre (population: 100,000-800,000); Metropolitan (more than 800,000)

- What percentage of your work hours is spent providing clinical pharmaceutical care services?
    - (< 25%, 25-50%, 51-75%, > 75%)
- Do you currently feel your pharmacy team is adequately staffed to provide optimal patient care?
    - Yes, no , not applicable
- To what degree do you feel COVID-19 is currently affecting your ability to provide clinical services to your patients (with any health condition)?
    - No change from baseline, moderate impact, significant impact
- To what degree do you feel COVID-19 has increased the need to provide clinical services related to mental health care?
    - No change from baseline, moderate increase, significant increase

- Have you ever had a close personal relationship (independent of a professional relationship) with someone diagnosed with a mental illness, or do you personally have a diagnosed mental illness?
    - Yes, no
    - Prefer not to say (excluded from analysis)

- Have you received any specialized training or certification related to mental health or psychotropic drugs? (select all that apply)
    - Board certification in psychiatric pharmacy
    - Post- undergraduate training with rotation(s) in mental health
    - Post- undergraduate training with primary focus in mental
    - Other (free text)
    - No specialized training or certification
- Do you currently provide any specialized mental health and addictions medications or services? (select all that apply)
    - administration of long acting injectable antipsychotics
    - dispensing clozapine
    - dispensing opioid agonist therapy
    - dispensing naloxone kits
    - psychotherapy (non-med treatment of insomnia, motivational interviewing, psychoeducation)
    - prescriptive authority under collaborative practice agreements (for mental health medications)
    - modified dispensing for psychotropic medication (i.e. 1 week fills, supervised administration)
    - other
    - I do not provide any of the above
- Do you offer structured screening for mental health conditions? (e.g. Patient Health Questionnaire [PHQ-9], Hamilton Depression Rating Scale [HAM-D], Mood Disorders Questionnaire (MDQ), etc.)
    - (never, sometimes, regularly), not applicable

II. Current Practices and Provision of Mental Health Clinical Services

Consider the following questions for patients receiving a prescription for a mental health medication and/or for patients with a diagnosed mental illness.

Mental health medication: psychotropic medication or medication prescribed primarily for a psychiatric condition (e.g. antidepressants, anxiolytics, antipsychotics, sedatives, etc.)

Mental illness: psychiatric condition diagnosed by any physician according to DSM-5 criteria (e.g. major depressive disorder, anxiety disorder, bipolar disorder, insomnia, schizophrenia, etc.

1. To what extent do you currently provide the following services:
   (1 = to no patients, 2 = to some patients, 3 = to most patients, 4 = to all patients)

2. To what extent do you feel motivated to provide the following services:
   (1 = not motivated at all, 2 = somewhat un-motivated, 3 = motivated, 4 = very motivated)

3. To what extent do you agree it is a pharmacist's role to provide the following services:
   (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree, 5 = I don't know)

a) **Thorough assessment of patient's clinical status**
   (Obtaining relevant history, confirming mental health diagnosis, evaluating patient's current mental status)
b) **Providing basic education for mental health medication(s)**
   (Counselling on indication, benefits, adverse effects, appropriate use)
c) **Providing advanced education for mental health medications or illnesses**
   (Counselling on psychiatric conditions, self-management, risk avoidance, motivational interviewing, relapse prevention)
d) **Providing active follow up (e.g. phone calls) when changes to mental health medication therapy is made**
e) **Monitoring mental health medication therapy**
   (Regularly assessing medication efficacy, safety, and adherence. Supporting resolution of active issues.)
f) **Performing CMM for mental health medications** (Medication reviews, assessing for drug therapy problems, and recommending changes to optimize therapy)
g) **Facilitating health-system navigation and collaboration for mental health care**
   (Screening for high risk mental state, referring to other professionals where appropriate, assisting patients to connect with additional supports or community resources)

Section 3 and 4 have randomized statements at present.

III. Attitudes and Beliefs

Please rate the extent to which you agree or disagree with the following statements*:*
1 = strongly disagree, 2 = somewhat disagree , 3 = I don't know, 4 = somewhat agree, 5 = strongly agree

a) I find it uncomfortable to discuss medication therapy with patients with mental illness
b) I believe patients with mental illness do not want to talk to a pharmacist about their symptoms or medications
c) Pharmacists are qualified to recommend mental health medication changes to psychiatrists
d) Pharmacists are qualified to recommend mental health medication changes to family physicians
e) Pharmacist involvement does not add value to the interdisciplinary mental health care team
f) Patients benefit from pharmacist involvement in providing care for their mental illness
g) There is a need for pharmacists to have more of an active role in providing medication management for patients with mental illness
h) Pharmacists should be as involved in mental health management as they are in chronic disease management for diabetes or cardiovascular conditions
i) I feel confident in my ability to regularly provide clinical services to patients with mental illness
j) I currently have adequate knowledge and training to regularly provide clinical services to patients with mental illness

IV. Potential Barriers

Please rate the extent to which the following impacts your readiness to regularly provide clinical services to patients with mental illness:
1 = no impact, 2 = slight impact, 3 = moderate impact, 4 = significant impact

a) Inadequate privacy in the work or patient environment
b) Inadequate staffing
c) Competing priorities
d) Insufficient training opportunities
e) Insufficient knowledge
f) Inadequate reimbursement
g) Lack of access to medical histories, diagnostic information, or treatment plans
h) Limitations in communication with prescribers
i) Insufficient administrative support to prioritize services
j) Lack of clinical tools to provide support to patients with mental health conditions
k) Lack of information about existing social supports or community resources

l) Other: (open)

Please select the factor that you believe has the largest impact on readiness to regularly provide mental health clinical services:

One choice only from list above

V. Optional open-ended question:

How do you think pharmacists can make a difference for patients with mental illness?

Appendix C: Content Analysis Process

The content analysis process is based on an amalgamation of various qualitative methodology[153–155]

Independent review: Amy Soubolsky and Katelyn Halpape

1. Read through once with no highlighting or notes
2. Read through and highlight substantive statements that make a key point, and make notes in the margins of any possible categories that come to mind
3. Make note of any substantial statements that do not fit into the list of categories
4. Add new categories to fit the remaining statements.
5. Transfer categories to a table and map to the original verbatim statements
6. Evaluate the categories; combine or separate categories as appropriate.
7. Compare list with other reviewer and reconcile differences to create finalized list
8. Read through again and ensure all substantive statements are included, making notes of verbatim statements to include in the report

External review: Joanna Procyshen

1. Complete an independent analysis by following the above steps #1-6. No information will be given about the initially determined categories.

Initial review compared to secondary review, and any major differences in primary categories were reconciled.

Appendix D: Crosstabulation Tables

F = Fisher's Exact Test; PCS = Pearson Chi Square; Significance p < .05; % = percent of total within each row; red font = statistically significant

S.1 Demographics compared to current provision of clinical services

	Thorough assessment		**Basic education**		**Advanced education**		**Active follow up**		**Monitoring medication therapy**		**CMM**		**Facilitating health-system navigation and collaboration**	
	No/some patients	Most/all patients	No/some patients	Most/all patients	No/some patients	Most/all patients	No/some patients	Most/all patients	No/some patients	Most/all patients	No/some patients	Most/all patients	No/some patients	Most/all patients
Years in practice														
≤ 10 years >10 years	50 (82%) 58 (85.3%)	11 (18%) 10 (14.7%)	29 (47.5%) 21 (30.9%)	32 (52.5%) 47 (69.1%)	56 (91.8%) 64 (94.1%)	5 (8.2%) 4 (5.9%)	52 (86.7%) 62 (91.2%)	8 (13.3%) 6 (8.8%)	46 (75.4%) 58 (86.6%)	15 (24.6%) 9 (13.4%)	51 (83.6%) 60 (89.6%)	10 (16.4%) 7 (10.4%)	55 (90.2%) 56 (83.6%)	6 (9.8%) 11 (16.4%)
p-value (Test)	.609 (PCS)		.053 (PCS)		.735 (F) .606 (PCS)		.415 (PCS)		.106 (PCS)		.322 (PCS)		.273 (PCS)	
Role (position)														
Staff pharmacist Manager/owner/director	68 (82.9%) 29 (87.9%)	14 (17.1%) 4 (12.1%)	40 (48.8%) 2 (6.1%)	42 (51.2%) 31 (93.9%)	78 (95.1%) 30 (90.9%)	4 (4.9%) 3 (9.1%)	76 (93.8%) 25 (75.8%)	5 (6.2%) 8 (24.2%)	70 (85.4%) 23 (71.9%)	12 (14.6%) 9 (28.1%)	72 (87.8%) 26 (81.3%)	10 (12.2%) 6 (18.8%)	75 (91.5%) 23 (71.0%)	7 (8.5%) 9 (28.1%)
p-value (Test)	.584 (F) .509 (PCS)		<.001 (F and PCS)		.407 (F) .393 (PCS)		.010 (F) .006 (PCS)		.095 (PCS)		.379 (F) .365 (PCS)		.014 (F) .007 (PCS)	
Practice location														
Large urban Smaller urban/Rural	48 (77.4%) 60 (89.6%)	14 (22.6%) 7 (10.4%)	29 (46.8%) 21 (31.3%)	33 (53.2%) 46 (68.7%)	57 (91.9%) 63 (94%	5 (8.1%) 4 (6%)	56 (91.8%) 58 (86.6%)	5 (8.2%) 9 (13.4%)	46 (75.4%) 58 (86.6%)	15 (24.6%) 9 (13.4%)	55 (90.2%) 56 (83.6%)	6 (9.8%) 11 (16.4%)	54 (88.5%) 57 (85.1%)	7 (11.5%) 10 (14.9%)
p-value (Test)	.062 (PCS)		.072 (PCS)		.737 (F) .641 (PCS)		.343 (PCS)		.106 (PCS)		.273 (PCS)		.566 (PCS)	
Practice setting														
Community pharmacy Acute care setting	68 (87.2%) 25 (78.1%)	10 (12.8%) 7 (21.9%)	13 (16.7%) 27 (84.4%)	65 (83.3%) 5 (15.6%)	73 (93.6%) 32 (100%)	5 (6.4%) 0	68 (88.3%) 32 (100%)	9 (11.7%) 0	65 (84.4%) 28 (87.5%)	12 (15.6%) 4 (12.5%)	69 (89.6%) 27 (84.4%)	8 (10.4%) 5 (15.6%)	66 (85.7%) 30 (93.8%)	11 (14.3%) 2 (6.3%)
p-value (Test)	.233 (PCS)		<.001 (PCS)		.319 (F) .143 (PCS)		.056 (F) .043 (PCS)		.774 (F) .679 (PCS)		.442 (PCS)		.338 (F) .238 (PCS)	
Type of community pharmacy														
Independently owned Other	31 (83.8%) 37 (90.2%)	6 (16.2%) 4 (9.8%)	6 (16.2%) 7 (17.1%)	31 (83.8%) 34 (82.9%)	36 (97.3%) 37 (90.2%)	1 (2.7%) 4 (9.8%)	32 (86.5%) 36 (90.0%)	5 (13.5%) 4 (10.0%)	32 (86.5%) 33 (82.5%)	5 (13.5%) 7 (17.5%)	32 (86.5%) 37 (92.5%)	5 (13.5%) 3 (7.5%)	32 (86.5%) 34 (85.0%)	5 (13.5%) 6 (15.0%)
p-value (Test)	.504 (F) .394 (PCS)		.919 (PCS)		.362 (F) .204 (PCS)		.731 (F) .632 (PCS		.630 (PCS)		.470 (F) .388 (PCS)		1.00 (F) .852 (PCS)	
Clinical practice area														
Psychiatry/SUD selected Psyc/SUD not selected	19 (82.6%) 89 (84%)	4 (17.4%) 17 (16%)	7 (30.4%) 43 (40%)	16 (69.6%) 63 (59.4%)	20 (87%) 100 (94.3%)	3 (12%) 6 (5.7%)	19 (82.6%) 95 (90.5%)	4 (17.4%) 10 (9.5%)	17 (73.9%) 87 (82.9%)	6 (26.1%) 18 (17.1%)	16 (69.6%) 95 (90.5%)	7 (30.4%) 10 (9.5%)	15 (65.2%) 96 (91.4%)	8 (34.8%) 9 (8.6%)
p-value (Test)	1.00 (F) .873 (PCS)		.366 (PCS)		.200 (F) .208 (PCS)		.278 (F) .274 (PCS)		.320 (PCS)		.007 (PCS)		<.001 (PCS)	
Relationship/experience with mental illness														
Yes No	87 (84.5%) 20 (83.3%)	16 (15.5%) 4 (16.7%)	39 (37.9%) 10 (41.7%)	64 (62.1%) 14 (58.3%)	96 (93.2%) 22 (91.7%)	7 (6.8%) 2 (8.3%)	93 (90.3%) 19 (82.6%)	10 (9.7%) 4 (17.4%)	84 (82.4%) 18 (75%)	18 (17.6%) 6 (25%)	91 (89.2%) 19 (79.2%)	11 (10.8%) 5 (20.8%)	86 (84.3%) 23 (95.8%)	16 (15.7%) 1 (4.2%)
p-value (Test)	1.00 (F) .891 (PCS)		.730 (PCS)		.678 (F) .792 (PCS)		.284 (F) .289 (PCS)		.409 (PCS)		.183 (PCS)		.192 (F) .137 PCS	

S.2 Demographics compared to extent of motivation to provide clinical services

	Thorough assessment		**Basic education**		**Advanced education**		**Active follow up**		**Monitoring medication therapy**		**CMM**		**Facilitating health-system navigation and collaboration**	
	Not motivated	Motivated	Not motivated	Motivated	Not motivated	Motivated	Not motivated	Motivated	Not motivated	Motivated	Not motivated	Motivated	Not motivated	Motivated
Years in practice														
≤ 10 years > 10 years	25 (41%) 34 (50.7%)	36 (59%) 33 (49.3%)	2 (3.3%) 9 (13.4%)	59 (96.7%) 58 (86.6%)	30 (49.2%) 38 (56.7%)	31 (50.8%) 29 (43.3%)	30 (42.9%) 33 (49.3%)	31 (50.8%) 34 (50.7%)	11 (18%) 19 (29.4%)	50 (82%) 48 (71.6%)	13 (21.3%) 30 (44.8%)	48 (78.7%) 37 (55.2%)	17 (29.7%) 36 (53.7%)	44 (72.1%) 31 (46.3%)
p-value (Test)	.268 (PCS)		.057 (F) .041 (PCS)		.393 (PCS)		.993 (PCS)		.168 (PCS)		.005 (PCS)		.003 (PCS)	
Role (position)														
Staff pharmacist Manager/owner/director	37 (45.1%) 17 (53.1%)	45 (54.9%) 15 (46.9%)	7 (8.5%) 1 (3.1%)	75 (91.5%) 31 (96.9%)	48 (58.5%) 14 (43.8%)	34 (41.5%) 18 (56.3%)	45 (54.9%) 10 (34.4%)	37 (45.1%) 21 (65.6%)	21 (25.6%) 6 (18.8%)	61 (74.4%) 26 (81.3%)	25 (30.5%) 11 (34.4%)	57 (69.5%) 21 (65.6%)	33 (40.2%) 13 (40.6%)	49 (59.8%) 19 (59.4%)
p-value (Test)	.442 (PCS)		.438 (F) .309 (PCS)		.154 (PCS)		.049 (PCS)		.439 (PCS)		.688 (PCS)		.970 (PCS)	
Practice location														
Large urban Smaller urban/Rural	22 (36.1%) 37 (55.2%	39 (63.9%) 30 (44.8%)	4 (6.6%) 7 (10.4%)	57 (93.4%) 60 (89.6%)	27 (44.3%) 41 (61.2%)	34 (55.7%) 26 (38.8%)	33 (54.1%) 30 (44.8%)	28 (45.9%) 37 (55.2%)	14 (23%) 16 (23.9%)	47 (77%) 51 (76.1%)	18 (29.5%) 25 (37.3%)	43 (70.5%) 42 (62.7%)	22 (36.1%) 31 (46.3%)	39 (63.9%) 36 (53.7%)
p-value (Test)	.030 (PCS)		.433 (PCS)		.055 (PCS)		.292 (PCS)		.901 (PCS)		.350 (PCS)		.242 (PCS)	
Practice setting														
Community pharmacy Acute care setting	41 (53.2%) 13 (40.6%)	36 (46.8%) 19 (59.4%)	7 (9.1%) 3 (9.4%)	70 (90.9%) 29 (90.6%)	40 (511.9%) 21 (65.6%)	37 (48.1%) 11 (34.4%	31 (40.3%) 23 (71.9%)	46 (59.7%) 9 (28.1%)	20 (26%) 7 (21.9%)	57 (74%) 25 (78.1%)	30 (39%) 7 (21.9%)	47 (61%) 25 (78.1%)	33 (42.9%) 13 (40.6%)	44 (57.1%) 19 (59.4%)
p-value (Test)	.230 (PCS)		1.00 (F) .963 (PCS)		.210 (F) .190 (PCS)		.003 (PCS)		.652 (PCS)		.086 (PCS)		.830 (PCS)	
Type of community pharmacy														
Independent Other	18 (48.6%) 23 (57.5%)	19 (51.4%) 17 (42.5%)	2 (5.4%) 5 (12.5%)	35 (94.6%) 35 (87.5%)	20 (54.1%) 20 (50%)	17 (45.9%) 20 (50%)	14 (43.2%) 15 (37.5%)	21 (56.8%) 25 (62.5%)	9 (24.3%) 11 (27.5%)	28 (75.7%) 29 (72.5%)	13 (3.51%) 17 (42.5%)	24 (64.9%) 23 (57.5%)	17 (45.9%) 16 (40%)	20 (54.1%) 24 (60%)
p-value (Test)	.437 (PCS)		.433 (F) .279 (PCS)		.722 (PCS)		.608 (PCS		.751 (PCS)		.508 (PCS)		.598 (PCS)	
Clinical practice area														
Psychiatry/SUD Other clinical practices	11 (47.8%) 48 (45.7%)	12 (52.2%) 57 (54.3%)	3 (13%) 8 (7.6%)	20 (87%) 97 (92.4%)	10 (43.5%) 58 (55.2%)	13 (56.5%) 47 (44.8%)	11 (47.8%) 52 (49.5%)	12 (52.2%) 53 (50.5%)	4 (17.4%) 26 (24.8%)	19 (82.6%) 79 (75.2%)	8 (34.8%) 35 (33.3%)	15 (65.2%) 70 (66.7%)	7 (30.4%) 46 (43.8%)	16 (69.6%) 59 (56.2%)
p-value (Test)	.854 (PCS)		.415 (F) .401 (PCS)		.306 (PCS)		.883 (PCS)		.591 (F) .450 (PCS)		.894 (PCS)		.238 (PCS)	
Relationship/experience with mental illness														
Yes No	42 (41.2%) 16 (66.7%)	60 (58.8%) 8 (33.3%)	6 (5.9%) 4 (16.7%)	96 (94.1%) 20 (83.3%)	49 (48%) 17 (70.8%)	53 (52%) 7 (29.2%)	47 (46.1%) 14 (58.3%)	55 (53.9%) 10 (41.7%)	22 (21.6%) 7 (29.2%)	80 (78.4%) 17 (70.8%)	32 (31.4%) 10 (41.7%)	70 (68.6%) 14 (58.3%)	37 (36.3%) 15 (62.5%)	65 (63.7%) 9 (37.5%)
p-value (Test)	.024 (PCS)		.096 (F) .079 (PCS)		.044 (PCS)		.280 (PCS)		.426 (PCS)		.336 (PCS)		.019 PCS	

Columns: Not motivated = Not at all motivated/somewhat unmotivated; Motivated = motivated/very motivated

S.3 Demographics compared to extent of role agreement for clinical services

	Thorough assessment		**Basic education**		**Advanced education**		**Active follow up**		**Monitoring medication therapy**		**CMM**		**Facilitating health-system navigation and collaboration**	
	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree
Years in practice														
≤ 10 years > 10 years	15 (26.3%) 27 (42.9%)	42 (73.7%) 36 (57.1%	0 1 (1.5%)	60 (100%) 65 (98.5%)	12 (21.8%) 20 (32.8%	43 (78.2%) 41 (67.2%)	6 (10.9%) 6 (9.4%)	49 (89.1%) 58 (90.6%)	0 2 (3.2%)	59 (100%) 61 (96.8%)	1 (1.7%) 6 (9.4%)	59 (98.3%) 58 (90.6%)	12 (21.8%) 13 (21.7%)	43 (78.2%) 47 (78.3%)
p-value (Test)	.058 (PCS)		1.0 (F) .338 (PCS)		.187 (PCS)		.782 (PCS)		.496 (F) .168 (PCS)		.116 (FF) .063 (PCS)		.984 (PCS)	
Role														
Staff pharmacist Manager/owner/ director	25 (32.9% 14 (43.8%	51 (67.1%) 18 (56.3%)	1 (1.3%) 0	79 (98.8%) 32 (100%)	20 (27.4%) 9 (30%)	53 (72.6%) 21 (70%)	8 (10.8%) 2 (6.3%)	66 (89.2%) 30 (93.8%)	0 1 (3.2%)	78 (100%) 30 (96.8%)	3 (3.8%) 2 (6.3%)	75 (96.2%) 30 (93.8%)	14 (19.2%) 8 (26.7%)	59 (80.8%) 22 (73.3%)
p-value (Test)	.284 (PCS)		1.0 (F) .525 (PCS)		.790 (PCS)		.720 (F) .461 (PCS)		.284 (F) .111 (PCS)		.627 (F) .583 (PCS)		.399 (PCS)	
Practice location														
Large urban Smaller urban/Rural	17 (29.3%) 25 (40.3%	41 (70.7%) 37 (59.7%)	0 1 (1.5%)	59 (100%) 66 (98.5%)	14 (25.5%) 18 (29.5%)	41 (74.5%) 43 (70.5%)	5 (9.6%) 7 (10.4%)	47 (90.4%) 60 (89.6%)	0 2 (3%)	55 (100%) 65 (97%)	1 (1.7%) 6 (9.1%)	57 (98.3%) 60 (90.9%)	11 (20%) 14 (23.3%)	44 (80%) 46 (76.7%)
p-value (Test)	.206 (PCS)		1.0 (F) .346 (PCS)		.626 (PCS)		.881 (PCS)		.501 (F) .196 (PCS)		.120 (F) .076 (PCS)		.665 (PCS)	
Practice setting														
Community pharmacy Acute care setting	30 (41.1%) 8 (26.7%)	43 (58.9%) 22 (73.3%)	1 (1.3%) 0	74 (98.7%) 32 (100%)	20 (29%) 7 (24.1%)	49 (71%) 22 (75.9%)	8 (11%) 2 (6.9%)	65 (89%) 27 (93.1%)	1 (1.4%) 1 (3.1%)	71 (98.6%) 31 (96.9%)	4 (5.5%) 2 (6.3%)	69 (94.5% 30 (93.8%)	17 (24.3%) 6 (20.7%)	53 (75.7%) 23 (79.3%)
p-value (Test)	.168 (PCS)		1.0 (F) .512 (PCS)		.624 (PCS)		.720 (F) .534 (PCS)		.523 (F) .552 (PCS)		1.0 (F) .876 (PCS)		.700 (PCS)	
Type of community pharmacy														
Independent Other	14 (40%) 16 (42.1%)	21 (60%) 22 (57.9%	0 1 (2.6%)	37 (100%) 37 (97.4%)	9 (28.1%) 11 (29.7%)	23 (71.9%) 26 (70.3%)	3 (8.3%) 5 (13.5%)	33 (91.7%) 32 (86.5%)	1 (2.8%) 0	35 (97.2%) 36 (100%)	2 (5.7%) 2 (5.3%)	33 (94.3%) 36 (94.7%)	10 (29.4%) 7 (19.4%)	24 (70.6%) 29 (80.6%)
p-value (Test)	.855 (PCS)		1.0 (F) .321 (PCS)		.884 (PCS)		.711 (F) .479 (PCS)		1.0 (F) .314 (PCS)		1.0 (F) .933 (PCS)		.331 (PCS)	
Clinical practice area														
No Psychiatry/SUD Psych/SUD selected	34 (34.7%) 8 (36.4%)	64 (65.3%) 14 (63.6%)	1 (1%) 0	102 (99%) 23 (100%)	23 (24.2%) 9 (42.9%)	72 (75.8%) 12 (57.1%)	10 (10.3%) 2 (9.1%)	87 (89.7%) 20 (90.9%)	1 (1%) 1 (4.5%)	99 (99%) 21 (95.5%	6 (5.9%) 1 (4.3%)	95 (94.1%) 22 (95.7%)	20 (21.1% 5 (25%)	75 (78.9%) 15 (75%)
p-value (Test)	.882 (PCS)		1.0 (F) .635 (PCS)		.084 (PCS)		1.0 (F) .864 (PCS)		.329 (F) .236 (PCS)		1.0 (F) .765 (PCS)		.767 (F) .697 (PCS)	
Relationship/experience with mental illness														
Yes No	31 (32%) 10 (47.6%)	66 (68%) 11 (52.4%)	1 (1%) 0	100 (99%) 23 (100%)	23 (24.7%) 8 (38.1%	70 (75.3%) 13 (61.9%	9 (9.7%) 3 (12.5%)	84 (90.3%) 21 (87.5%)	2 (2.1%) 0	95 (97.9%) 23 (100%)	2 (2%) 4 (16.7%)	96 (98%) 20 (83.3%)	19 (20.7%) 6 (28.6%)	73 (79.3% 15 (71.4%)
p-value (Test)	.172 (PCS)		1.0 (F) .632 (PCS)		.214 (PCS)		.709 (F) .684 (PCS)		1.0 (F) .487 (PCS)		.014 (F) .003 (PCS)		.560 (F) .430 (PCS)	

Columns: Disagree = strongly disagree/disagree; Agree = agree/strongly agree

S.4 Demographics compared to total attitude scores regarding pharmacists' role in mental health patient care

	Total Attitude Scores	
Years in practice	Less positive attitude (score < 30)	More positive attitude (score ≥ 30)
≤ 10 years	19 (31.7%)	41 (68.3%)
> 10 years	30 (44.1%)	38 (55.9%)
p-value (Test)	.148 (PCS)	
Role		
Staff pharmacist	28 (34.6%)	53 (65.4%)
Manager/owner/ director	16 (48.5%	17 (51.5%)
p-value (Test)	.166 (PCS)	
Practice location		
Large urban	20 (32.3%)	42 (67.7%)
Smaller urban/Rural	29 (43.9%)	37 (56.1%)
p-value (Test)	.174 (PCS)	
Practice setting		
Community pharmacy	37 (48.1%)	40 (51.9%)
Acute care setting	7 (21.9%)	25 (78.1%)
p-value (Test)	.011 (PCS)	
Type of community pharmacy		
Independent	15 (41.7%)	21 (58.3%)
Other	22 (53.7%	19 (46.3%)
p-value (Test)	.293 (PCS)	
Clinical practice area		
Psychiatry/SUD	5 (21.7%)	18 (78.3%)
Other clinical practices	44 (41.9%)	61 (58.1%)
p-value (Test)	.072 (PCS)	
Relationship/experience with mental illness		
Yes	37 (36.3%)	65 (63.7%)
No	11 (45.8%)	13 (54.2%)
p-value (Test)	.386 (PCS)	

Attitude statement scoring: 1 = Strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree; higher scores indicate more positive attitudes

S.5 Demographics compared to degree of impact of potential barriers

	Role (position)		**Years in Practice**		**Practice location**		**Practice setting**		**Type of community pharmacy**		**Clinical practice area**		**Relationship/ Experience**	
N (%) total within column	Staff pharmacist	Owner/Manager /Director	≤ 10 years	> 10 years	Large urban	Smaller urban/Rural	Community pharmacy	Acute care	Independent	Other	Psych/SUD	Non-psyc/SUD	Yes	No
Competing priorities No/slight impact Mod/significant impact	6 (7.6%) 73 (92.4%)	7 (21.2%) 26 (78.8%)	12 (20.3%) 47 (79.7%)	3 (4.5%) 64 (95.5%)	8 (13.1%) 53 (86.9%)	7 (10.8%) 58 (89.2%)	10 (13%) 67 (87%)	3 (10%) 27 (90%)	3 (8.3%) 33 (91.7%)	7 (17.1%) 34 (82.9%)	4 (17.4%) 19 (82.6%)	11 (10.7%) 92 (89.3%)	12 (12%) 88 (88%)	3 (12.5%) 21 (87.5%)
p-value (Test)	.054 (F) .040 (PCS)		.011 (F) .006 (PCS)		.685 (PCS)		1.00 (F) .671 (PCS)		.321 (F) .255 (PCS)		.474 (F) .369 (PCS)		1.00 (F) .946 (PCS)	
Insufficient training opportunities No/slight impact Mod/significant impact	14 (17.5%) 66 (82.5%)	10 (30.3%) 23 (69.7%)	13 (21.7%) 47 (78.3%)	13 (19.4%) 54 (80.6%)	12 (19.4%) 50 (80.6%)	14 (21.5%) 51 (78.5%)	14 (18.2%) 63 (81.8%)	8 (25.8%) 23 (74.2%)	7 (19.4%) 29 (80.6%)	7 (17.1%) 34 (82.9%)	7 (30.4%) 16 (69.6%)	19 (18.3%) 85 (81.7%)	23 (22.8%) 78 (77.2%)	3 (12.5%) 21 (87.5%)
p-value (Test)	.130 (PCS)		.752 (PCS)		.760 (PCS)		.373 (PCS)		.788 (PCS)		.191 (PCS)		.402 (F) .265 (PCS)	
Insufficient knowledge No/slight impact Mod/significant impact	20 (25%) 60 (75%)	11 (34.4%) 21 (65.6%)	19 (31.7%) 41 (68.3%)	16 (24.2%) 50 (75.8%)	16 (25.8%) 46 (74.2%)	19 (29.7%) 45 (70.3%)	22 (28.6%) 55 (71.4%)	4 (12.9%) 27 (87.1%)	11 (30.6%) 25 (69.4%)	11 (26.8%) 30 (73.2%)	8 (36.4%) 14 (63.6%)	27 (26%) 77 (74%)	28 (28%) 72 (72%)	7 (29.2%) 17 (70.8%)
p-value (Test)	.316 (PCS)		.353 (PCS)		.627 (PCS)		.134 (F) .085 (PCS)		.718 (PCS)		.322 (PCS)		.909 (PCS)	
Inadequate reimbursement No/slight impact Mod/significant impact	28 (38.9%) 44 (61.1%)	3 (9.4%) 29 (90.6%)	26 (46.4%) 30 (53.6%)	11 (18%) 50 (82%)	19 (33.3%) 38 (66.7%)	18 (30%) 42 (70%)	8 (10.8%) 66 (89.2%)	20 (80%) 5 (20%)	4 (11.4%) 31 (88.6%)	4 (10.3%) 35 (89.7%)	6 (30%) 14 (70%)	31 (32%) 66 (68%)	29 (30.2%) 67 (69.8%)	8 (42.1%) 11 (57.9%)
p-value (Test)	.002 (PCS)		<.001 (PCS)		.698 (PCS)		<.001 (PCS)		1.00 (F) .871 (PCS)		.864 (PCS)		.310 (PCS)	
Lack of access to patient information No/slight impact Mod/significant impact	13 (16.3%) 67 (83.8%)	7 (21.2%) 26 (78.8%)	18 (30%) 42 (70%)	5 (7.6%) 61 (92.4%)	15 (24.6%) 46 (75.4%)	8 (12.3%) 57 (87.7%)	9 (11.7%) 68 (88.3%)	10 (32.3%) 21 (67.7%)	3 (8.3%) 33 (91.7%)	6 (14.6%) 35 (85.4%)	4 (18.2%) 18 (81.8%)	19 (18.3%) 85 (81.7%)	17 (16.8%) 84 (83.2%)	6 (26.1%) 17 (73.9%)
p-value (Test)	.530 (PCS)		.001 (PCS)		.074 (PCS)		.011 (PCS)		.490 (F) .391 (PCS)		1.00 (F) .992 (PCS)		.303 (PCS)	
Limitations in communication with prescribers No/slight impact Mod/significant impact	25 (31.3%) 55 (68.8%)	9 (27.3%) 24 (72.7%)	19 (31.7%) 41 (68.2%)	22 (32.8%) 45 (67.2%)	24 (38.7%) 38 (61.3%)	17 (26.2%) 48 (73.8%)	16 (20.6%) 61 (79.2%)	19 (61.3%) 12 (38.7%)	10 (27.8%) 26 (72.2%)	6 (14.6%) 35 (85.4%)	9 (39.1%) 14 (60.9%)	32 (30.8%) 72 (69.2%)	31 (30.7%) 70 (69.3%)	10 (41.7%) 14 (58.3%)
p-value (Test)	.675 (PCS)		1.00 (F) .888 (PCS)		.130 (PCS)		<.001 (PCS)		.156 (PCS)		.438 (PCS)		.303 (PCS)	
Insufficient admin support No/slight impact Mod/significant impact	13 (16.3%) 67 (83.8%)	12 (38.7%) 19 (61.3%)	15 (25%) 45 (75%)	13 (20%) 52 (80%)	12 (19.7%) 49 (80.3%)	16 (25%) 48 (75%)	16 (21.3%) 59 (78.7%)	7 (22.6%) 24 (77.4%)	13 (38.2%) 21 (61.8%)	3 (7.3%) 38 (92.7%)	10 (43.5%) 13 (56.5%)	18 (17.6%) 84 (82.4%)	23 (23.2%) 76 (76.8%)	5 (20.8%) 19 (79.2%)
p-value (Test)	.011 (PCS)		.503 (PCS)		.475 (PCS)		.887 (PCS)		.002 (F) .001 (PCS)		.007 (PCS)		.801 (PCS)	
Lack of clinical tools to provide support No/slight impact Mod/significant impact	16 (20%) 64 (80%)	6 (18.8%) 26 (81.3%)	16 (26.7%) 44 (73.3%)	8 (12.1%) 58 (87.9%)	9 (14.5%) 53 (85.5%)	15 (23.4%) 49 (76.6%)	12 (15.6%) 65 (84.4%)	7 (22.6%) 24 (77.4%	8 (22.2%) 28 (77.8%)	4 (9.8%) 37 (90.2%)	7 (31.8%) 15 (68.2%)	17 (16.3%) 87 (83.7%)	21 (21%) 79 (79%)	3 (12.5%) 21 (87.5%)
p-value (Test)	.880 (PCS)		.038 (PCS)		.202 (PCS)		.388 (PCS)		.208 (F) .132 (PCS)		.093 (PCS)		.565 (F) .344 (PCS)	
Lack of info about existing social supports No/slight impact Mod/significant impact	13 (16.3%) 67 (83.8%)	9 (27.3%) 24 (72.7%)	9 (15%) 51 (85%)	17 (25.4%) 50 (74.6%)	14 (22.6%) 48 (77.4%)	12 (18.5%) 53 (81.5%)	16 (20.8%) 61 (79.2%)	4 (12.9%) 27 (87.1%)	7 (19.4%) 29 (80.6%)	9 (22%) 32 (78%)	8 (24.8%) 15 (65.2%)	18 (17.3%) 86 (82.7%)	18 (17.8%) 83 (82.2%)	8 (33.3%) 16 (66.7%)
p-value (Test)	.178 (PCS)		.148 (PCS)		.565 (PCS)		.421 (F) .340 (PCS)		.787 (PCS)		.060 (PCS)		.092 (PCS)	
Inadequate staffing No/slight impact Mod/significant impact	16 (20%) 64 (80%)	9 (29%) 22 (71%)	15 (25%) 45 (75%)	13 (20%) 52 (80%)	12 (19.7%) 49 (80.3%)	16 (25%) 48 (75%)	14 (18.4%) 62 (81.6%)	10 (32.3%) 21 (67.7%)	12 (33.3%) 24 (66.7%)	2 (5%) 38 (95%)	5 (23.8%) 16 (76.2%)	23 (22.1%) 81 (77.9%)	20 (20.2%) 79 (79.8%)	8 (33.3%) 16 (66.7%)
p-value (Test)	.307 (PCS)		.503 (PCS)		.475 (PCS)		.120 (PCS)		.002 (F) .001 (PCS)		.865 (PCS)		.169 (PCS)	
Inadequate privacy No/slight impact Mod/significant impact	32 (41.6%) 45 (58.4%)	17 (53.1%) 15 (46.9%)	25 (42.4%) 34 (57.6%)	29 (45.3%) 35 (54.7%)	29 (49.2%) 30 (50.8%)	25 (39.1%) 39 (60.9%)	28 (37.3%) 47 (62.7%)	17 (56.7%) 13 (43.3%)	15 (44.1%) 19 (55.9%)	13 (31.7%) 28 (68.3%)	13 (56.5%) 10 (43.5%)	41 (41%) 59 (59%)	38 (39.2%) 59 (60.8%)	16 (66.7%) 8 (33.3%)
p-value (Test)	.269 (PCS)		.743 (PCS)		.260 (PCS)		. 071 (PCS)		.269 (PCS)		.176 (PCS)		.015 (PCS)	

S.6 Current provision of services compared to motivation, role agreement, attitude scores, and current work environment

	Current Provision													
	Thorough assessment		**Basic education**		**Advanced education**		**Active follow up**		**Monitoring medication therapy**		**CMM**		**Facilitating health-system navigation and collaboration**	
Role agreement	No/some patients	Most/all patients	No/some patients	Most/all patients	No/some patients	Most/all patients	No/some patients	Most/all patients	No/some patients	Most/all patients	No/some patients	Most/all patients	No/some patients	Most/all patients
Strongly disagree/disagree	42 (100%)	0	0	1 (100%)	32 (100%)	0	12 (100%)	0	2 (100%)	0	7 (100%)	0	25 (100%)	0
Agree/strongly agree	59 (75.6%)	19 (24.4%)	50 (40%)	75 (60%)	75 (89.3%)	9 (10.7%)	93 (87.7%)	13 (12.3%)	97 (80.8%)	23 (19.2%)	100 (85.5%)	17 (14.5%)	74 (82.2%)	16 (17.8%)
p-value (Test)	<.001 (F) <.001 (PCS)		1.00 (F) .415 (PCS)		.061 (F) .054 (PCS)		.357 (F).198 (PCS)		1.00 (F) .492 (PCS)		.278 (PCS)		.023 (PCS)	
Motivation														
Not at all/somewhat unmotivated	57 (96.6%)	2 (3.4%)	8 (72.7%)	3 (27.3%)	67 (98.5%)	1 (1.5%)	61 (98.4%)	1 (1.6%)	29 (96.7%)	1 (3.3%)	43 (100%)	0	53 (100%)	0
Motivated/very motivated	50 (72.5%)	(9.5%)	42 (35.9%)	(3.8%)	52 (86.7%)	(11.1%)	52 (80%)	(7.1%)	75 (76.5%)	(4.2%)	68 (80%)	17 (20%)	58 (77.3%)	(0%)
		19 (27.5%)		75 (64.1%)		8 (13.3%)		13 (20%)		23 (23.5%)				17 (22.7%)
		(90.5%)		(96.2%)		(88.9%)		(92.9%)		(95.8%)				(100%)
p-value (Test)	<.001 (F) <.001 (PCS)		.023 (F) .017 PCS		.012 (F) .009 (PCS)		.001 (F) <.001 (PCS)		.014 (F) .013 (PCS)		.259 (F) .228 (PCS)		<.001 (PCS)	
Total attitude score														
Less positive	45 (91.8%)	4 (8.2%)	16 (32.7%)	33 (67.3%)	46 (93.9%)	3 (6.1%)	42 (87.5%)	6 (12.5%)	41 (85.4%)	7 (14.6%)	46 (95.8%)	2 (4.2%)	43 (89.6%)	5 (10.4%)
More positive	62 (78.5%)	17 (21.5%)	34 (43%)	45 (57%)	73 (92.4%)	6 (7.6%)	71 (89.9%)	8 (10.1%)	62 (78.5%)	17 (21.5%)	64 (81%)	15 (19%)	67 (84.8%)	12 (15.2%)
p-value (Test)	.047 (PCS)		.242 (PCS)		1.0 (F) .751 (PCS)		.679 (PCS)		.333 (PCS)		.017 (PCS)		.444 (PCS)	
Current staffing														
Adequate for optimal patient care	41 (78.8%)	11 (21.2%)	18 (34.6%)	34 (65.4%)	47 (90.4%)	5 (9.6%)	41 (78.8%)	11 (21.2%)	40 (76.9%)	12 (23.1%)	43 (82.7%)	9 (17.3%)	44 (84.6%)	8 (15.4%)
Not adequate	66 (86.8%)	10 (13.2%)	31 (40.8%)	45 (59.2%)	72 (94.7%)	4 (5.3%)	72 (96%)	3 (4%)	63 (84%)	12 (16%)	67 (89.3%)	8 (10.7%)	66 (88%)	9 (12%)
p-value (Test)	.230 (PCS)		.480 (PCS)		.484 (F) .344 (PCS)		.002 (PCS)		.316 (PCS)		.280 (PCS)		.582 (PCS)	
Currently offer structured screening for mental health conditions														
Never	86 (86%)	14 (14%)	38 (38%)	62 (62%)	97 (97%)	3 (3%)	89 (89%)	11 (11%)	83 (83.8%)	16 (16.2%)	88 (88.9%)	11 (11.1%)	89 (89.9%)	10 (10.1%)
Sometimes/regularly	10 (66.7%)	5 (33.3%)	5 (33.3%)	10 (66.7%)	11 (73.3%)	4 (26.7%)	13 (86.7%)	2 (13.3%)	10 (66.7%)	5 (33.3%)	10 (66.7%)	5 (33.3%)	10 (66.7%)	5 (33.3%)
p-value (Test)	.127 (F) .060 (PCS)		.728 (PCS)		.005 (F) <.001 (PCS)		.678 (F) .790 (PCS)		.148 (F) .110 (PCS)		.036 (F) .021 (PCS)		.027 (F) .013 (PCS)	
% work hours providing clinical pharmaceutical care														
≤ 50%	75 (89.3%)	9 (10.7%)	26 (31%)	58 (69%)	78 (92.9%)	6 (7.1%)	72 (85.7%)	12 (14.3%)	66 (79.5%	17 (20.5%)	73 (88%)	10 (12%)	74 (89.2%)	9 (10.8%)
> 50%	33 (73.3%)	12 (26.8%)	24 (53.3%)	21 (46.7%)	42 (93.3%)	3 (6.7%)	42 (95.5%)	2 (4.5%)	38 (84.4%)	7 (15.6%)	38 (84.4%)	7 (15.6%)	37 (82.2%)	8 (17.8%)
p-value (Test)	.019 (PCS)		.013 (PCS)		1.0 (F) .919 (PCS)		.136 (F) .094 (PCS)		.495 (PCS)		.577 (PCS)		.270 (PCS)	
COVID-19 impact on ability to provide clinical services														
None to moderate	73 (85.9%)	12 (14.1%)	41 (48.2%)	44 (51.8%)	81 (95.3%)	4 (4.7%)	74 (87.1%)	11 (12.9%)	70 (83.3%)	14 (16.7%)	72 (85.7%)	12 (14.3%)	76 (90.5%)	8 (9.5%)
Significant	35 (79.5%)	9 (20.5%)	9 (20.5%)	35 (79.5%)	39 (88.6%)	5 (11.4%)	40 (93%)	3 (7%)	34 (77.3%)	10 (22.7%)	39 (88.6%)	5 (11.4%)	35 (79.5%)	9 (20.5%)
p-value (Test)	.355 (PCS)		.002 (PCS)		.272 (F) .159 (PCS)		.381 (F) .307 (PCS)		.404 (PCS)		.644 (PCS)		.083 (PCS)	

*This table is also % by row, but some results are discussed in terms of % by column; Blue = % by columns

S.7 Statistically significant associations between any of the attitude statements and extent of current provision for any of the services

I find it uncomfortable to discuss medication therapy with PWMI

	Monitoring medication therapy	
	No/some patients	Most/all patients
Disagree	63 (75.9%)	20 (24.1%)
Agree	38 (92.7%)	3 (7.3%)
	.024 (PCS)	

I believe PWMI do not want to talk to a pharmacist about their symptoms or medications.

	Thorough assessment	
	No/some patients	Most/all patients
Disagree	71 (79.8%)	18 (20.2%)
Agree	35 (94.6%)	2 (5.4%)
	.038 (PCS)	

Pharmacists are qualified to recommend mental health medication changes to psychiatrists.

	Thorough assessment	
	No/some patients	Most/all patients
Disagree	34 (89.5%)	4 (10.5%)
Agree	17 (68%)	8 (32%)
	.050 (F) .034 (PCS)	
	CMM	
	No/some patients	Most/all patients
Disagree	37 (97.4%)	1 (2.6%)
Agree	16 (64%)	9 (36%)
	< .001	
	Facilitating health-system navigation	
	No/some patients	Most/all patients
Disagree	36 (94.7%)	2 (5.3%)
Agree	18 (72%)	7 (28%)
	.023 (F) .012 (PCS)	

Pharmacist involvement does not add value to the interdisciplinary mental health care team.

	Active follow up	
	No/some patients	Most/all patients
Disagree	109 (90.8%)	11 (9.2%)
Agree	4 (57.1%)	3 (42.9%)
	.029 (F) .006 (PCS)	

I feel confident in my ability to regularly provide clinical services to PWMI.

	Basic education	
	No/some patients	Most/all patients
Disagree	29 (50%)	29 (50%)
Agree	2 (16.7%)	10 (83.3%)
	.034 (PCS)	

	Advanced education	
	No/some patients	Most/all patients
Disagree	56 (96.6%)	2 (3.4%)
Agree	9 (75%)	3 (25%)
	.032 (F) .008 (PCS)	
	Active follow up	
	No/some patients	Most/all patients
Disagree	53 (91.4%)	5 (8.6%)
Agree	8 (66.7%)	4 (33.3%)
	.041 (F) .020 (PCS)	

I currently have adequate knowledge and training to regularly provide clinical services to PWMI.

	Thorough assessment	
	No/some patients	Most/all patients
Disagree	65 (92.9%)	5 (7.1%)
Agree	1 (20%)	4 (80%)
	< .001	
	Advanced education	
	No/some patients	Most/all patients
Disagree	68 (97.1%)	2 (2.9%)
Agree	1 (20%)	4 (80%)
	< .001	
	Active follow up	
	No/some patients	Most/all patients
Disagree	64 (91.4%)	6 (8.6%)
Agree	0	4 (100%)
	< .001	
	Monitoring medication therapy	
	No/some patients	Most/all patients
Disagree	59 (84.3%)	11 (15.7%)
Agree	0	5 (100%)
	< .001	
	CMM	
	No/some patients	Most/all patients
Disagree	62 (88.6%)	8 (11.4%)
Agree	2 (40%)	3 (60%)
	.021 (F) .003 (PCS)	
	Facilitating health-system navigation	
	No/some patients	Most/all patients
Disagree	61 (87.1%)	9 (12.9%)
Agree	2 (40%)	3 (60%)
	.027 (F) .005 (PCS)	

Rows: Disagree = strongly/somewhat disagree; Agree = somewhat/strongly agree

S.8 Statistically significant associations between any of the attitude statements and extent of motivation for any of the services

I believe PWMI do not want to talk to a pharmacist about their symptoms or medications.

	Thorough assessment	
	Not motivated	Motivated
Disagree	33 (37.1%)	56 (62.9%)
Agree	24 (66.7%)	12 (33.3%)
	.003 (PCS)	
	Facilitating health-system navigation	
	Not motivated	Motivated
Disagree	31 (34.8%)	58 (65.2%)
Agree	20 (55.6%)	16 (44.4%)
	.033 (PCS)	

Pharmacists are qualified to recommend mental health medication changes to psychiatrists.

	Thorough assessment	
	Not motivated	Motivated
Disagree	22 (57.9%)	16 (42.1%)
Agree	8 (32%)	17 (68%)
	.044 (PCS)	
	CMM	
	Not motivated	Motivated
Disagree	20 (52.6%)	18 (47.4%)
Agree	3 (12%)	22 (88%)
	.001 (PCS)	

Pharmacists are qualified to recommend mental health medication changes to family physicians.

	Thorough assessment	
	Not motivated	Motivated
Disagree	11 (78.6%)	3 (21.4%)
Agree	21 (37.5%	35 (62.5%)
	.006 (PCS)	
	Basic education	
	Not motivated	Motivated
Disagree	4 (28.6%)	10 (71.4%)
Agree	1 (1.8%)	55 (98.2%)
	.005 (F) < .001 (PCS)	

	Monitoring medication therapy	
	Not motivated	Motivated
Disagree	7 (50%)	7 (50%)
Agree	9 (16.1%)	47 (83.9%)
	.012 (F) .007 (PCS)	
	CMM	
	Not motivated	Motivated
Disagree	9 (64.3%)	5 (35.7%)
Agree	14 (25%)	42 (75%)
	.009 (F) .005 (PCS)	
	Facilitating health-system navigation	
	Not motivated	Motivated
Disagree	10 (71.4%)	4 (28.6%)
Agree	16 (28.6%)	40 (71.4%)
	.003 (PCS)	

Patients benefit from pharmacist involvement in providing care for their mental illness.

	Basic education	
	Not motivated	Motivated
Disagree	2 (66.7%)	1 (33.3%)
Agree	4 (4.4%)	86 (95.6%)
	.010 (F) < .001 (PCS)	
	CMM	
	Not motivated	Motivated
Disagree	3 (100%)	0
Agree	24 (26.7%)	66 (73.3%)
	.023 (F) .006 (PCS)	

Pharmacists should be as involved in mental health management as they are in chronic disease management for diabetes or cardiovascular conditions.

	Basic education	
	Not motivated	Motivated
Disagree	3 (60%)	2 (40%)
Agree	3 (4.1%)	71 (95.9%)
	.002 (F) <.001 (PCS)	

	Advanced education	
	Not motivated	Motivated
Disagree	5 (100%)	0
Agree	30 (40.5%)	44 (59.5%)
	.014 (F) .010 (PCS)	
	Monitoring medication therapy	
	Not motivated	Motivated
Disagree	3 (60%)	2 (40%)
Agree	11 (14.9%)	63 (85.1%)
	.037 (F) .011 (PCS)	
	CMM	
	Not motivated	Motivated
Disagree	4 (80%)	1 (20%)
Agree	17 (23%)	57 (77%)
	.016 (F) .005 (PCS)	
	Facilitating health-system navigation	
	Not motivated	Motivated
Disagree	4 (80%)	1 (20%)
Agree	21 (28.4%)	53 (71.6%)
	.033 (F) .016 (PCS)	

I feel confident in my ability to regularly provide clinical services to PWMI.

	Advanced education	
	Not motivated	Motivated
Disagree	37 (64.9%)	20 (35.1%)
Agree	3 (25%)	9 (75%)
	.011 (PCS)	
	Active follow up	
	Not motivated	Motivated
Disagree	36 (63.2%)	21 (36.8%)
Agree	3 (25%)	9 (75%)
	.015 (PCS)	

Rows: Disagree = strongly/somewhat disagree; Agree = somewhat/strongly agree
Columns: Not motivated = not motivated at all/somewhat unmotivated; Motivated = motivated/very motivated

S.9 Statistically significant associations between any of the attitude statements and extent of role agreement for any of the services

I believe PWMI do not want to talk to a pharmacist about their symptoms or medications.

	Thorough assessment	
	Disagree	Agree
Disagree	22 (26.2%)	62 (73.8%)
Agree	19 (55.9%)	15 (44.1%)
	.002 (PCS)	

Pharmacists are qualified to recommend mental health medication changes to psychiatrists.

	Thorough assessment	
	Disagree	Agree
Disagree	18 (52.9%)	16 (47.1%)
Agree	4 (17.4%)	19 (82.6%)
	.007 (PCS)	
	Advanced education	
	Disagree	Agree
Disagree	15 (42.9%)	20 (57.1%)
Agree	3 (13%)	20 (87%)
	.016 (PCS)	
	Facilitating health-system navigation	
	Disagree	Agree
Disagree	16 (48.5%)	17 (51.5%)
Agree	2 (9.1%)	20 (90.9%)
	.002 (PCS)	

Pharmacists are qualified to recommend mental health medication changes to family physicians.

	Thorough assessment	
	Disagree	Agree
Disagree	8 (66.7%)	4 (33.3%)
Agree	12 (22.6%)	41 (77.4%)
	.005 (F) .003 (PCS)	
	CMM	
	Disagree	Agree
Disagree	3 (27.3%)	8 (72.7%)
Agree	1 (1.8%)	55 (98.2%)
	.012 (F) .001 (PCS)	
	Facilitating health-system navigation	
	Disagree	Agree
Disagree	7 (63.6%)	4 (36.4%)
Agree	6 (11.5%)	46 (88.5%)
	< .001 (F)(PCS)	

Patients benefit from pharmacist involvement in providing care for their mental illness.

	Thorough assessment	
	Disagree	Agree
Disagree	3 (100%)	0
Agree	22 (25.9%)	63 (74.1%)
	.021 (F) .005 (PCS)	

Pharmacists should be as involved in mental health management as they are in chronic disease management for diabetes or cardiovascular conditions.

	Thorough assessment	
	Disagree	Agree
Disagree	5 (100%)	0
Agree	16 (22.9%)	54 (77.1%)
	.001 (F) <.001 (PCS)	
	Advanced education	
	Disagree	Agree
Disagree	4 (80%)	1 (20%)
Agree	13 (19.1%)	55 (80.9%)
	.009 (F) .002 (PCS)	
	CMM	
	Disagree	Agree
Disagree	3 (60%)	2 (40%)
Agree	0	72 (100%)
	<.001 (F)(PCS)	

Rows: Disagree = strongly/somewhat disagree; Agree = somewhat/strongly agree
Columns: Disagree = strongly disagree/disagree; Agree = agree/strongly agree

S.10 Total attitude scores compared to motivation, role agreement

MOTIVATION*	**Thorough assessment**		**Basic education**		**Advanced education**		**Active follow up**		**Monitoring medication therapy**		**CMM**		**Facilitating health-system navigation and collaboration**	
	Not motivated	Motivated	Not motivated	Motivated	Not motivated	Motivated	Not motivated	Motivated	Not motivated	Motivated	Not motivated	Motivated	Not motivated	Motivated
Total attitude scores														
Less positive	35 (72.9%)	13 (27.1%)	9 (18.8%)	39 (81.3%)	32 (66.7%)	16 (33.3%)	28 (58.3%)	20 (41.7%)	19 (39.6%)	29 (60.4%)	26 (54.2%)	22 (45.8%)	29 (60.4%)	19 (39.6%)
More positive	24 (30.4%)	55 (69.6%)	2 (2.5%)	77 (97.5%)	35 (44.3%)	44 (55.7%)	34 (43%)	45 (57%)	11 (13.9%)	68 (86.1%)	17 (21.5%)	62 (78.5%)	24 (30.4%)	55 (69.6%)
p-value (Test)	< .001		.003 (F) .002 (PCS)		.014 (PCS)		.095 (PCS)		< .001		< .001		< .001	
ROLE AGREEMENT**	**Thorough assessment**		**Basic education**		**Advanced education**		**Active follow up**		**Monitoring medication therapy**		**CMM**		**Facilitating health-system navigation and collaboration**	
	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree
Total attitude scores														
Less positive	25 (56.8%)	19 (43.2%)	0	46 (100%)	15 (37.5%)	25 (62.5%)	6 (14%)	37 (86%)	1 (2.4%)	41 (97.6%)	6 (13.6%)	38 (86.4%)	12 (30.8%)	27 69.2%)
More positive	16 (21.3%)	59 (78.7%)	1 (1.3%)	78 (98.7%)	16 (21.3%)	59 (78.7%)	6 (8%)	69 (92%)	1 (1.3%)	78 (98.7%)	1 (1.3%)	78 (98.7%)	12 (16%)	63 (84%)
p-value (Test)	< .001		1.0 (F) .444 (PCS)		.063 (PCS)		.350 (F) .303 (PCS)		1.0 (F) .647 (PCS)		.008 (F) .005 (PCS)		.066 (PCS)	

*Not motivated = not motivated at all/somewhat unmotivated; Motivated = motivated/very motivated **Disagree = strongly disagree/disagree; Agree = agree/strongly agree

S.11 Degree of impact of insufficient training or resources compared to confidence and perceived knowledge

	Insufficient training		**Insufficient knowledge**		**Lack of Clinical Tools**	
	No/slight impact	Mod/significant impact	No/slight impact	Mod/significant impact	No/slight impact	Mod/significant impact
I feel confident in my ability to regularly provide clinical services to patients with mental illness.						
Strongly/somewhat disagree	8 (14%)	49 (86%)	8 (14%)	49 (86%)	6 (10.5%)	51 (89.5%)
Somewhat/strongly agree	3 (25%)	9 (75%)	4 (36.4%)	7 (63.6%)	1 (9.1%)	10 (90.9%)
p-value (Test)	.390 (F) .346 (PCS)		.094 (F) .075 (PCS)		1.0 (F) .886 (PCS)	
I currently have adequate knowledge and training to regularly provide clinical services to patients with mental illness.						
Strongly/somewhat disagree	11 (15.9%)	58 (84.1%)	9 (13%)	60 (87%)	9 (13%)	60 (87%)
Somewhat/strongly agree	2 (40%)	3 (60%)	2 (50%)	2 (50%)	0	4 (100%)
p-value (Test)	.210 (F) .172 (PCS)		.105 (F) .045 (PCS)		1.0 (F) .440 (PCS)