

COMMUNITY PHARMACISTS' EXPERIENCES WITH THE
SASKATCHEWAN MEDICATION ASSESSMENT PROGRAM (SMAP)

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By

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ABSTRACT

Objectives: The Saskatchewan Medication Assessment Program (SMAP) is a community pharmacy based medication assessment program introduced in 2013, which has not been formally evaluated. The objectives of this research were to (1) determine the extent to which pharmacists believe they are fulfilling the purposes of the SMAP; (2) describe pharmacists' perceptions of the barriers and facilitators to fulfilling the purposes of the SMAP; and (3) determine strategies pharmacists would like to see implemented to assist them to provide the SMAP.

Methods: Mixed methods study in which a web-based questionnaire was distributed by the Pharmacy Association of Saskatchewan. Pharmacists were eligible to participate if they practiced in a community pharmacy setting. The questionnaire consisted of a combination of 53 Likert-scale and free-text questions.

Results: The survey had 228 respondents (response rate = 20.3%, n=228/1124). The majority of respondents were staff pharmacists (64.3%, n=128/199) who worked 31-40 hours per week (57.5%, n=115/200), and completed between one and five SMAP assessments in a typical month (79.2%, n=164/207). Most respondents were in agreement that the SMAP was meeting its intended purposes. For instance, 89.7% (n=192/214) of respondents agreed or strongly agreed that SMAP assessments improved medication safety for seniors. Pharmacists also agreed that they were confident in identifying drug related problems (88.2%, n=172/195) and that they were comfortable making recommendations to physicians (81.7%, n=156/191). However, respondents also revealed that they sometimes have trouble identifying drug related problems because they do not have enough of the patients medical history (67.2%, n=131/195) and that they do not regularly contact the physician to request additional patient information (89.7%, n=175/195). Respondents reported that a lack of time, patients not meeting eligibility criteria, and patients having difficulty coming into the pharmacy as common barriers for providing SMAP assessments. Respondents also reported that good teamwork, employer support, and a belief that SMAP assessments improve patient care helped them to provide SMAP assessments.

Conclusions: Pharmacists in Saskatchewan perceive that the SMAP is fulfilling its intended purposes, however the findings revealed that community pharmacists experience several barriers to providing SMAP assessments that they wish to be addressed to improve the provision and quality of the program.

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DEDICATION

My thesis is dedicated to my late uncle, Beverly E. Allen, as it was his encouragement that led me to pursue a career in the profession of pharmacy, and for this I will be forever grateful.

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LIST OF ABBREVIATIONS

AGS	American Geriatrics Society
ANOVA	Analysis of Variance
BC	British Columbia
BCMMP	British Columbia Medication Management Program
CPhA	Canadian Pharmacists Association
DRP	Drug related problem
DTP	Drug therapy problem
eHR	Electronic health record
FPAF	Follow-up patient assessment fee
GERD	Gastroesophageal reflux disease
GP	General Practitioner
GPPC	General Practitioner-Pharmacist Collaboration
LDL	Low-density lipoprotein
MAC	Medication Assessment Centre
MAF	Medication assessment fee
MAI	Medication Appropriateness Index
MCA	MedsCheck Annual
MR-PC	Medication Review – Pharmacist Consultation
MR-S	Medication Review – Standard
MTM	Medication Therapy Management
MUR	Medicines use review
OTC	Over-the-counter
PACT	Partnership to Assist with Cessation of Tobacco
PAS	Pharmacy Association of Saskatchewan
PIP	Pharmaceutical Information Program
PPMI	Pharmacy Practice Models Initiative
QUIT	Quit Using and Inhaling Tobacco
RCT	randomized control trial
REB	Research Ethics Board

SCPP	Saskatchewan College of Pharmacy Professionals
SMAP	Saskatchewan Medication Assessment Program
TAR	Tobacco Addiction Recovery
UK	United Kingdom
USA	United States of America

CHAPTER 1

INTRODUCTION

Within the last decade there has been a push for pharmacists to take on more clinical roles to improve patients' health and quality of life.^{1,2} As their knowledge and skills are recognized, pharmacists are being better utilized and their scope of practice is expanding.¹ An emerging trend in pharmacy is the expansion of pharmacists' clinical roles through government-funded programs that pay for pharmacists' services such as minor ailment management, enhanced prescriptive authority, administering drugs by injection, and medication assessments.¹ Community pharmacists are in a particularly good position to provide these new clinical services, as they are highly accessible to the public.¹

One new professional service that has become particularly common in community pharmacies across Canada is the medication assessment.³ The goals of this service are to update patient's medication lists and also to ensure that patients are receiving optimal drug therapy by identifying and resolving drug therapy problems (DTPs). Most provinces have slightly different versions of community pharmacy-based, pharmacist-led medication assessment programs for patients who meet program-specific eligibility criteria.³ Many provincial governments fund the medication assessment programs and pharmacies are paid for providing these services.³ The Saskatchewan Medication Assessment Program (SMAP) was introduced on July 8th, 2013.^{4,5}

There is limited evidence that these types of medication assessment programs improve patient health outcomes, such as reducing hospitalizations and mortality.⁶⁻¹² However, there are several studies that suggest these programs may be helpful to identify and resolve DTPs and improve prescribing quality, quality of life scores, medication appropriateness index (MAI) scores, medication adherence, patient knowledge, laboratory values, pharmacists' professional fulfillment, patient loyalty to a pharmacy, and satisfaction scores for both clinicians and patients.^{6-8,13-15} Unfortunately, these studies are extremely heterogeneous with respect to the types of medication assessment programs that were evaluated (i.e., programs can differ significantly in depth of inquiry, patient support, and the quality of recommendations provided), the endpoints that were measured, and the research methodologies that were used.⁶⁻¹⁶ Consequently, it is

impossible to reliably translate the evidence from these studies to other medication assessment programs, such as the SMAP in Saskatchewan.

The SMAP is a relatively new medication assessment program that has not yet been formally evaluated. The purpose of this study was to take a first step in evaluating the SMAP by exploring pharmacists' experiences with, and perceptions of, the SMAP. The goal is to determine the extent to which pharmacists believe they are fulfilling the purposes of the SMAP outlined by the Saskatchewan Ministry of Health^{4,5}, identify the barriers and facilitators to fulfilling the purposes of the SMAP, and determine strategies pharmacists would like to see implemented to help them to fulfill the purposes of the SMAP.

CHAPTER 2

BACKGROUND AND LITERATURE REVIEW

2.1 Changing Pharmacy Practice

The focus of community pharmacy practice, and pharmacy practice in general, has shifted several times in history.¹⁷ Holland and Nimmo summarized the history as:

*The story tells of frequent, dramatic changes in practice spurred by advances in technology, by economic alterations, and by legislation. Between 1860 and the late 1990s, the profession's preferred orientation has moved from manufacturing, to compounding, to distribution, to a more clinical role, and finally to pharmaceutical care. Seen in retrospect, these shifts seem so large as to represent a series of entirely different professions bound only by a common name and an association with a common product, medications.*¹⁷

In 1990 an article was published by Hepler and Strand that made the case for the need for pharmacy practice to adapt.¹⁸ The authors suggested that pharmacists focused too much on tangible drug products, rather than providing direct patient care and taking responsibility for individual patient's drug therapy outcomes.¹⁸ Recognizing the emerging issue of preventable drug-related morbidity and mortality facing healthcare, they introduced and defined the concept of patient-centred pharmaceutical care.¹⁸ Hepler and Strand defined pharmaceutical care as, "... the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life".¹⁸ They also stated that pharmaceutical care:

*"... involves the process through which a pharmacist cooperates with a patient and other professionals in designing, implementing, and monitoring a therapeutic plan that will produce specific therapeutic outcomes for the patient".*¹⁸

Hepler and Strand suggested that it was time for pharmacists to make a greater contribution to the healthcare system and secure their professional role.¹⁸ They believed that this could be achieved by the provision of pharmaceutical care services that were individualized and focused on the patient's wellbeing.¹⁸

In January 2007 the Blueprint Task Force was established in Canada.² The goal of the Task Force was to outline a vision for pharmacy to align the efforts of Canadian pharmacists and pharmacy organizations with the healthcare needs of Canadians.² The overarching message of the Vision for Pharmacy was the desire for, “Optimal drug therapy outcomes for Canadians through patient-centred care”.² The task force recognized that the healthcare needs of Canadians were changing and as such there was increased pressure on the healthcare system.² It was argued that pharmacists were in a unique position to help improve this situation given their expertise in drug therapy.² Ultimately it was agreed that the practice of pharmacy must shift its focus from being product-centred to patient-centred in order to contribute optimally to the Canadian healthcare system.²

2.2 Common Clinical Services Offered in Community Pharmacy

Since the development of the Blueprint for Pharmacy in 2008, several programs have been created across Canada in an effort to move towards the Blueprint’s goals.² These programs include: minor ailment management, smoking cessation counselling, enhanced prescriptive authority, administering drugs by injection, and medication assessments.¹⁹

2.2.1 Minor Ailment Management

Pharmacists in Alberta, Saskatchewan, Manitoba, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador can assess and prescribe for a growing list of minor ailments.¹⁹ This is a relatively new and expanded scope of practice that permits community pharmacists to assess that a patient has made a correct self-diagnosis of a minor ailment and provide the patient with a prescription for a medication that they would otherwise be unable to access without an appointment with a physician or a nurse practitioner.²⁰

In Saskatchewan, pharmacists have been able to prescribe for minor ailments since February 1st, 2012.²¹ The original list of conditions that pharmacists in Saskatchewan could prescribe for included: acne, cold sores, and insect bites.²¹ The service has since been expanded to include: allergic rhinitis, atopic dermatitis, diaper dermatitis, dysmenorrhea, gastroesophageal reflux disease (GERD), headache, hemorrhoids, musculoskeletal strains and sprains, oral aphthous ulcers, oral thrush, impetigo, folliculitis, tinea corporis infection, tinea cruris skin infection, and tinea pedis infection.²⁰ The advantage of minor ailment prescribing by pharmacists

is that it allows patients access to effective medications to treat relatively minor, self-limiting conditions that often do not require a physician assessment.²⁰

2.2.2 Smoking Cessation Counselling

Most provinces fund smoking cessation programs that are provided to patients by a variety of healthcare practitioners, including pharmacists. The Canadian Pharmacists Association (CPhA) offers a continuing education program called the QUIT (Quit Using and Inhaling Tobacco) Smoking Cessation Program that is designed to enhance pharmacists' abilities to provide smoking cessation services.²² In Saskatchewan, the PACT (Partnership to Assist with Cessation of Tobacco) program was developed in 2004.²³ Initially PACT was designed to support community pharmacists in encouraging their patients to stop using tobacco products and later the program was expanded to all healthcare professionals in Saskatchewan.²³ Community pharmacists who become PACT certified are paid a fee by the provincial drug plan to provide their patients with smoking cessation counseling.²⁴ The Tobacco Addiction Recovery (TAR) program is also available in Saskatchewan and is similar to PACT, but TAR was developed specifically for smoking cessation in Aboriginal communities and the promotion of only scared tobacco use.²³

2.2.3 Enhanced Prescriptive Authority

Most Canadian provinces and territories have expanded pharmacists' traditional scope of practice and have granted pharmacists enhanced prescriptive authority.¹⁹ There are variances between each province, but the most common prescribing practices that can be undertaken by pharmacists include: providing emergency prescription refills, renewing or extending existing prescriptions, changing a drug dosage or formulation, and therapeutic substitution.¹⁹ Enhanced prescriptive authority activities enable pharmacists to reduce disruptions to drug therapy and avoid unnecessary physician or emergency room visits. Saskatchewan pharmacists have been providing enhanced prescriptive authority to their patients since March 4, 2011.²⁵

2.2.4 Administering Drugs by Injection

Pharmacists in British Columbia, Alberta, Manitoba, Ontario, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, and Saskatchewan can administer

drugs by injection.¹⁹ In Saskatchewan, pharmacists began providing influenza vaccinations in October 2015 and pharmacies are paid a fee of \$13.00 by the Drug Plan and Extended Benefits Branch.²⁶ Saskatchewan pharmacists are able provide other intramuscular and subcutaneous injections, however the fee to provide the service must be paid by the patient.²⁶

By having pharmacists offer injections in community pharmacies, patients have the option to receive immunizations such as the influenza vaccine at a time and in a location that is convenient for them. The service also avoids the hassle of having patients get a prescription for an injectable drug from a physician, having it dispensed at a pharmacy, and then making another appointment to have the drug administered by the physician. Administration of injectable drugs by pharmacists has been shown to increase vaccination rates and has the potential to improve adherence to injectable drug therapy and free up physician time.²⁷

2.2.5 Medication Assessments

A medication assessment, also referred to as a medication review, has been defined as: “a structured critical examination of a patient’s medications with the objectives of reaching an agreement with the patient about their treatment and optimizing the impact of medications on the patient’s health outcomes”.⁷ More specifically a medication assessment is a clinical service in which a pharmacist interacts with a patient or caregiver to collect a detailed medication history, and uses that information (along with additional patient history collected from other sources) to ensure that the patient’s medications are all indicated, safe, and effective. In addition, the pharmacist ensures that patients understand why they are taking their medications, how to take them, and encourages them to be adherent.

In Canada, eight provinces have provincially funded medication assessment programs: British Columbia, Alberta, Saskatchewan, Ontario, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador.³ This is not a particularly new service for pharmacists to provide, but having it offered in a community pharmacy (and funded by provincial Ministries of Health) is a relatively new practice. Ontario’s MedsCheck program, introduced in 2007, was the first government funded medication assessment program in Canada.²⁸

The Pharmacy Association of Saskatchewan (PAS) developed a program for compliance packaging and medication assessments for homecare and mental health patients that was implemented in 2010.^{29,30} Under this program, community pharmacies are reimbursed by the

provincial drug plan for completing a yearly medication assessment, along with monthly compliance packaging.^{29,30} A second medication assessment program, the Saskatchewan Medication Assessment Program (SMAP), was introduced in July 2013.^{4,5} Under SMAP, community pharmacies are remunerated for pharmacists' completing medication assessments with Saskatchewan residents over the age of 65 who also meet additional eligibility criteria (e.g., taking five or more chronic medications, or taking an anticoagulant listed in section 20:12.04 of the Saskatchewan Formulary, or taking a medication listed in the most current American Geriatrics Society (AGS) Beers Criteria for Potentially Inappropriate Use in Older Adults).^{4,5}

2.3 What Happens During a Medication Assessment?

Healthcare providers other than pharmacists can perform medication assessments, however, pharmacists are generally considered to be the most qualified professional to offer this service due to their specialized drug therapy knowledge and training. Medication assessments are offered in a variety of settings, ranging from hospitals, physician clinics, primary health centres, and, most recently, in community pharmacies.

The depth of inquiry and the subsequent quality of recommendations and patient support provided during the medication assessment has been known to vary significantly amongst medication assessment programs. Hatah et al recognized three discreet types of medication assessments that are typically offered by pharmacists, which they categorized as: prescription reviews, adherence support reviews, and clinical reviews.⁷

At one end of the spectrum (i.e., the "prescription reviews"), the service provided is quite superficial and technical in nature. These prescription reviews focus on confirming that no discrepancies exist between the patient's medication list on file in the pharmacy or clinic and the medications the patient is actually taking.⁷ This type of service is also commonly referred to as medication reconciliation, particularly when it is provided in an institutional or hospital setting.

"Adherence support reviews" are a slightly more advanced assessment that, in addition to the steps performed in the "prescription review", the pharmacist also ensures that the patient knows what each medication is for, how to take each medication properly, and that there are no obvious adverse effects, contraindications or drug interactions.⁷ The MedsCheck program in Ontario is an example of an adherence support review.³¹

At the other end of the spectrum is the “clinical review”, which is the most in-depth and comprehensive type of medication assessment. It entails a thorough patient interview and examination of relevant patient medical records and laboratory results, with the goal of collecting a detailed and comprehensive patient history related to medication use and chronic disease management.⁷ As with “prescription reviews” and “adherence support reviews”, “clinical reviews” aim to: (1) confirm that no discrepancies exist between the patient’s medication list on file in the pharmacy or clinic and the medications the patient is actually taking; and (2) ensure that the patient knows what each medication is for, how to take each medication properly, and that there are no obvious adverse effects, contraindications or drug interactions.⁷ However, these clinical reviews also aim to ensure that the overall medication regimen is appropriate, effective and safe, by identifying and resolving any drug therapy problems.⁷ There are eight recognized types of drug therapy problems that might be identified when performing a clinical review: (1) unnecessary drug therapy, (2) wrong drug, (3) dose is too low, (4) dose is too high, (5) adverse drug reaction, (6) non-adherence, (7) additional drug therapy needed, and (8) interaction with another drug, a disease, a food, or a lab test.⁴

The medication assessment services offered in community pharmacies in Canada vary significantly from province to province, and can fall anywhere on this spectrum, ranging from prescription reviews to clinical reviews.³ Alberta and British Columbia have both developed two medication assessment services that differ on the level of assessment offered.^{32,33} In Alberta there is a Comprehensive Annual Care Plan offered to patients with “complex needs” that would fit the description of a clinical review and a Standard Medication Management Assessment that would be considered an adherence support review.³² Pharmacists in British Columbia initially offer a Medication Review – Standard (MR-S), similar to an adherence support review, and if a medication management issue is identified a Medication Review – Pharmacist Consultation (MR-PC), similar to a clinical review, is offered to the patient.³³

Several factors can come into play when determining which patients will receive a medication assessment in a community pharmacy, including: whether or not the patient meets the eligibility criteria for the medication assessment program offered in the jurisdiction; the willingness of the patient to participate; the pharmacists’ judgment of the potential benefit of the service to the individual patient; and the availability of the pharmacist and patient at a mutually acceptable time. In Ontario a study was done to determine what factors affect whether an eligible

patient receives a community pharmacists-led medication review under the annual MedsCheck service.³¹ All Ontario residents taking three or more prescription medications for chronic conditions are eligible for a medication assessment under the MedsCheck program.³¹ The study population was limited to residents over 65 years of age because the drug claim data in Ontario was only available for seniors.³¹ Utilizing data from April 2012 to March 2013, a statistical model was used to determine which factors affected whether or not an eligible senior received a MedsCheck assessment.³¹ It was found that factors increasing the likelihood of receiving a MedsCheck included: having a prior MedsCheck service (OR = 3.03; 95% CI, 2.98-3.09); having a new prescription claim on the eligible claim date for a MedsCheck assessment (OR = 1.78; 95% CI, 1.74-1.81); high risk medication use (OR = 1.09; 95% CI, 1.07-1.12); and a diagnosis of hypertension (OR = 1.18; 95% CI, 1.15-1.21).³¹ Factors decreasing the likelihood of receiving a MedsCheck assessment included: a diagnosis of dementia (OR = 0.57; 95% CI, 0.55-0.60), depression (OR = 0.90; 95% CI, 0.86-0.95), or heart failure (OR = 0.88; 95% CI, 0.86-0.91); older age (OR = 0.72; 95% CI, 0.69-0.74 for 86+ years vs. 66-70 years); female sex (OR = 0.90; 95% CI, 0.89-0.92); patients receiving potentially inappropriate medications (OR = 0.90; 95% CI, 0.88-0.91) or a large number of medications (OR = 0.44; 95% CI, 0.43-0.46 for 11+ medications vs. 0-4 medications); patients using a pharmacy that had a high volume of claims (OR = 0.65; 95% CI, 0.63-0.67 for highest vs. lowest volume); and patients living in a rural community (OR = 0.74; 95% CI, 0.71-0.77 for rural vs. major urban).³¹ The research showed that MedsCheck assessments might not, in all cases, be reaching the patients that need them most.³¹ It was suggested that eligibility criteria could be adjusted to better align with patient need and that, “policies regarding current and future medication review programs may need to evolve to ensure that those at greatest need receive timely and comprehensive medication reviews”.³¹

2.4 How common are Medication Assessment Programs in Canada?

Eight provinces in Canada have government-funded, pharmacist-led medication assessment programs that are offered by community pharmacists.³ The first of these programs was Ontario’s MedsCheck program that was introduced in April 2007, which is intended to include a face-to-face meeting with the patient and their community pharmacist that takes approximately 20-30 minutes.³⁴ During the first 6 years (2007 – 2013) of the program a total of 1,498,440 Ontario residents received a MedsCheck Annual (MCA).³⁵ In the first month of the

program 1494 of the 3132 pharmacies in Ontario had provided at least one MCA.³⁵ The number of MCA claims and number of participating pharmacies has increased almost every year.³⁵

Community pharmacy based medication assessment services have subsequently expanded across Canada. British Columbia, Alberta, Saskatchewan, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador have established similar programs.³

The Saskatchewan Medication Assessment Program (SMAP) was implemented on July 8th, 2013.^{4,5} Under this program, medication assessments are completed by community pharmacists for Saskatchewan residents who are 65 years or older and living in their own residence, taking five or more chronic medications, or taking an anticoagulant medication listed in section 20:12.04 of the Saskatchewan Formulary, or taking a medication listed in the most current American Geriatrics Society (AGS) Beers Criteria for Potentially Inappropriate Use in Older Adults.^{4,5} On April 1st, 2014 the SMAP eligibility criteria was expanded to include people who are 65 years or older and living in a personal care home, approved private service home or group home.⁵

The SMAP was intended to be a comprehensive medication assessment service, similar to the “clinical reviews” described previously. As such, SMAP guidelines require that, at a minimum, all the following steps be completed with patients: (1) confirm that no discrepancies exist between the patient’s medication list on file in the pharmacy and the medications the patient is actually taking; (2) ensure that the patient knows what each medication is for, how to take each medication properly; and (3) ensure that the overall medication regimen is appropriate, effective and safe, by identifying any drug therapy problems.⁴ The provincial drug plan pays the pharmacy a medication assessment fee (MAF) of \$60 for an initial medication assessment, which can be completed with each eligible patient annually.⁵ The SMAP also allows for two follow-up assessments each year for a follow-up patient assessment fee (FPAF) of \$20 per assessment.⁵ A follow-up assessment is indicated when: the patient is discharged from a hospital or convalescent care facility; changes have been made to a patient’s medications; a new medication has been added; there is evidence of non-adherence; the patient transfers their medications to another pharmacy; or to confirm that a drug therapy problem discovered in the initial medication assessment or first follow-up has been resolved.⁵ In situations where the pharmacist deems that the patient would benefit from compliance packaging, patients who have received a SMAP are

eligible for compliance packaging coverage and the provincial drug plan can be billed \$25 per four weeks of compliance packaging.⁵

2.5 Review of the Research on Community Pharmacy-Based Medication Assessment Programs

2.5.1 Evidence for Impact on Patient Outcomes

Research into medication assessments provided by community pharmacists have looked at a variety of different medication assessment services and have measured diverse endpoints.⁶⁻¹⁶ Three systematic reviews have been published that aimed to summarize the evidence for pharmacist-led medication assessments.⁶⁻⁸ The first systematic review looked at the impact of medication assessments completed collaboratively between the patients' general practitioner and community pharmacist.⁶ Eighty-three articles, including studies from Europe, Canada, Australia, New Zealand, and the United States, were included in the review.⁶ Most articles did not report objective clinical outcomes, however nine articles did report hospital admission rates.⁶ Of the articles reporting on hospital admission rates, three studies showed a statistically significant decrease in hospital admissions, one study showed a statistically significant increase, and the remaining studies did not have statistically significant results.⁶ Of the three studies showing a significant decrease in hospital admission, one showed a 79% reduction in hospitalization (hazard ratio = 0.21, 95% CI 0.05 – 0.87) for warfarin associated bleeding in Australian war veterans⁹, one showed a 45% reduction in hospitalization (hazard ratio = 0.55, 95% CI 0.39 – 0.77) for heart failure¹⁰, and one showed the overall hospital readmission rate was lower for patients receiving the intervention (36.2% vs. 45.5%; adjusted odds ratio = 0.63, 95% CI 0.42 – 0.94)¹¹. The study showing a significant increase in hospitalization, found a 30% increase in readmission in patients receiving a medication assessment after initial discharge from hospital (rate ratio = 1.30, 95% CI 1.07 – 1.58), but the study was not able to determine why there was an increase in readmissions.¹² Aside from these hospital admission outcomes, this systematic review found that medication assessments performed collaboratively between community pharmacists and general practitioners consistently resulted in a decrease in the number of DTPs, improved prescribing, improved quality of life scores, improved MAI scores, increased compliance and patient knowledge, improved laboratory values, and positive satisfaction outcomes for both clinicians and patients.⁶

The second systematic review and meta-analysis by Hatah et al aimed to summarize the impact of a community pharmacist-led fee-for-service adherence support review or clinical medication review.⁷ Studies looking at outcomes from unfunded medication assessment services that existed only for the purposes of the trial were excluded, because they may not reflect actual clinical practice.⁷ Thirty-six studies that took place in the USA, UK, Canada, Netherlands, Australia, Belgium, and Denmark were selected for inclusion in the review, 21 of which reported on the primary outcomes (blood pressure, LDL cholesterol, hospitalization rates and mortality) of interest and 32 of which reported on the secondary outcomes (adherence, economic implications and quality of life).⁷ Several of the studies involved medication assessments (n=30) that focused on specific disease states (e.g., asthma, diabetes, hypertension, hyperlipidemia, etc.) and the other medication assessments (n=6) were aimed at specific groups of patients (e.g., elderly, recently discharged from hospital, and those with polypharmacy).⁷ The medication assessments took place in either a community pharmacy (42.9%), a community pharmacy or the patient's home (23.8%), at GP clinics/surgeries or community health centres (19%), or at the patient's home (14.3%).⁷ Meta-analysis showed that the medication assessments significantly improved achievement of target blood pressure (OR 3.50, 95% CI 1.58, 7.75, P=0.002) and LDL cholesterol (OR 2.35, 95% CI 1.17, 4.72, P=0.02), but not hospitalization rates (OR 0.69, 95% CI 0.39, 1.21, P=0.19) or mortality (OR 1.50, 95% CI 0.65, 3.46, P=0.34).⁷ When looking at the outcomes separately for medication assessments classified as adherence support reviews or clinical medication reviews, a statically significant reduction in hospitalizations was found in patients receiving the more in-depth and comprehensive clinical medication review (OR 0.46, 95% CI 0.26, 0.83, P=0.01), but not the adherence support reviews (OR 0.88, 95% CI 0.59, 1.32, P=0.54).⁷ In addition, this systematic review found that the medication assessments improved patient adherence in 11 of the 19 studies.⁷ No conclusions could be made for economic implications and quality of life due to a lack of available data in the studies.⁷

The third systematic review and meta-analysis included 32 studies which looked at the outcomes of pharmacist-delivered medication reviews that were aimed at optimizing older patients' drug regimens.⁸ The review included studies from the United Kingdom, the United States, Australia, Canada, Singapore, and one study involving multiple European countries.⁸ The interventions were delivered in a variety of settings including: hospitals, clinics, primary care clinics, community pharmacies, patients' homes, and a nursing home.⁸ The primary outcome

was all-cause hospital admissions and the secondary outcomes were mortality and the number of drugs prescribed.⁸ Seventeen studies reported on all-cause hospital admissions and meta-analysis of the results showed the interventions had no significant effect (relative risk (RR) = 0.99; 95% CI 0.87, 1.14; P = 0.91).⁸ Twenty-two studies reported on mortality and, similarly, meta-analysis showed the intervention had no significant effect (RR = 0.96; 95% CI 0.82, 1.13; P = 0.65).⁸ A meta-analysis of 15 studies providing data on prescribing showed that the interventions reduce the number of drugs prescribed (weighted mean difference = -0.48; 95% CI -0.89, -0.07).⁸ Only one-third of studies measuring quality of life found a benefit of the interventions on quality of life and none of them showed a statistically significant benefit.⁸

In Canada, two community pharmacy-based medication assessment pilot programs were formally evaluated, the British Columbia Medication Management Program (BCMMP) and the Alberta Pharmacy Practice Models Initiative (PPMI).^{13,14} The BCMMP pilot project was qualitatively evaluated by interviewing pharmacists, physicians, and patients over the phone or in focus groups.¹³ This pilot program was in place from September 2010 to January 2012.¹³ All residents of British Columbia were eligible to receive a medication assessment through this program as long as they were taking at least one medication.¹³ Pharmacists in community pharmacies provided the medication assessments. A total of 88 people participated in a focus group or interview among all of the stakeholder groups (patients, physicians and pharmacists) involved.¹³ Benefits of the BCMMP that were recognized by participants of the focus groups included: interviewee's anecdotal perception that the program improved patient's understanding of their medications; providing an integrative review of a patient's medication profile; patients were provided with advice on how to use their medications appropriately to increase effectiveness and reduce adverse effects; reviewing over-the-counter (OTC) medications that are typically over-looked; increasing pharmacists professional fulfillment; increasing patient loyalty to a pharmacy; and providing physicians with updated medication lists.¹³ Drawbacks of the service were also recognized, including: not being beneficial to patients that were found to lack medication issues; potentially jeopardizing physician-patient relationships; potentially increasing patient confusion about their medications; increasing demand on pharmacists time; pharmacists lacking patient information to make informed recommendations; not being financially feasible for pharmacies to provide the service; and physicians not being compensated for the time that they were required to spend reviewing and responding to pharmacists recommendations.¹³

Overall, it was agreed that the BCMMP pilot project had potential to be a valuable service if modifications were made addressing the drawbacks identified.¹³

The Alberta PPMI pilot project ran from March 1, 2009 to February 28, 2010.¹⁴ The PPMI implemented a medication management model, in which 190 participating pharmacists conducted patient assessments, created care plans, evaluated outcomes, and offered additional interventions including prescribing (adapting a prescription, prescribing in an emergency, and additional authorization to prescribe), administering a drug by injection, chronic disease education (diabetes), and recommendations or referrals.¹⁴ A total of 11,326 patients participated in the PPMI program and 21,377 DTPs were identified and resolved during the 12 months that the PPMI pilot project took place.¹⁴ After the conclusion of PPMI, a program evaluation was performed to assess the outcomes. The clinical outcomes were assessed based on the individual pharmacist's assessment of the patient's condition status from baseline to the most recent follow-up.¹⁴ The condition status could be classified as unchanged, improved, or declined.¹⁴ Of the 11,326 patients that received PPMI services, 2,913 had a follow-up completed in which 4,952 conditions were assessed.¹⁴ Of these conditions 737 were assigned a status of 'initial' meaning that no interventions had been made, therefore they were not included in the assessment of clinical outcomes.¹⁴ For the remaining 4,215 conditions, 1,554 (36.99%) had a status of unchanged, 2,388 (55.47%) had a status of improved, and 273 (6.48%) had a status of declined.¹⁴ Investigators saw this is a positive result and concluded that PPMI had been successful in improving patient's clinical outcomes.¹⁴ The assessment of the clinical outcomes was quite subjective and may have suffered significantly from researcher bias, as pharmacists themselves were subjectively evaluating the effects that their interventions had on patients' disease status. Part of the program evaluation also included an assessment of patient satisfaction by surveying patients who participated in the program.¹⁴ The results were quite positive, with 84% of patients agreeing (38.8%) or strongly agreeing (45.2%) that the service they received was just about "perfect".¹⁴

In an Ontario study, a community pharmacist was hired to provide enhanced medication management services, like MedsCheck, to patients within a single community pharmacy.¹⁵ The purpose of the study was to determine if the pharmacist could generate enough revenue by exclusively working to provide billable services to pay their own salary.¹⁵ The researchers measured additional endpoints such as: numbers of DTPs that were resolved and patient's

satisfaction with the service.¹⁵ In a four-month span, from April 4th to July 27th, 2012, the pharmacist generated enough revenue to cover his/her full-time salary.¹⁵ A total of 336 patients had their medications reviewed, resulting in the resolution of 674 DTPs.¹⁵ Fifty patients were chosen randomly to rate their satisfaction with several aspects of the service and the results showed that overall patients were very satisfied.¹⁵

A British Columbia study was also published recently that assessed whether or not the provincially funded medication review programs significantly modified prescription drug use for the patients who received a review.¹⁶ The investigators used the BC PharmaNet system, the provincial drug claims database, to collect data on medication review billings and prescription drug dispensations for residents of BC.¹⁶ Patient data was included in the study if the patient had received their first medication review between May 1, 2012 and June 30, 2013.¹⁶ Twelve months of data was analyzed for each individual included in the study, which was the 12 months following their first medication review.¹⁶ Between May 1, 2012 and June 30, 2013, pharmacists in BC billed for 266,786 MR-S reviews for 147,770 unique patients and 31,533 MR-PC reviews for 16,006 unique patients.¹⁶ The investigators separated the data for patients receiving a MR-S and MR-PC to determine if outcomes differed for the two types of reviews and had determined immediate changes to the outcomes of interest as well as the trends in the following twelve months.¹⁶

Analysis of the BC PharmaNet data did not provide evidence that the medication assessment programs were altering utilization of medication as intended. For example, there was a statistically significant increase in total drug expenditure per capita per month for both MR-S (\$7.49 per capita per month; 95% CI, \$0.41-\$14.60; P = 0.048) and MR-PC (\$11.98 per capita per month; 95% CI, \$3.92-\$20.04; P = 0.007) reviews.¹⁶ There were also no significant changes in the continuation of many long-term chronic medications, with the exception of a small increase in the continuation of statins of 0.52% (95% CI, 0.19%-0.86%; P = 0.005).¹⁶ As well, in contrast to what the investigators hoped to find, the number of potential inappropriate prescriptions dispensed to patients 65 years and older after their first medication review increased (MR-S, 13.32 prescriptions per 1000 patients; 95% CI, 4.09-22.55; P = 0.009; and MR-PC, 16.48 prescriptions per 1000 patients; 95% CI, 1.93-31.02; P = 0.035).¹⁶ Investigators also found that neither type of medication review helped to decrease the number of visits that a patient made to the pharmacy to refill prescriptions or increase the patients loyalty to a particular

pharmacy.¹⁶ Overall the investigators concluded that neither the MR-S nor the MR-PC reviews had had any meaningful impact on the prescription drug use outcomes that were investigated in the study.¹⁶ They suggested that since medication review services can be costly, they needed to be modified and evaluated to ensure they are adding value to health care.¹⁶

2.5.2 Barriers and Facilitators to providing medication assessments in community pharmacies

Despite the lack of strong evidence to show that community pharmacist-led medication assessment services have a clinically meaningful impact on patient health outcomes, the services have been frequently implemented across Canada. Consequently, some information exists regarding the barriers and facilitators that have been experienced by pharmacists who have attempted to provide these services.

Researchers from the University of Waterloo conducted a literature review to compile a list of the barriers, facilitators and operational requirements that have been identified when implementing new pharmacist-led clinical programs and services (such as medication assessments) in community pharmacies.³⁶ The barriers identified included: limited access to patient medical records; lack of co-operation with physicians; lack of remuneration; suspected misuse/overuse of services; low patient awareness of services; patient privacy concerns; pharmacy layouts that do not facilitate the provision of the services; lack of pharmacist time; and difficulties with documentation.³⁶ The facilitators identified that made it easier to provide the services included: a blame-free environment; team building and upward communication; increased working hour overlaps with multiple pharmacists; external support from upper management; interest and motivation of staff; staff understanding of the importance of the services; strong communication with physicians and patients; adequate training of staff; re-evaluation of roles and responsibilities; clear understanding of workflow processes/algorithms; and pharmacist knowledge and skills to administer the services.³⁶

Additional important operational requirements identified included access to the internet, proper software, a private counselling area, access to published research, and access to electronic tools/resources.³⁶ Research specifically considering medication assessment services offered in community pharmacies have identified similar barriers and facilitators to those identified for community pharmacy services in general.^{13,28,37-39}

The MedsCheck program in Ontario was evaluated to determine barriers that pharmacists faced and facilitators that they found helpful when providing the service.²⁸ Questionnaires were mailed out to pharmacists working in Hamilton a few months after the program was implemented.²⁸ The questionnaire was followed up with semi-structured telephone interviews intended to delve deeper into the issues identified in the survey.²⁸ The major barriers that pharmacists noted were a lack of time to conduct the assessments and lack of pharmacist overlap to cover the dispensary.²⁸ Pharmacists also cited insufficient reimbursement, interruptions during reviews, forgetting to offer service, documentation requirements, lack of a private room, lack of patient awareness or interest, and patients thinking a cost was involved, as additional barriers.²⁸ When exploring facilitators, pharmacist overlap was found to be a key facilitator.²⁸ Other facilitators included offering reviews on an appointment only basis, advertising, reducing documentation, utilizing technicians, increasing physician and patient awareness, availability of a private counselling area with access to internet, team work, electronic tools/forms, having adequate education and knowledge, and personally inviting patients to participate.²⁸

The British Columbia Medication Management Program (BCMMP) pilot project was evaluated to determine the perceptions of pharmacists, physicians, and patients.¹³ Along with exploring benefits and drawbacks of the pilot project, the researchers also identified the challenges, or barriers, to providing the service.¹³ Pharmacists stated that they had difficulty determining which patients would benefit from the service.¹³ The computer system used for documentation was not integrated into the pharmacy dispensing systems, and consequently entering patient data from the medication review was time-consuming.¹³ Since documentation required so much of the pharmacist's time, many pharmacists reported that it was often not financially feasible to offer the service.¹³ Pharmacists also felt that physicians had a negative attitude towards the project.¹³ This might have been the case, as physicians felt their workload increased due to the project, but they were not compensated for their time reviewing the pharmacists' recommendations and responding to patient concerns.¹³

In the United Kingdom (UK), medicines use review (MUR) was introduced in April 2005 as a way to "establish a picture of the patients understanding and use of prescribed and non-prescribed medications".³⁷ Uptake of the service by pharmacists was lower than expected, so researchers developed a questionnaire to explore factors that affected the number of MUR that pharmacist performed and their attitudes towards the service.³⁷ Pharmacists identified the

following barriers: doubts about general practitioners' beliefs that the service was valuable, lack of pharmacist time, lack of support staff, unsuitable consultation areas, and lack of reasonable financial incentive.³⁷

In an effort to identify and potentially eliminate some barriers to providing medication assessments, pharmacists in Qatar were given an opportunity to provide their thoughts on the MUR service prior to it being implemented in community pharmacy practice.³⁸ The researchers hoped to assess pharmacists' current knowledge about MUR, their attitudes toward MUR services, their willingness to provide MUR, and the availability of facilities to provide the MUR services.³⁸ The questionnaire was distributed to a random sample of 220 community pharmacists in Qatar in December 2012.³⁸ One hundred twenty-three (56%) pharmacists responded to the survey, but only 116 (53%) responses were usable.³⁸ It was found that pharmacists were quite knowledgeable about MUR, with a mean total knowledge score (\pm SD) of $71.4 \pm 14.7\%$.³⁸ Gender, age, highest pharmacy degree obtained, years of experience, and hours worked per week, had no significant effect on knowledge scores, however attitudes towards practice change had a significant effect on knowledge scores.³⁸ Pharmacists who indicated that they aspired to be role models had higher mean knowledge scores than those who indicated that they were resistant to new ways of working (76.1% vs. 55.0%; $p = 0.032$).³⁸

The majority of pharmacists who completed the questionnaire had positive attitudes towards MUR services.³⁸ For example, 96.5% agreed that MUR is a great opportunity for an extended pharmacists' role and 95.7% agreed that MUR are an excellent use of pharmacists' skills.³⁸ It is interesting to note that 41.7% of the respondents indicated that they believed a lack of access to medical records reduces the benefits of MUR services.³⁸ Slightly more than half (57.7%) felt that there was enough time for MUR services in their practice.³⁸ When asked about their willingness to provide MUR services, 87% agreed that they were willing to incorporate these services within their daily practice.³⁸ Only 25% of the respondents agreed that there was a screened area available in the community pharmacy to provide MUR services, indicating that this would likely be a significant barrier to providing MUR services in Qatar.³⁸ Even fewer respondents, 16.4%, agreed that they had sufficient training to provide MUR services, showing that a lack of knowledge and confidence in their ability to provide MUR may also be significant barriers to providing MUR services.³⁸ The overwhelming majority of pharmacists, 95.6%, agreed that training programs to orient and educate pharmacists should be conducted by

universities and the Supreme Council of Health before implementing MUR service in Qatar.³⁸

Pharmacists who participated in the General Practitioner-Pharmacist Collaboration (GPPC) study in Auckland, New Zealand, were asked to participate in semi-structured interviews to identify potential barriers to community pharmacists providing clinical medication reviews.³⁹ The pharmacists who were interviewed expressed that they did not think there was a clear mandate from general practitioners or the government for pharmacists to take on the role of performing clinical medication reviews.³⁹ The pharmacists also felt that providing medication reviews was not a legitimate role that fit into the normal dispensing activity in a community pharmacy.³⁹ Many of the pharmacists saw it as a nice thing to do, but not a priority.³⁹ The pharmacists also struggled with feelings about the adequacy of their clinical knowledge and skills to provide medication reviews.³⁹ Lastly, the pharmacists questioned the effectiveness of the service; many pharmacists cited that they had not received feedback on the recommendations they had made and did not know if their work was useful.³⁹

2.6 Why should the Saskatchewan Medication Assessment Program (SMAP) be evaluated?

Based on the previous summary of the literature, there exists a significant amount of research regarding the impact of community pharmacy based medication assessment programs on patients, and also regarding the barriers and facilitators to integrating these programs into an existing community pharmacy team. However, recently community pharmacists in Canada became the target of a large CBC News *Marketplace* investigation, which questioned the quality of service that community pharmacists were providing to their patients and the potential risk to patient safety.⁴⁰ On March 24, 2015 CBC News published an article titled “Medication reviews may miss patients who need them”.⁴⁰ The opening argument for this article stated that “Medication reviews, which are publicly funded safeguards designed to make sure people are taking prescription drugs correctly, are not always performed properly or reaching the people who need them most”.⁴⁰ The author claimed Canadian pharmacists report they are under pressure in recent years to do as many medication assessments as possible and in some cases even have a quota that they are expected to achieve.⁴⁰ It was suggested that this recent pressure that has now been put on pharmacists to offer these services might be causing them to perform poor quality assessments and choose patients with fewer medications that are less complicated so that the assessments can be completed very quickly.⁴⁰ If these allegations are accurate, medication

assessment services in Canada may not be achieving the same outcomes as in previous years. It is therefore possible that these recent changes and pressures to the health system landscape in Canada may have impacted the ability of community pharmacists to provide quality medication assessment services, making it difficult to translate the evidence from previous studies to the SMAP in Saskatchewan.

In addition, the SMAP is a new medication assessment service and has yet to be evaluated and it cannot be assumed that evidence from other similar programs will translate directly to this unique program. Consequently, it is important to evaluate the SMAP to determine if it is meeting the intended purposes.

The SMAP was intended to fulfill seven purposes as outlined in the guidance document prepared by the Drug Plan and Extended Benefits Branch of the Saskatchewan Ministry of Health: (1) to provide safe and effective medication therapy to seniors living in the community; (2) to improve patient safety and patient outcomes; (3) to prevent drug related problems, emergency room visits and hospitalizations; (4) to reduce duplication and or wastage of medication; (5) to optimize medication adherence; (6) to provide support to seniors living in the community that will allow them to age within their own home; and (7) to assist the patient and/or caregiver with appropriate and cost-effective medication administration.^{4,5}

From June 30th, 2013 to June 30th, 2016 a total of \$4,585,143 was billed by community pharmacies for SMAP program services: \$1,810,000 for initial Medication Assessments (MAF), \$132,060 for Follow-up assessments (FPAF), and \$2,643,083 for Compliance Packaging.⁴¹ Community-based, government funded programs like the SMAP can be quite expensive and time consuming, but also have the potential to offer great benefits. Since funding available for health and other services is limited, it is important that research is performed to determine if the programs and services that are offered are able to provide patient benefit.

CHAPTER 3
STUDY PURPOSE

The purpose of this study is to explore pharmacists' experiences with, and perceptions of, the SMAP. Since community pharmacists are directly involved in interacting with patients to complete the medication assessments, they are in an ideal position to make judgments pertaining to whether or not the program is meeting purposes, identify the barriers and facilitators that pharmacists are dealing with in their practice when trying to implement the SMAP, and make suggestions for improvements that could be made to the program in the future.

CHAPTER 4
RESEARCH OBJECTIVES

1. Determine the extent to which pharmacists believe they are fulfilling the purposes of the Saskatchewan Medication Assessment Program as outlined in the guidance document prepared by the Drug Plan and Extended Benefits Branch of the Saskatchewan Ministry of Health.
2. Describe pharmacists' perceptions of the barriers and facilitators to fulfilling the purposes of the Saskatchewan Medication Assessment Program as outlined in the guidance document prepared by the Drug Plan and Extended Benefits Branch of the Saskatchewan Ministry of Health.
3. Determine strategies pharmacists would like to see implemented to assist them to fulfill the purposes of the Saskatchewan Medication Assessment Program as outlined in the guidance document prepared by the Drug Plan and Extended Benefits Branch of the Saskatchewan Ministry of Health.

CHAPTER 5

METHODS

5.1 Overview of Research Methods

The methodology used for this research was an embedded mixed methods design.⁴² Mixed methods research involves the use of both qualitative and quantitative data collection methods.⁴² An embedded mixed methods design refers to research that primarily utilizes one of the data collection types (qualitative or quantitative) and embeds a smaller portion of the other type into the primary type as a means to supplement the primary data.⁴² A common example of an embedded mixed methods design is a largely quantitative survey in which some open-ended questions are included to collect additional qualitative data, as was done in this study.⁴²

This study utilized an online, self-administered questionnaire to survey pharmacists currently practicing in a community pharmacy setting in Saskatchewan. A survey has been defined as “a system for collecting information from or about people to describe, compare, or explain their knowledge, attitudes, and behavior”.⁴³ Since the objectives of this research project involved determining pharmacists’ beliefs and perceptions regarding the research objectives, a survey was selected as the primary research method.

Survey questions can be used in research instruments such as self-administered questionnaires and face-to-face or telephone interviews.⁴³ In the case of a self-administered questionnaire, the respondent fills out the questionnaire individually.⁴⁴ In addition, an online questionnaire can be distributed to a large group of people for a low cost. Since it was feasible to distribute a self-administered online questionnaire to a large portion of the population of community pharmacists in Saskatchewan (via the Pharmacy Association of Saskatchewan), this is the specific method that was used to implement the survey.

5.2 The Sample

All licensed pharmacists who self-declared that they were practicing in a community pharmacy setting anywhere in Saskatchewan (on a full, part-time or casual basis) at the time of data collection, were eligible to participate in the study. Pharmacists were only excluded if they

did not practice in a community pharmacy in Saskatchewan. The online questionnaire was distributed to all Saskatchewan pharmacists with a Pharmacy Association of Saskatchewan (PAS) membership through the PAS email database. PAS is the professional advocacy body for Saskatchewan pharmacy professionals and membership amongst practicing pharmacists is voluntary.⁴⁵ PAS agreed to distribute the questionnaire on our behalf, since the SMAP is a program that they created. At the time of the survey distribution (January 26th, 2016), PAS had 1295 practicing members⁴¹, which includes 82.6% of the 1568 licensed pharmacists in Saskatchewan (according to the Saskatchewan College of Pharmacy Professionals (SCPP), who license pharmacists in the province).⁴⁶ The SCPP was originally approached to distribute the survey, as their database contains a complete list of all practicing pharmacists in Saskatchewan; however, SCPP preferred that PAS distribute the survey since the SMAP is a program that was created by PAS.

PAS members can voluntarily declare a ‘primary practice site’ when they purchase their membership, and this data is included in the PAS member database. However, all PAS members (regardless of their self-declared primary practice site) were invited to participate in the study. If only PAS members who self-declared ‘community pharmacy’ as their primary practice had been invited, the survey would have missed pharmacists who chose not to declare their primary practice site, those who moved to community pharmacy since declaring, and those who work part-time in community pharmacy. The following statement was included in the survey invitation email to encourage the correct pharmacists to completed the questionnaire: “Please fill out this questionnaire only if you currently practice in the community pharmacy setting on a full, part-time or casual basis”. (See Appendix A)

5.3 Questionnaire Content

The questionnaire (see Appendix C) contained 53 items. Part A asked pharmacists if they believe the SMAP is fulfilling the intended purposes, part B asked pharmacists to consider the facilitators and barriers that may help or hinder them in providing a medication assessment, and part C asked demographic questions. In addition, three initial questions were included (prior to Part A) for the purposes of determining if the respondent was familiar with the SMAP, the extent of previous experience the respondent had had with the program, and the extent to which the pharmacy they work in participated in the program. There was a possibility that some

community pharmacists were not aware of the SMAP, therefore one of the initial questions asked whether or not the respondent was familiar with the program. For those who indicated that they were not familiar with the SMAP, parts A and B would be skipped and only demographic information would be collected. Pharmacists indicating that they were not familiar with the SMAP would not be asked the questions in parts A and B, because they would not have developed opinions about the program necessary to answer the questions; consequently the data would be meaningless and it would be a frustrating experience for the respondent. For pharmacists who indicated that they were familiar with the program, but have not personally completed an assessment through the SMAP, questions regarding personal experience with the SMAP were skipped.

5.4 Questionnaire Development Methodology

The questionnaire was developed after reviewing the literature regarding previous evaluations of medication assessment programs, as well as documentation from the Saskatchewan Ministry of Health regarding SMAP procedures and guidelines.^{4,5} The initial draft of the questionnaire was developed by the primary investigator in collaboration with her faculty supervisor. The questionnaire was also revised based on feedback from primary investigator's supervisory committee members, which included three faculty members within the College of Pharmacy and Nutrition. Upon review by the committee members, the primary investigator drafted a second version of the questionnaire that was sent to PAS, SCPP, and the Saskatchewan Ministry of Health for comments, which were incorporated into a third draft of the questionnaire.

The questionnaire was subsequently pilot tested by ten pharmacists who were not working in a community pharmacy setting and were therefore not eligible to be involved in the study. These pharmacists were asked to comment regarding questionnaire readability, convenience, misspelled words, sentences that were difficult to understand, and unknown terms. They were also asked to comment on issues such as font size or type, ease of use of the online questionnaire, any problems that were encountered while trying to complete the questionnaire, and the length of time it took them to complete the questionnaire. Comments made by individuals were carefully considered, and the format and content of the questionnaire was edited and revised.

Finally, representatives of PAS reviewed the final questionnaire to ensure that it met their policies and procedures regarding electronic communications distributed to its members. The representatives from PAS did not suggest any further edits at the time of the final review.

5.5 Distribution of the Questionnaire and Collection of Data

The questionnaire was distributed to pharmacists on January 26th, 2016 via an email communication from PAS that included a link to the online questionnaire that was created using FluidSurveysTM.⁴⁷ Respondents were allowed skip questions that they did not want to answer and they were also able to go back and change answers to questions at any time before submitting the completed questionnaire; however respondents were not presented with a summary of their responses at the end of the questionnaire.

Respondents could potentially answer the survey more than once, as the anonymous settings that were used did not allow for security against this. Part of the anonymous settings included that the IP address would not be recorded.

The first email contact, on Tuesday, January 26th, 2016, included a link to the online questionnaire along with an explanation of the research being conducted and the contact information of the principal investigator for those with further questions (See Appendix A: Invitation). One email reminder was sent two weeks following the initial invitation, on Tuesday, February 9th, 2016 (See Appendix B: Reminder). The questionnaire was closed four weeks following the initial invitation, on Tuesday, February 23rd, 2016.

A small incentive was included to encourage participation. The first fifty respondents were offered a \$10 Tim Horton's gift card and all respondents were entered into a draw for a chance to win one of eight \$250 gift cards.

5.6 Data Analysis

5.6.1 Statistical Analysis of Closed-ended and Likert-type Questions

Data from closed-ended and Likert-type questions (i.e., quantitative data) was exported from FluidSurveysTM to SPSS (Version 23). Descriptive statistics were used to characterize the responses to all of these questions.

Prior to performing any analysis, comparisons were planned between selected demographic data and Likert-scale questions based on relationships that were suspected to exist.

The specific questions that were compared using statistical analysis are shown in Table 1 along with the reasoning for suspecting a relationship might exist.

It has been disputed among researchers whether Likert data should be analyzed as ordinal or interval data.⁴⁸⁻⁵¹ Some take that position that Likert data should be treated as ordinal because the intervals between response categories should not be assumed to be equal.^{48,49} Treating Likert data as ordinal data means that analysis can only be done using non-parametric statistics.⁴⁸ On the other side of the argument, some researchers point out that parametric tests, like Analysis of Variance (ANOVA), are more powerful and sensitive than non-parametric tests.⁴⁹⁻⁵¹ Norman concluded that empirical literature has shown, “[p]arametric statistics can be used with Likert data, with small sample sizes, with unequal variances, and with non-normal distributions, with no fear of “coming to the wrong conclusion”.”⁵⁰

For this research, given the arguments presented in the literature for analyzing Likert data, one-way ANOVA was used to identify if there were statistically significant differences between specific respondent groups and how they responded to various Likert-type questions. One-way ANOVA, “is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups”.⁵² Since a statistically significant one-way ANOVA result only shows the researcher that there is a significant difference between at least two groups, post hoc tests are used to determine which specific groups differ.⁵² When statistically significant relationships were found, the Tukey’s honestly significant difference (HSD) post hoc test was used to determine where the differences occurred.⁵²

Table 1: Questions tested using Analysis of Variance (ANOVA)		
Questions:		Reasons for Comparing:
Indicate the number of SMAP medication assessments that you personally complete in a typical month.	I enjoy performing SMAP assessments.	It is suspected that respondents who agree/strongly agree that they enjoy performing SMAP assessments will indicate that they perform more SMAP assessments than those who do not because they may be more likely to promote the service to patients and seek out opportunities to provide SMAP assessments.
	Sometimes I have trouble identifying drug related problems when completing a SMAP	It is suspected that respondents who agree or strongly agree that they have trouble identifying drug related problems due to lack of information, will indicate that they

	<p>assessment because I do not have enough information about the patient's medical history.</p>	<p>perform fewer SMAP assessments because they are likely to be less comfortable offering the service when they feel they do not have access to necessary information.</p>
	<p>When completing a SMAP assessment I feel comfortable making recommendations to physicians.</p>	<p>It is suspected that respondents that disagree or strongly disagree that they feel comfortable making recommendations to physicians, will indicate that they perform fewer SMAP assessments to avoid the potential of having to contact the physician about suspected drug related problems.</p>
How many years have you been a licensed pharmacist?	<p>I am confident in my ability to identify drug related problems when I perform SMAP medication assessments.</p>	<p>It is suspected that pharmacists who have been in practice for a long time, who may have outdated clinical knowledge and no formal education on performing medication assessments or those who have recently been licensed with little practice experience, will be less likely to indicate that they are confident in their ability to identify drug related problems, than those who have some practice experience combined with fairly up to date clinical knowledge and some formal education on performing medication assessments during their undergraduate degree.</p>
	<p>When you are completing a SMAP assessment, how often do you contact the physician to request additional information from the patient's chart?</p>	<p>We suspected that pharmacists with fewer years in practice would be more likely to indicate that they contact that physician to request additional information from the patient's chart more often, because collaborative practice and sharing of information is encouraged in current undergraduate pharmacy programs.</p>
	<p>When completing a SMAP assessment I feel comfortable making recommendations to physicians.</p>	<p>It is suspected that pharmacists who have been in practice for a long time, who may have outdated clinical knowledge and no formal education on performing medication assessments or those who have recently been licensed with little practice experience, will be less likely to indicate that they are comfortable making recommendations to physicians, than those who have some practice experience combined with fairly up to date clinical knowledge and some formal education on performing medication</p>

		assessments during their undergraduate degree.
What is the population of the community where you pharmacy is located?	The SMAP encourages collaboration between pharmacists and physicians.	It is suspected that in rural areas the physicians and pharmacists are already engaged in collaborative relationships and would not indicate that the SMAP encourages this further.

Table 1: A summary of the seven planned comparisons between the responses to selected questions and the reasons for choosing to make these comparisons.

5.6.2 Comparison of the number of SMAP assessments performed by respondents with the barriers and facilitators that the respondents identified as being significant

In an attempt to determine if the most popular barriers and facilitators selected by respondents had an effect on the number of SMAP assessments that respondents indicated that they performed in a typical month, a comparison between these data was conducted. Using Pearson’s Chi-Square, a comparison between whether or not respondents had selected the most popular barriers and facilitators and the number of SMAP assessments the respondents had indicated that they performed in a typical month was performed. Pearson’s Chi-Squared test is used to determine if there is an association between two categorical variables.⁵³ In this case the two categorical variables were: (1) if the respondent had ‘selected’ or ‘not selected’ the barrier or facilitator in question, and, (2) if the respondent indicated that they completed ‘zero’, ‘1 to 5’, or ‘6 to 21+’ SMAP assessments in a typical month.

5.6.3 Non-response Bias

Two discreet methods were used to assess for non-response bias. The first was a comparison of the early and late respondents, defined by those who responded before the reminder sent on February 9th, 2016 and those who responded after the reminder. To determine if the early and late respondents answered the survey questions similarly, the responses to each multiple choice and Likert-type question were compared using the Mann-Whitney U test, a non-parametric test that can be “used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed”.⁵⁴ In this case the two independent groups were the early responders and late responders and the dependent variables were the respondent’s answers to the survey questions. The theory behind this method is that respondents who are more resistant to responding (i.e., late respondents) are

more similar to non-respondents than they are to early respondents.^{55,56} A statistically significant result would indicate the potential for non-response bias. This method is limited as the late respondents are still respondents and thus could differ from the non-respondents, however it is used in studies when a survey of non-respondents is not feasible.^{55,56}

The second method used to assess for non-response bias was a comparison of the demographic characteristics of the respondents to the demographic characteristics of the entire population of pharmacists in Saskatchewan. Data from the Canadian Institute for Health Information (CIHI) report, *Pharmacists, 2014* was visually compared to the demographic data collected in the questionnaire.⁵⁷ The CIHI report summarizes the demographics, education and employment status of the pharmacist workforce in Canada, broken down by province, during the years of 2010 to 2014.⁵⁷ The data from 2014 is used for the comparison, as it is the most recent data available. The characteristics that were compared between the two populations were the demographic characteristics (e.g. pharmacy owner/manager, staff pharmacist, male, female, etc.) The theory behind this approach is that if the demographic characteristics of the respondents and the entire population are similarly distributed, the respondents are more likely to be representative of the entire population.⁵⁶ A limitation of this approach is that the demographics of the pharmacists are not necessarily the focus of the research.⁵⁶ In the case of this research, pharmacists' attitudes toward the SMAP were the main focus of the research and attitudes of pharmacists may have little to do with their demographic characteristics.

5.6.4 Content Analysis of Open-ended Questions

Answers to open-ended, free-text questions (i.e., qualitative data) were analyzed using a technique known as content analysis. It has been defined as “a systematic, replicable technique for compressing many words or text into fewer content categories based on explicit rules of coding”.⁵⁸ To minimize researcher bias, the content analysis was performed by three individuals; Dr. Derek Jorgenson, a clinical pharmacist and faculty member at the University of Saskatchewan; Katherine Lysak, a hospital pharmacist and graduate student at the University of Saskatchewan; and Krysta Currie, the primary investigator who is a community pharmacist and graduate student at the University of Saskatchewan. Dr. Derek Jorgenson and Katherine Lysak both had previous experience with content analysis.

The analyzers were given step-by-step instructions (Appendix D), which were adapted from *Developing a Questionnaire*, to complete the content analysis as well as a printed copy of the written responses to the open-ended questions.⁵⁹ Each analyzer individually read through the responses to select the main concepts (or themes). The three analyzers subsequently met on two separate occasions to come to a consensus on the main concepts (or themes) that emerged from the data, and also to attempt to categorize the main concepts (or themes). The main concepts (or themes) and categories were refined until the analyzers were satisfied with the list of categories and that each concept fit into a category or it was decided that it could not be categorized.

Following this content analysis an external audit was performed to enhance the trustworthiness and credibility of the findings. As part of the external audit process, a researcher who has not been involved in the research process examines the documentation of the content analysis process and the findings to determine if the findings could be logically interpreted from the data.^{60,61} Katherine Ford, a Registered Dietician and graduate student at the University of Saskatchewan with previous experience with qualitative analysis, acted as the external auditor. Katherine was given the content analysis guidelines used by the analyzers, a copy of the answers to the open-ended questions as well as the copies used by the original analyzers (that included their notes and highlighting), a list of the nine main themes, and the summary of the qualitative analysis results. Katherine was asked to determine if the themes developed by the analyzers aligned with the responses to the open-ended questions.

5.7 Ethics

The Behavioural Research Ethics Board at the University of Saskatchewan approved the protocol on January 11th, 2016 (BEH# 15-378). The survey was anonymous and aside from a minimal time commitment to complete the questionnaire, the research project posed little risk to participants. Prior to responding, participants were informed about the research project including: who was carrying out the research, the sponsorship provided, the purpose of the research, and the level of confidentiality/anonymity guaranteed (See Appendix A: Invitation). A statement regarding voluntary participation and the ability to skip questions was also included.

CHAPTER 6

RESULTS

6.1 Response Rate

A total of 1124 PAS members were sent an email inviting them to participate in the survey and 228 chose to participate by answering at least one question, resulting in an overall response rate of 20.3%. Not all participants answered every question; therefore, response rates are also reported for each individual survey question. During data analysis it was decided to include all responses regardless of how few questions were answered by the respondent. As well, some questions were only presented to respondents depending on their responses to previous questions, making the number of respondents to those questions appear significantly lower than the 228 total respondents.

6.2 Participant Demographics

The majority of the respondents indicated that they were staff pharmacists (n=128/199, 64.3%) and worked between 31 to 40 hours in a community pharmacy setting in a typical week (n=115/200, 57.5%). Respondents had varying years of experience as licensed pharmacists, with the greatest proportion of respondents indicating they had been licensed between 11 to 20 years (n=48/198, 24.2%). The respondents were distributed between rural, small city and large city practice sites, with the largest proportion indicating they practiced in a large city (n=83/200, 41.5%). Most respondents indicated that the number of prescriptions filled per day at their pharmacy was between 100 to 200 (n=78/199, 39.2%) or 201 to 300 (n=56/199, 28.1%). One hundred thirty-two of the 228 respondents (57.9%) indicated they had completed additional training/education. Detailed demographic information of respondents is presented in Table 2.

Characteristic:	Number (228):	Percentage:
Position		
Pharmacy Owner	26	13.1%
Pharmacy Manager	36	18.1%
Staff Pharmacist	128	64.3%
Relief/Casual Pharmacist	9	4.5%

	Missing	29	
Hours worked in community pharmacy in a typical week	Less than 10 hours	8	4.0%
	10-20 hours	11	5.5%
	21-30 hours	22	11.0%
	31-40 hours	115	57.5%
	More than 40 hours	44	22.0%
	Missing	28	
Gender	Male	44	22.0%
	Female	152	76.0%
	Prefer not to answer	4	2.0%
	Missing	28	
Years as a licensed pharmacist	1 year or less	20	10.1%
	2 – 5 years	40	20.2%
	6 – 10 years	33	16.7%
	11 – 20 years	48	24.2%
	21 – 30 years	36	18.2%
	More than 30 years	21	10.6%
	Missing	30	
Population of the community where pharmacy is located	Rural (<5,000)	63	31.5%
	Small city (5,000 – 100,000)	54	27.0%
	Large city (Saskatoon or Regina)	83	41.5%
	Missing	28	
Classification of pharmacy	Independent/Banner	92	46.7%
	Franchise	31	15.7%
	Chain/Supermarket/Mass merchandiser	74	37.6%
	Missing	31	
International/Canadian Graduate	International pharmacy graduate	8	4.0%
	Canadian pharmacy graduate	191	96.0%
	Missing	29	
Number of prescriptions filled in a typical day	< 100	22	11.1%
	100 – 200	78	39.2%
	201 – 300	56	28.1%
	> 300	43	21.6%
	Missing	29	
Additional training/education	Residency (ACPR)	3	1.3%
	ADAPT Certificate in Patient Care Skills (CphA)	15	6.6%

completed	CPhA Medication Review Services Program	12	5.3%
	Certified Diabetes Educator (CDE)	10	4.4%
	Certified Respiratory Educator (CRE)	11	4.8%
	Certified Geriatric Pharmacist	2	0.9%
	Advanced Method Certification (Immunization and Injection Training)	114	50.0%
	Board Certification in United States (BPS)	0	0%
	Post baccalaureate PharmD	0	0%
	Masters Degree	4	1.8%
	PhD Degree	1	0.4%
	Other*	13	5.7%

Table 2: A summary of the demographic information collected from the respondents.

*Other: The 13 respondents who indicated that they had completed other training besides those included in the list indicated they had received the following training: CPhA Lab Tests Interpretation, Associate of the Trinity College of Music, Resptrek and Asthmatrek, CAE, PACT training, Minor Ailments Prescribing, BSc Food Science and Nutrition, Travel Medicine Certificate, Sigvaris training, CBT-I training, BSc Physiology and MSc Nutrition. One respondent also included that he or she was almost finished immunization training and another indicated that he or she was working on ADAPT.

6.3 Degree of Experience with the Saskatchewan Medication Assessment Program

Of the 227 respondents who answered the first question regarding previous involvement with the SMAP, 207 (91.2%) indicated that they had completed at least one medication assessment through the SMAP (Figure 1). The remaining 20 respondents (8.8%) indicated that they were aware of the SMAP, but have never completed a medication assessment (Figure 1). There were no respondents who indicated that they had never heard of the SMAP.

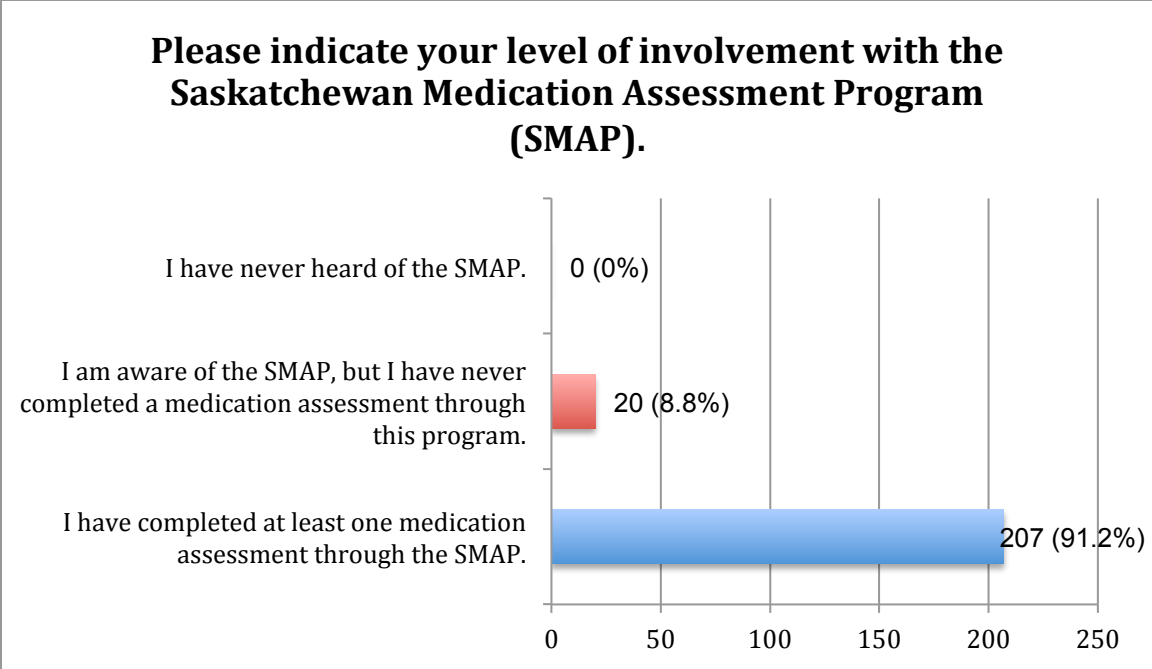


Figure 1: The number of respondents who indicated their level of involvement with the Saskatchewan Medication Assessment Program based on the three response options. Total number of responses = 227.

Of the 207 pharmacists who had completed at least one SMAP medication assessment, the majority, 164 (79.2%), indicated that they personally complete between one and five SMAP medication assessments in a typical month (Figure 2).

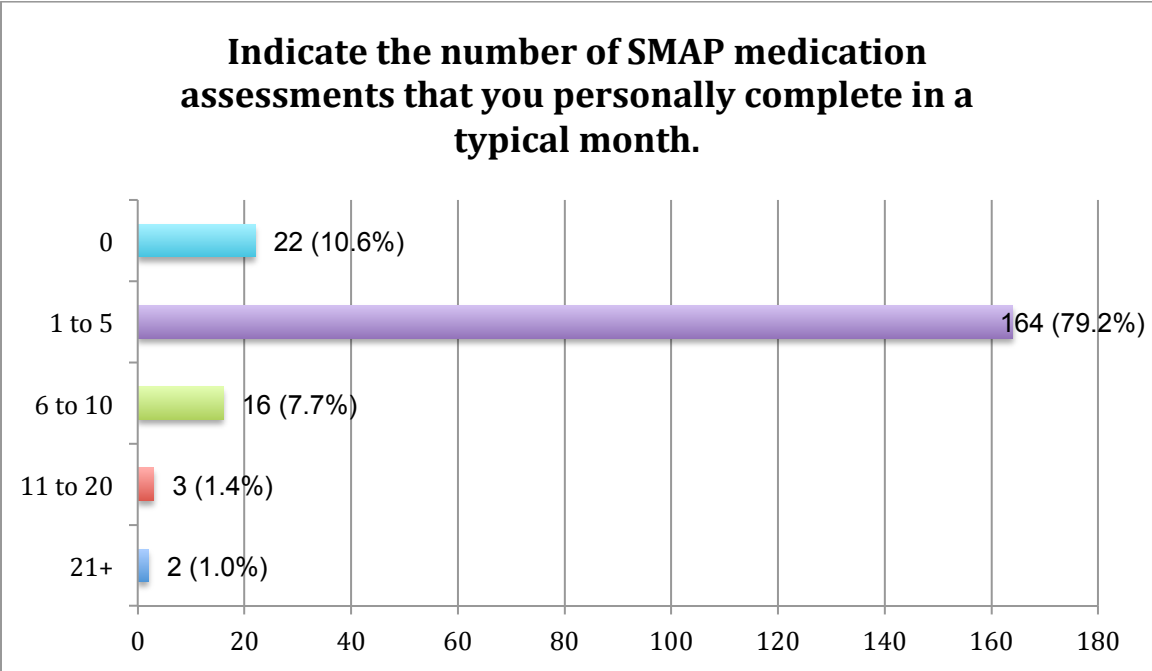


Figure 2: The number of respondents who indicated the number of SMAP medication assessments they personally complete in a typical month based on the response ranges provided. Total number of responses = 207.

When asked how many SMAP assessments all pharmacists at the respondent’s pharmacy completed in a typical month, the most common answer, given by 102 of the 222 respondents (45.9%), was between one and five assessments (Figure 3).

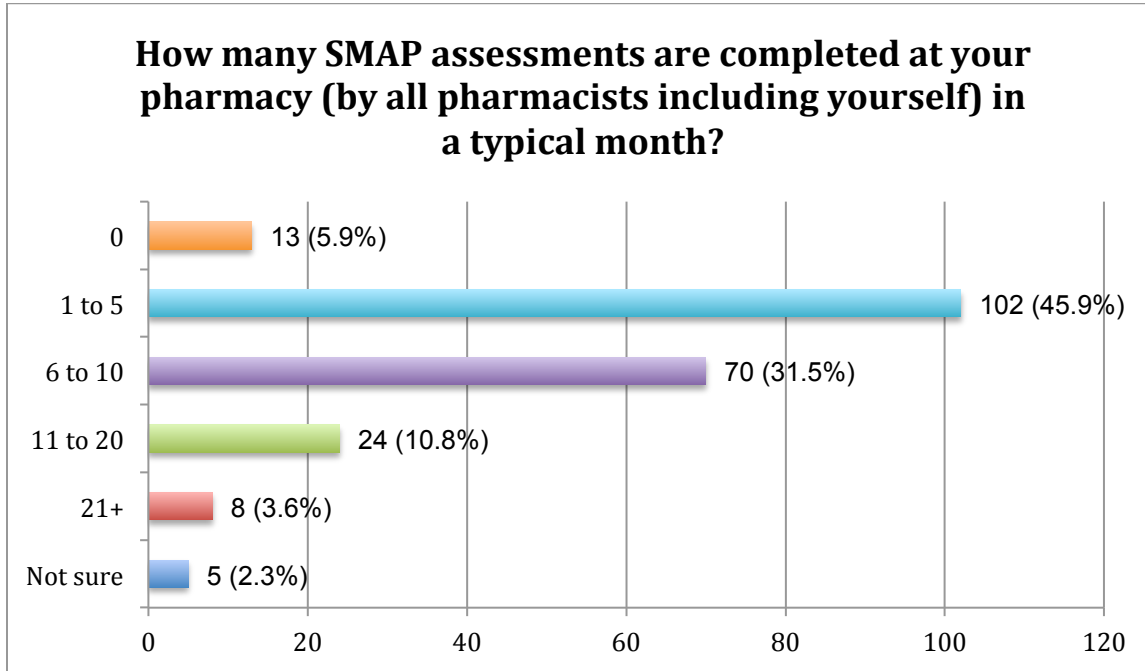


Figure 3: The number of respondents who indicated the number of SMAP medication assessments complete in a typical month in the pharmacy where they work based on the response ranges provided. Total number of responses = 222.

6.4 Does the SMAP Fulfill the Stated Purposes?

In part A of the questionnaire, pharmacists were asked to rate their levels of agreement with statements relating to the seven purposes of the SMAP that were laid out by the Saskatchewan Ministry of Health. The first purpose of the SMAP is: *To provide safe and effective medication therapy to seniors living in the community.* This was divided into two statements in the questionnaire: *Assessments provided through the SMAP improve medication safety for seniors* and *Assessments provided through the SMAP ensure that seniors are taking the most effective medication therapy.* Of the 214 pharmacists responding to the first statement, 192 (89.7%) indicated that they agreed or strongly agreed with the statement (Figure 4). A similar response was observed with the second statement, with 179 (83.6%) of the 214 respondents indicating that they agreed or strongly agreed (Figure 5).

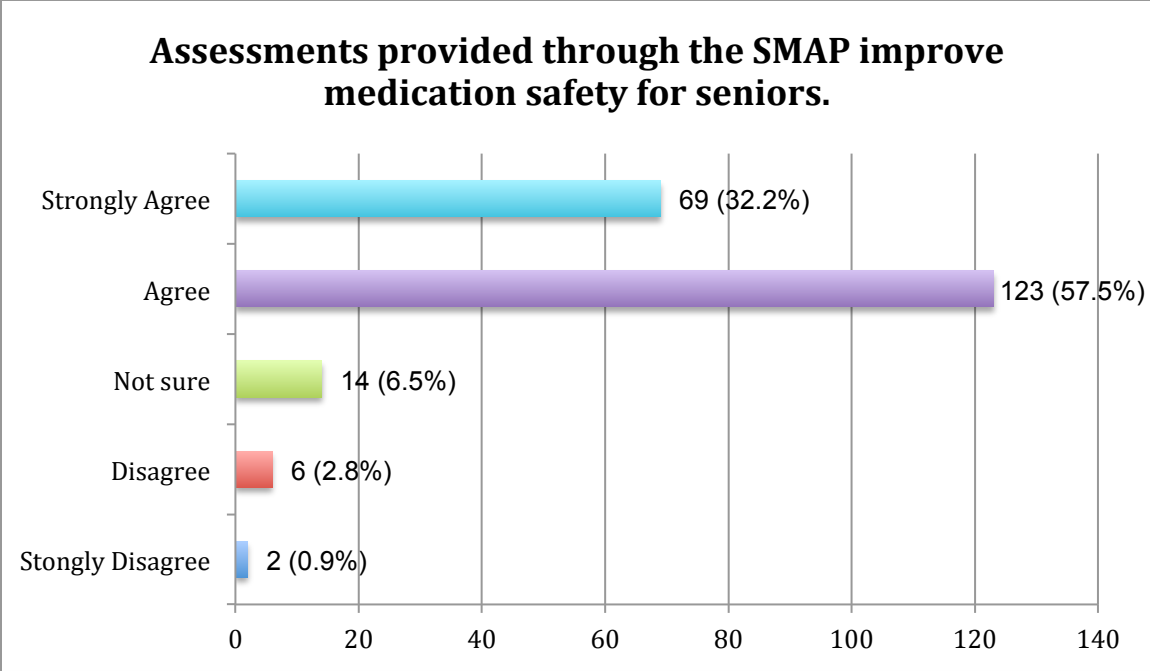


Figure 4: The number of respondents who indicated their level of agreement that SMAP assessments improve medication safety for seniors. Total number of responses = 214.

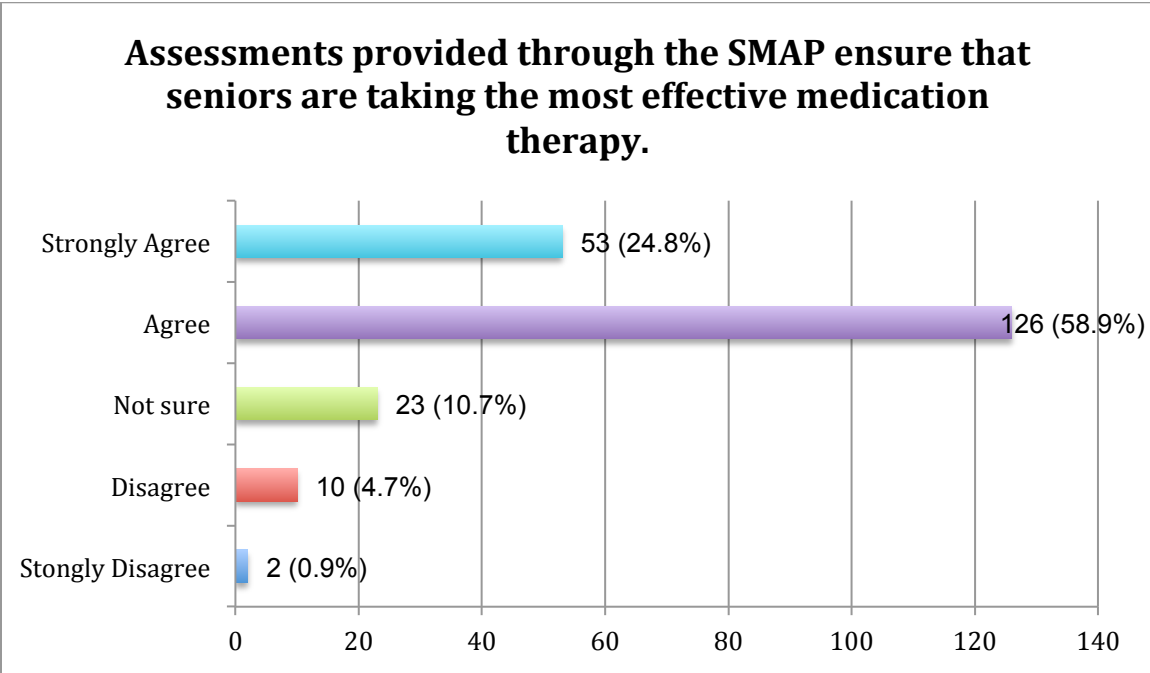


Figure 5: The number of respondents who indicated their level of agreement that SMAP assessments ensure that seniors are taking the most effective medication therapy. Total number of responses = 214.

The second purpose of the SMAP is *to improve patient safety and patient outcomes*. This was assessed using the statement: *Seniors who receive a SMAP assessment are more likely to have improved health outcomes compared with seniors who do not receive an assessment*. One

hundred sixty-one of the 214 respondents (75.2%) to this question agreed or strongly agreed with this statement (Figure 6).

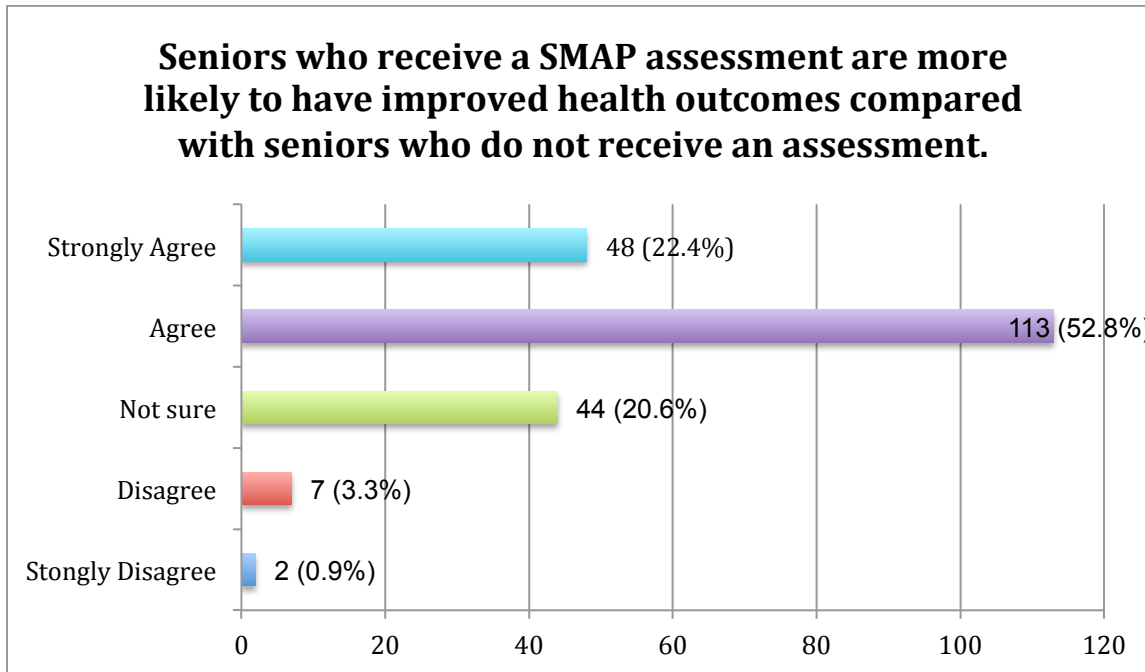


Figure 6: The number of respondents who indicated their level of agreement that seniors who receive SMAP assessments are more likely to have improved health outcomes compared with seniors who do not receive an assessment. Total number of responses = 214.

The third purpose of SMAP is *to prevent drug related problems, emergency room visits and hospitalizations*. Three separate questionnaire items were created to evaluate this SMAP purpose: (1) *Assessments provided through the SMAP prevent drug-related problems for seniors*; (2) *An assessment completed through the SMAP is likely to decrease the incidence of emergency room visits for seniors*; and (3) *An assessment completed through the SMAP is likely to decrease the incidence of hospitalizations for seniors*. Of the 214 pharmacists that responded to the statement regarding drug-related problems, 190 (88.8%) agreed or strongly agreed (Figure 7).

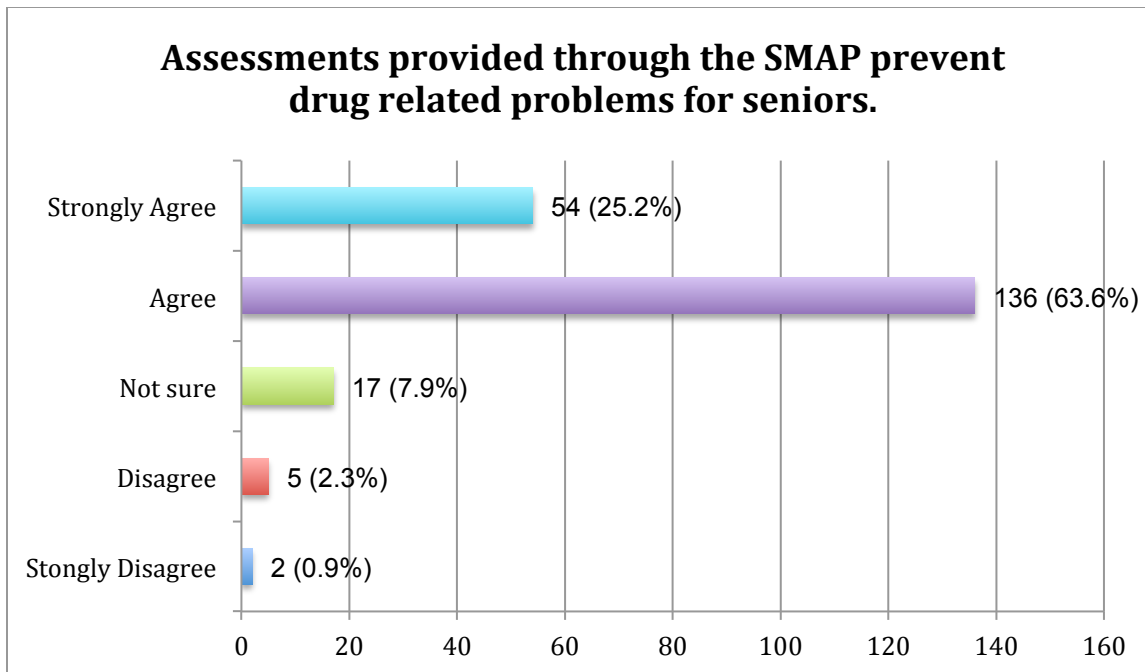


Figure 7: The number of respondents who indicated their level of agreement that SMAP assessments prevent drug related problems for seniors. Total number of responses = 214.

Overall pharmacists were not as confident that SMAP assessments reduce emergency room visits and hospitalizations. A small majority, 117, of the 204 respondents (57.3%) agreed or strongly agreed that an assessment completed through the SMAP was likely to decrease the incidence of emergency room visits for seniors, however, many (n=81/117 (39.7%)), indicated that they were not sure (Figure 8). Responses were similar to the question related to hospitalization rates, with 66 (32.5%) of the 203 respondents indicating they were not sure that an assessment completed through the SMAP was likely to decrease the incidence of hospitalizations for seniors (Figure 9).

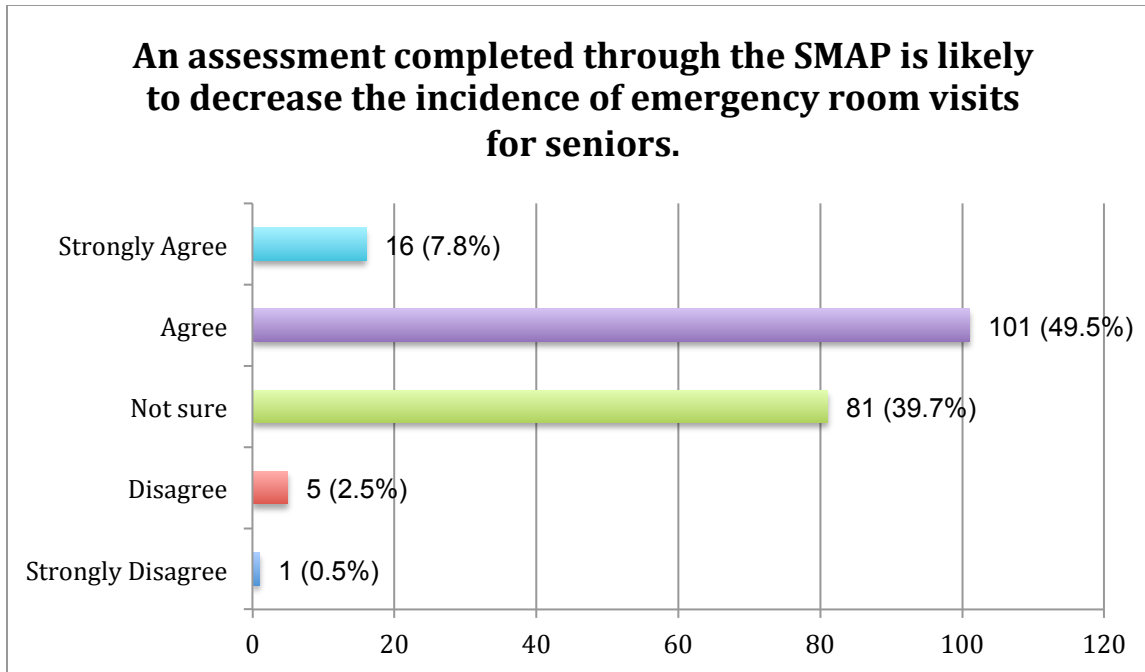


Figure 8: The number of respondents who indicated their level of agreement that SMAP assessments decrease the incidence of emergency room visits for seniors. Total number of responses = 204.

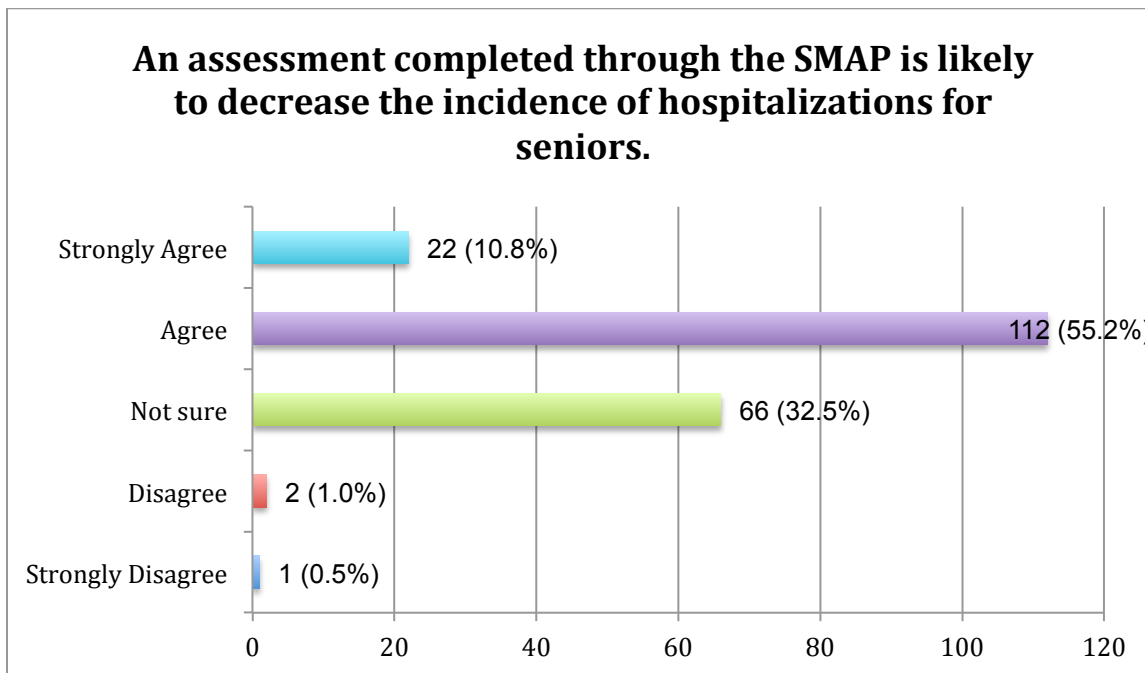


Figure 9: The number of respondents who indicated their level of agreement that SMAP assessments decrease the incidence of hospitalizations for seniors. Total number of responses = 203.

The fourth purpose of the SMAP is *to reduce duplication and or wastage of medication*. This was assessed using two questionnaire items: (1) *SMAP assessments reduce duplication of*

medication therapy for seniors, and, (2) Providing SMAP assessments to seniors reduces medication wastage. One hundred ninety-seven of the 202 respondents (97.5%) agreed or strongly agreed that SMAP assessments reduce duplication of medication therapy for seniors (Figure 10).

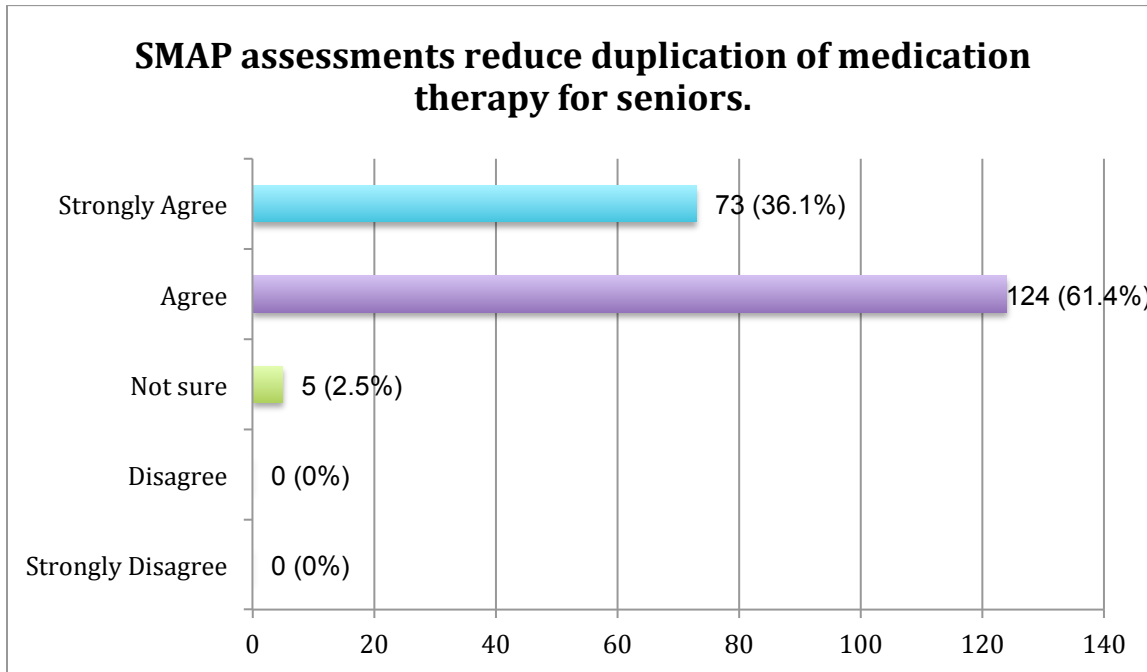


Figure 10: The number of respondents who indicated their level of agreement that SMAP assessments reduce duplication of medication therapy for seniors. Total number of responses = 203.

Out of 203 respondents, 171 (84.2%) agreed or strongly agreed that providing SMAP assessments to seniors reduces medication wastage (Figure 11). Only four respondents (2%) disagree with this statement and no one indicated that they strongly disagreed.

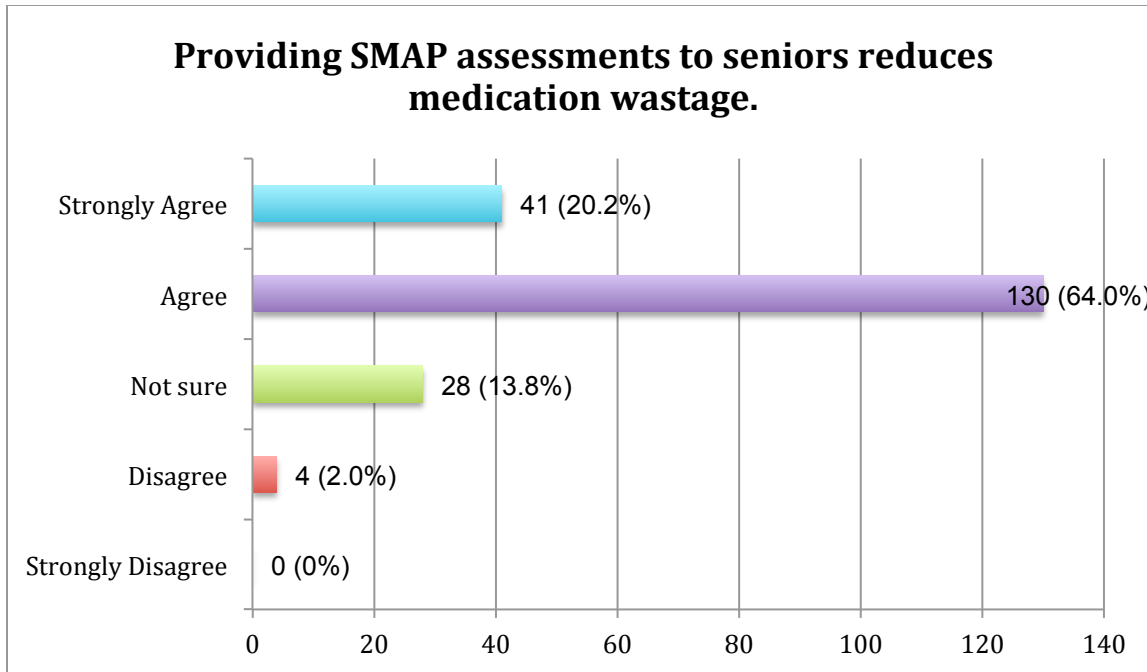


Figure 11: The number of respondents who indicated their level of agreement that providing SMAP assessments to seniors reduces medication wastage. Total number of responses = 203.

The fifth purpose of the SMAP is *to optimize medication adherence*. Respondents were asked to indicate their level of agreement with the statement: *Seniors who receive an assessment through the SMAP have improved medication adherence following the assessment*. One hundred fifty-two of the 203 respondents (74.9%) indicated that they agreed or strongly agreed with this statement (Figure 12).

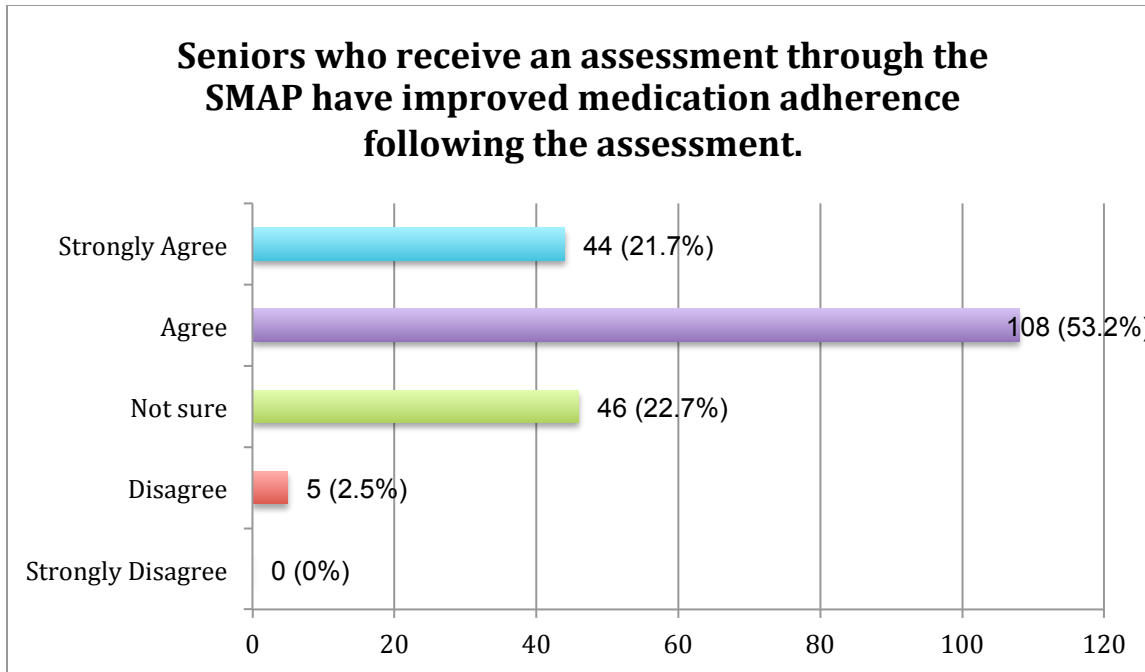


Figure 12: The number of respondents who indicated their level of agreement that seniors who receive an SMAP assessment have improved medication adherence following the assessment. Total number of responses = 203.

The sixth purpose of the SMAP is to *provide support to seniors living in the community that will allow them to age within their own home*. Respondents were asked for their level of agreement with the following statement: *SMAP assessments provide support to seniors living in the community that will allow them to age within their own home*. Of the 203 respondents to this question, 133 (65.5%) indicated that they agreed or strongly agreed with the statement (Figure 13). A large portion of respondents, 59 (29.1%), indicated that they were not sure if SMAP assessments provided support to allow seniors to age within their own home (Figure 13).

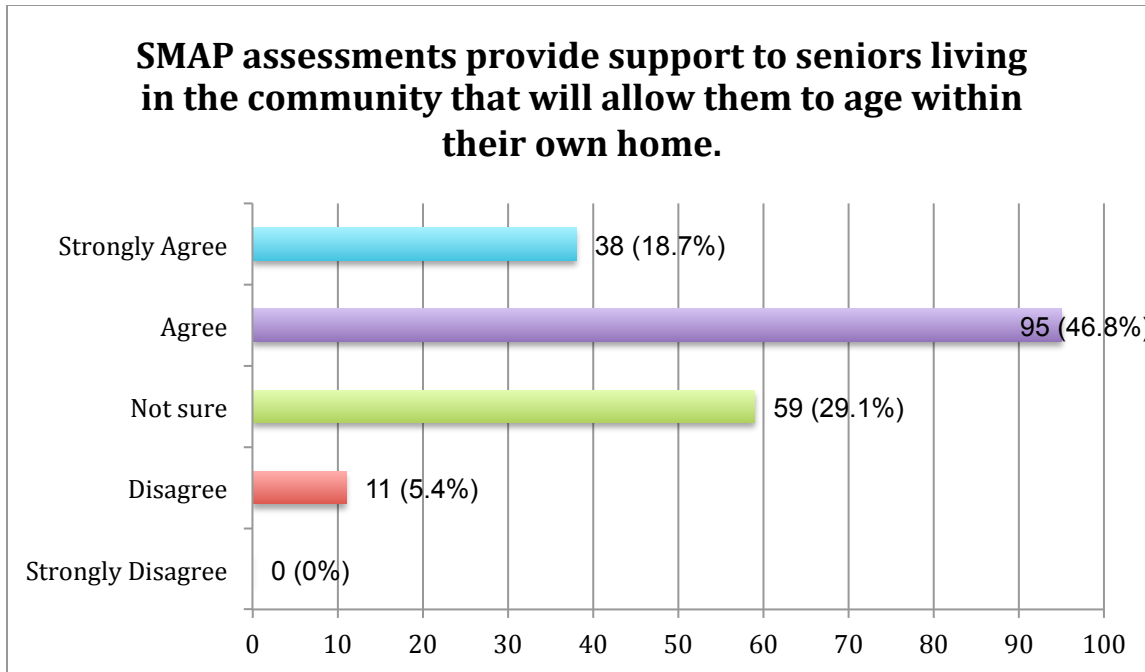


Figure 13: The number of respondents who indicated their level of agreement that SMAP assessments provide support to seniors living in the community that will allow them to age within their own home. Total number of responses = 203.

The last purpose of the SMAP is: *To assist the patient and/or caregiver with appropriate and cost-effective medication administration.* Respondents were presented with the statement: *SMAP assessments provide an opportunity for pharmacists to assist their patients and/or caregivers in administering their medications appropriately.* One hundred ninety-six of the 203 respondents (96.6%) to this question agreed or strongly agreed with the statement (Figure 14).

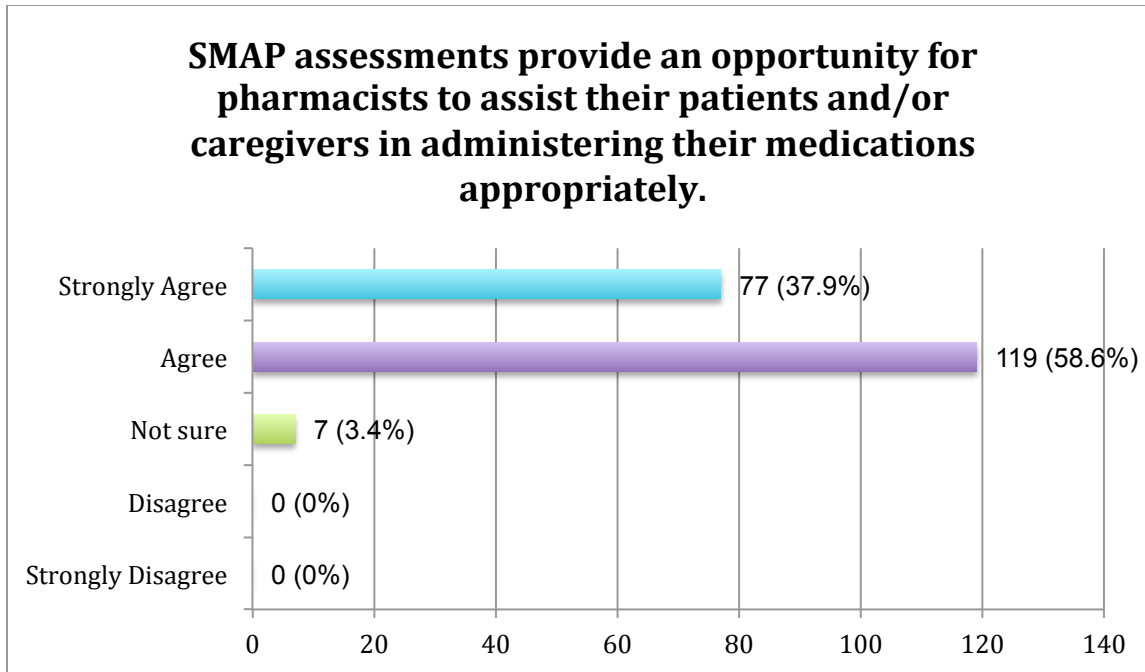


Figure 14: The number of respondents who indicated their level of agreement that SMAP assessments provide an opportunity for pharmacists to assist their patients and/or caregivers in administering their medications appropriately. Total number of responses = 203.

6.5 Pharmacists' Personal Experiences with the SMAP

Respondents were asked additional questions in part A relating to their personal experiences with the SMAP. The 207 pharmacists who indicated that they had completed at least one SMAP medication assessment were asked about specific aspects of their experiences.

When asked for their level of agreement with the statement “I am confident in my ability to identify drug related problems when I perform SMAP medication assessments”, 172 of the 195 respondents (88.2%) agreed or strongly agreed (Figure 15).

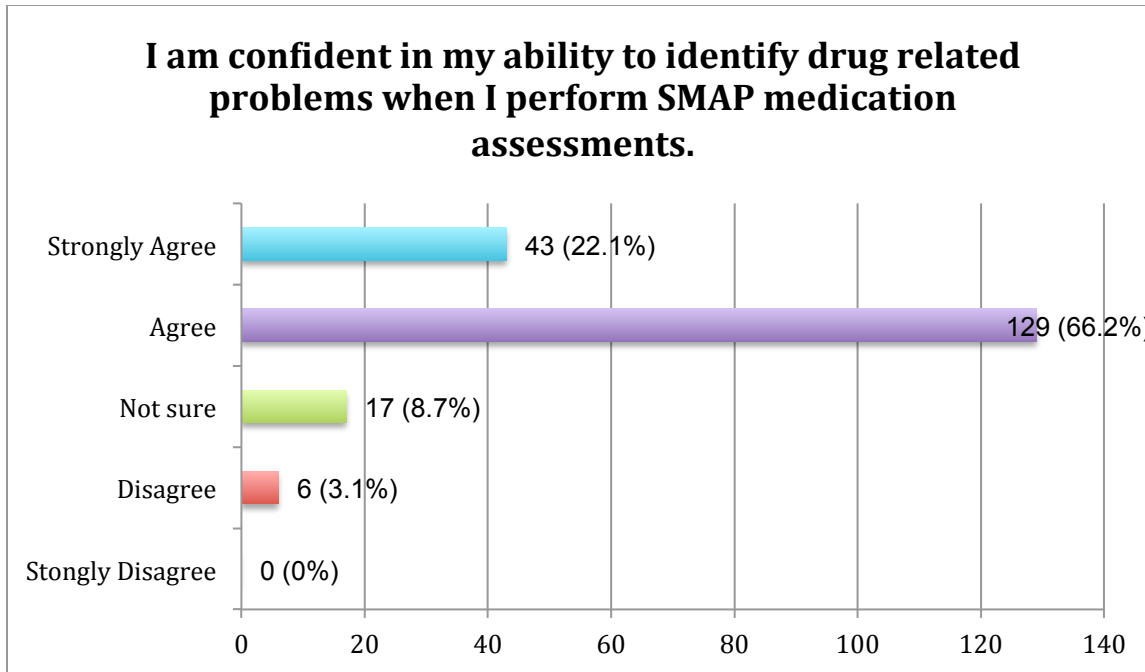


Figure 15: The number of respondents who indicated their level of agreement with the statement “I am confident in my ability to identify drug related problems when I perform SMAP medication assessments”. Total number of responses = 195.

Pharmacists were also asked to respond to the statement “Sometimes I have trouble identifying drug related problems when completing a SMAP assessment because I do not have enough information about the patient’s medical history”. One hundred thirty-one of the 195 respondents (67.2%) agreed or strongly agreed (Figure 16).

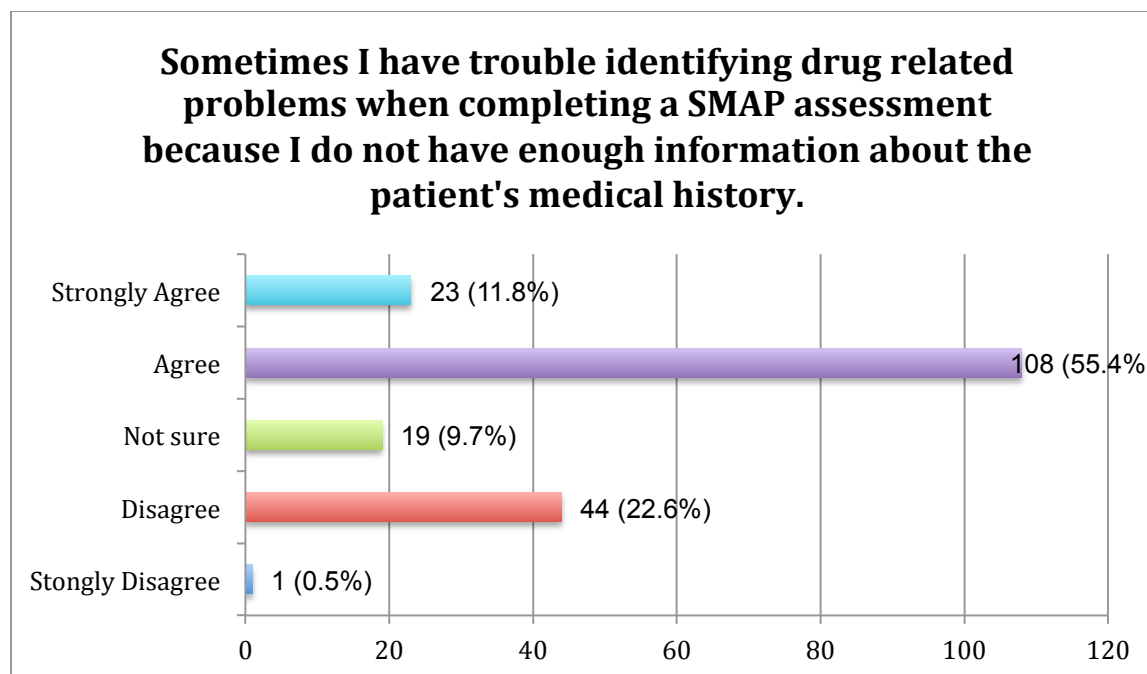


Figure 16: The number of respondents who indicated their level of agreement with the statement “Sometimes I have trouble identifying drug related problems when completing a SMAP assessment because I do not have enough information about the patient’s medical history”. Total number of responses = 195.

When asked, “When you are completing a SMAP assessment, how often do you contact the physician to request additional information from the patient’s chart?”, only three of the 195 respondents (1.5%) indicated that they “always” do this (Figure 17). The majority of respondents (n=112/195, 57.4%) indicated that they “rarely” (n=87/195, 44.6%) or “never” (n=25/195, 12.8%) request additional information from the patient’s chart (Figure 17).

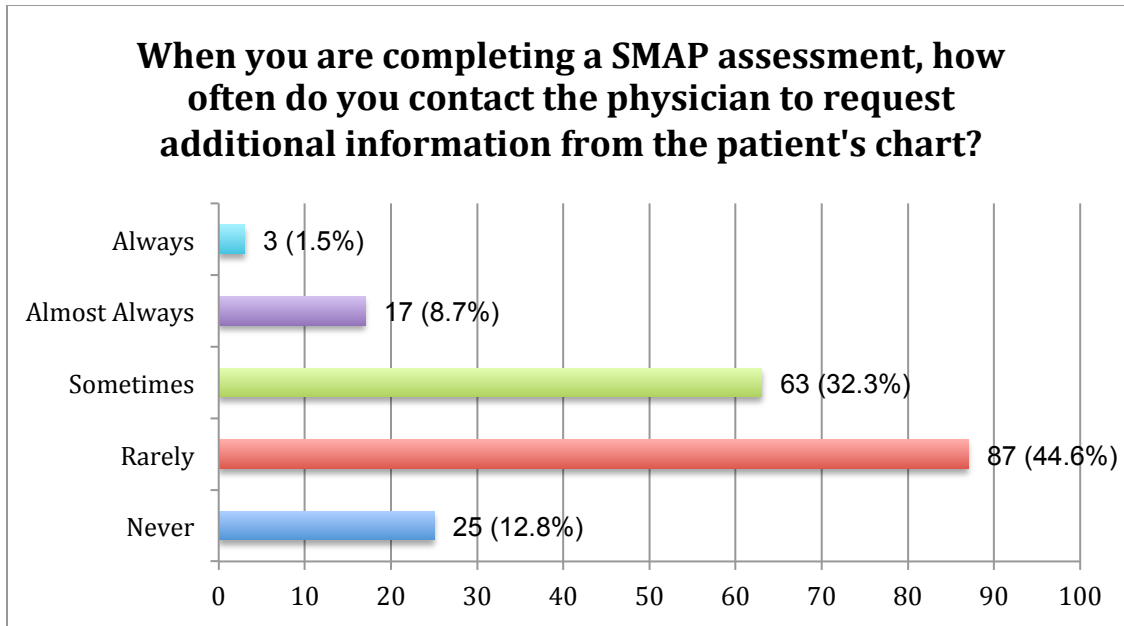


Figure 17: The number of respondents who indicated how often they contact the physician to request additional information from the patient’s chart when completing a SMAP assessment. Total number of responses = 195.

Following a SMAP assessment and the discovery of potential drug related problems, the issues need to be brought to the attention of the patient and/or physician. The majority of pharmacists (96.4%) who responded to the survey agreed that they were comfortable discussing their recommendations with patients (Figure 18).

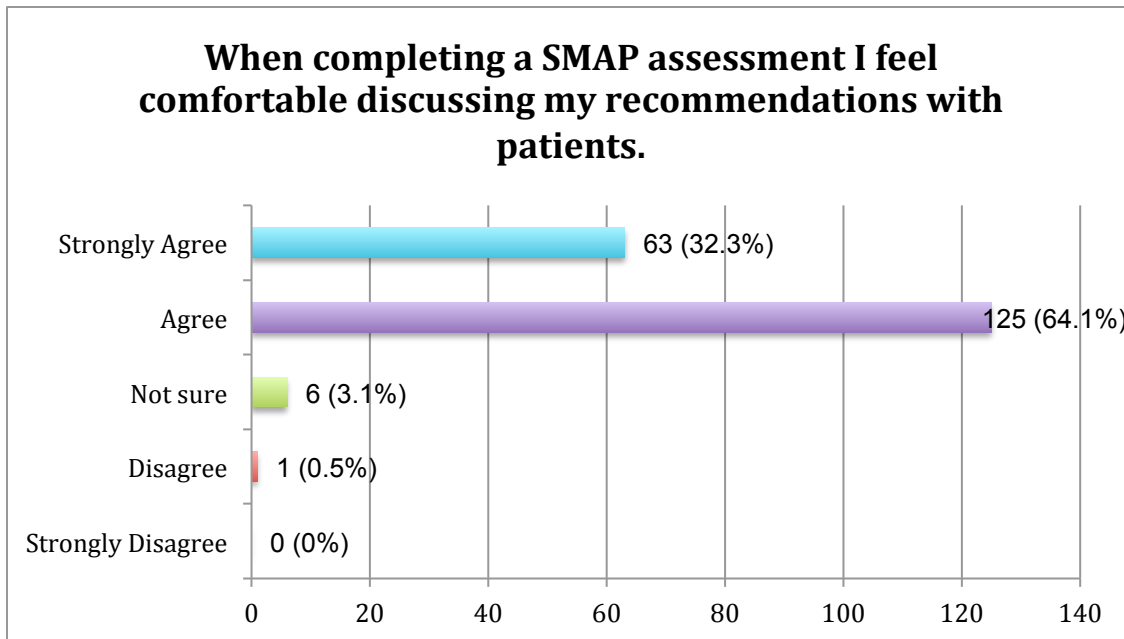


Figure 18: The number of respondents who indicated their level of agreement with the statement “When completing a SMAP assessment I feel comfortable discussing my recommendations with patients”. Total number of responses = 195.

Respondents also indicated that patients often agreed with the recommendations that were made during the SMAPs. When responding to the question, “How often do patients agree with the recommendations that you make when completing a SMAP assessment?”, 150 of the 195 respondents (76.9%) indicated that patients always or almost always agree with the pharmacist’s recommendations (Figure 19).

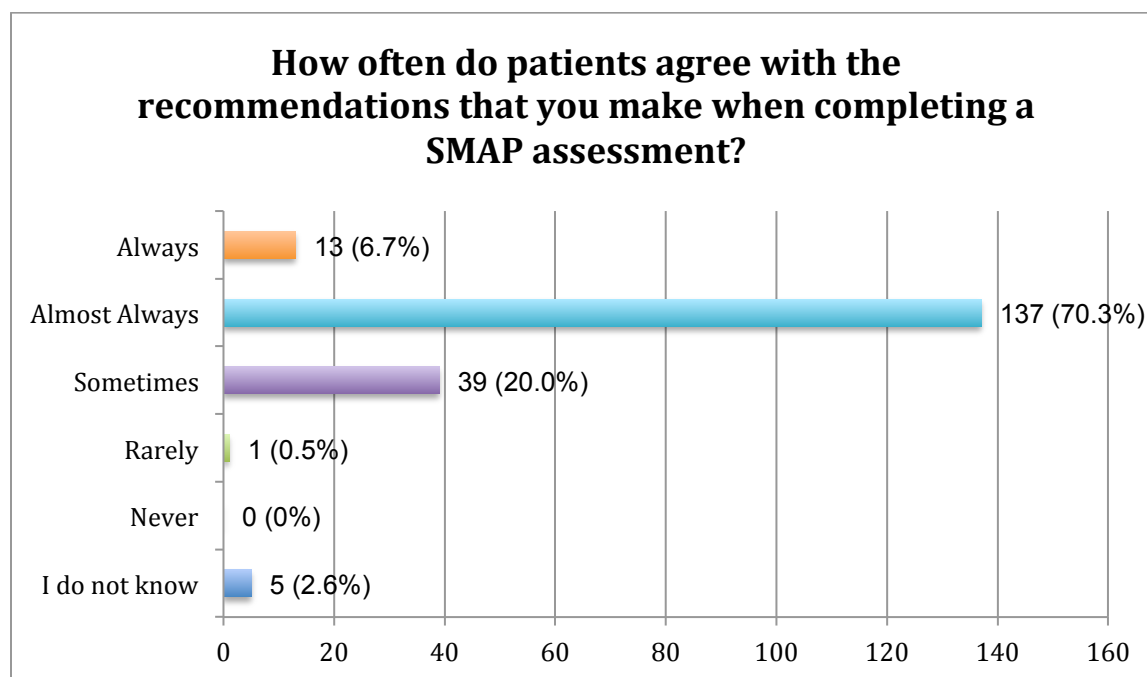


Figure 19: The number of respondents who indicated how often patients agree with the recommendations that they make when completing a SMAP assessment. Total number of responses = 195.

It is expected that a program like the SMAP would involve collaboration between pharmacists and physicians to make appropriate changes to their patient’s medication therapy. All respondents, regardless of whether they had completed a SMAP assessment or not, were asked to indicate their level of agreement with the statement, “The SMAP encourages collaboration between pharmacists and physicians”. A substantial portion, 40, of 153 respondents (19.0%) indicated that they were not sure if the SMAP encouraged collaboration between physicians and pharmacists and 18 (8.5%) disagreed or strongly disagreed (Figure 20).

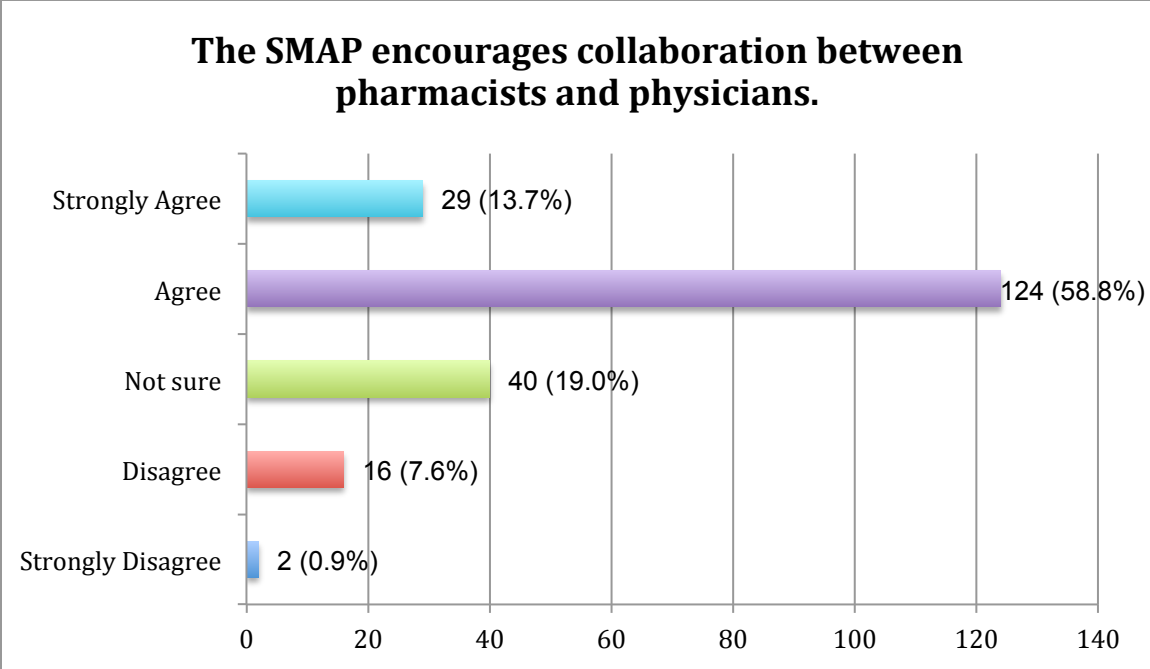


Figure 20: The number of respondents who indicated their level of agreement with the statement “The SMAP encourages collaboration between pharmacists and physicians”. Total number of responses = 211.

In response to the statement, “When completing a SMAP assessment I feel comfortable making recommendations to physicians”, the majority, 156, of the 191 respondents (81.7%) agreed or strongly agreed (Figure 21).

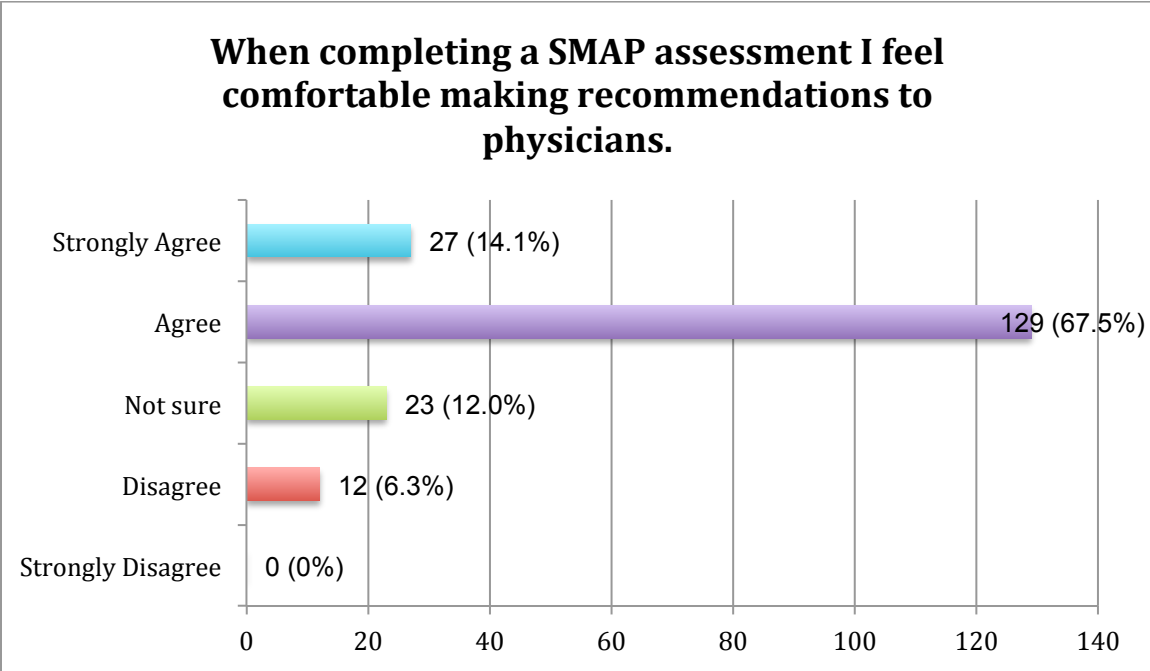


Figure 21: The number of respondents who indicated their level of agreement with the statement “When completing a SMAP assessment I feel comfortable making recommendations to physicians”. Total number of responses = 191.

One hundred and one of 192 respondents (52.6%) indicated that physicians “sometimes” accept their recommendations when they are completing a SMAP assessment and 63 (32.8%) indicated that physicians “almost always” accept their recommendations (Figure 22).

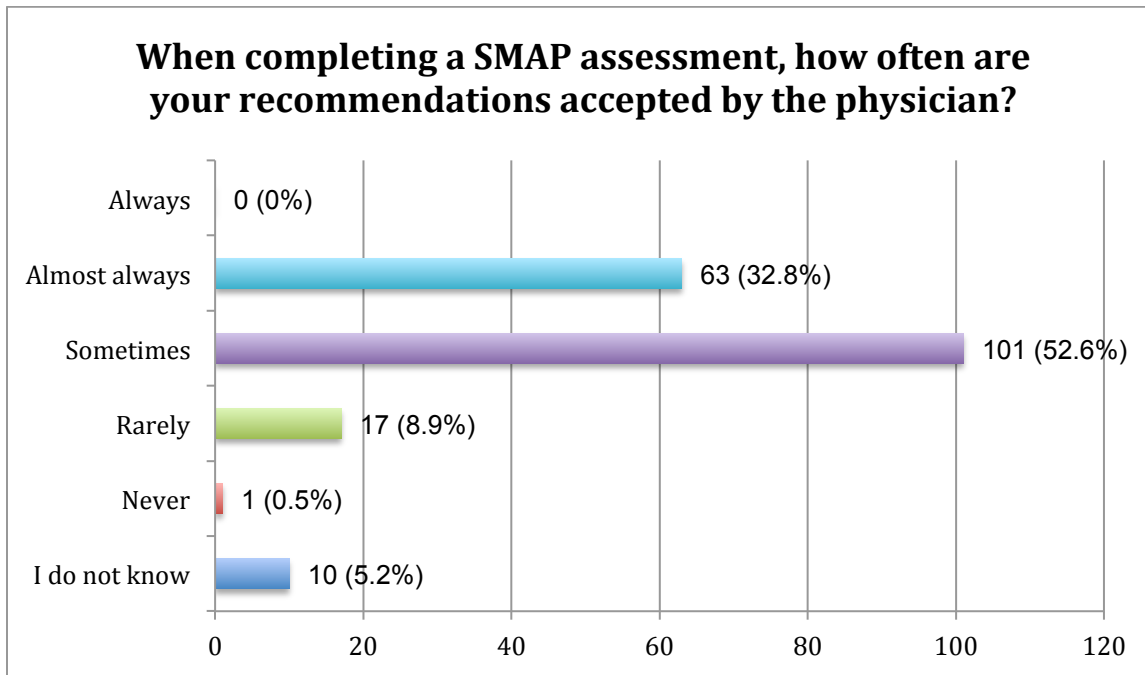


Figure 22: The number of respondents who indicated how often their recommendations are accepted by physicians when completing SMAP assessments. Total number of responses = 192.

Pharmacists have multiple methods to communicate with physicians. The most popular method of communication with physicians regarding SMAP assessments amongst respondents was via fax, with 182 of the 193 respondents (94.3%) indicating that they typically use this method of communication with physicians (Figure 23). Nine respondents indicated that they used other methods of communication, including: email, the patient’s electronic medical record (EMR), the patient’s chart or a typed assessment hand delivered to the physician’s office (Figure 23).

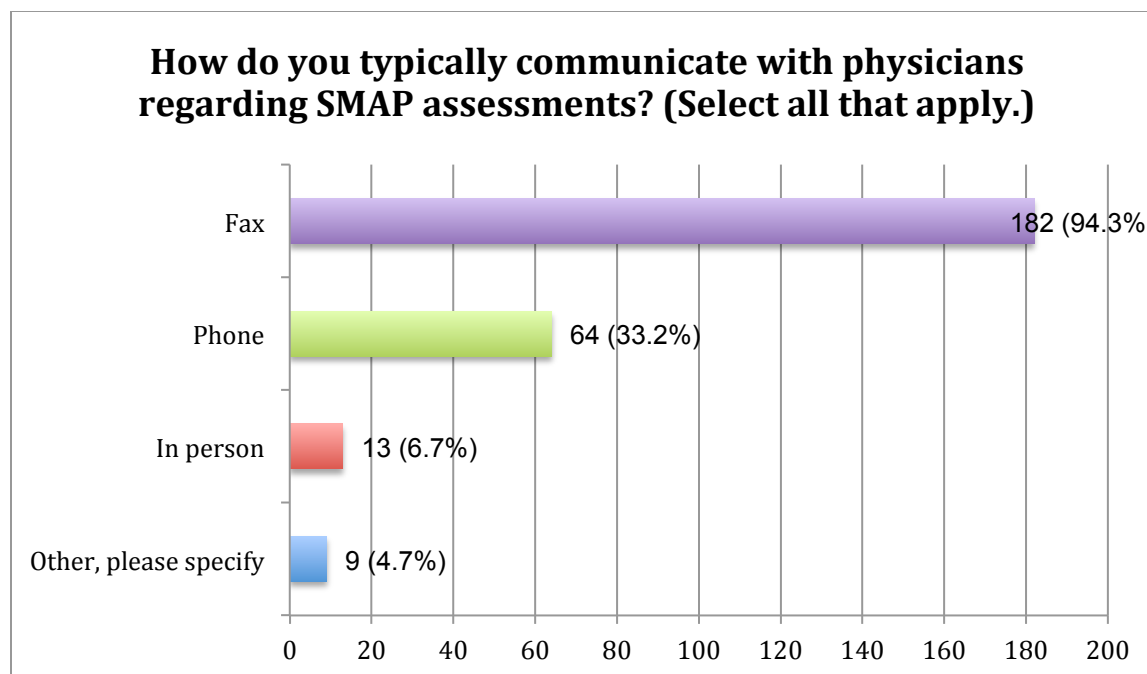


Figure 23: The number of respondents who indicated that they communicate with physicians regarding SMAP assessments via the options listed: fax, phone, in person or other. Respondents could choose multiple response options. Total number of respondents = 193.

A SMAP assessment provides pharmacists an opportunity to help patient properly use complicated medication related devices. Respondents were asked, “During a SMAP assessment, how often do you have patients who use devices (e.g., inhalers, eye drops, etc.) demonstrate their technique?”. Only 50 of the 187 respondents (26.7%) reported that they “always” or “almost always” have patients demonstrate device techniques during a SMAP assessment (Figure 24).

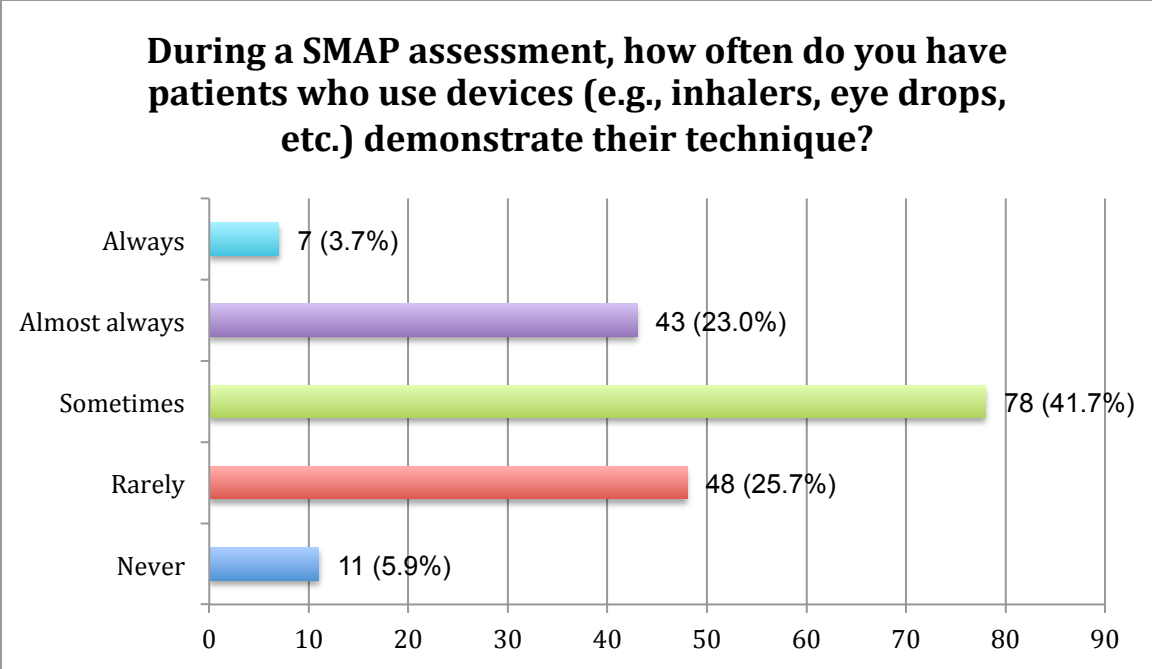


Figure 24: The number of respondents who indicated how often they have patients who use devices demonstrate their technique during a SMAP assessment. Total number of responses = 187.

A SMAP assessment also provides an opportunity for the pharmacist to assess the cost-effectiveness of the medications that the patient is taking and consider lower cost alternatives. Respondents were asked, “During a SMAP assessment, how often do you personally assess whether patients are on the most cost-effective medications?”. Only 82 of the 188 respondents (43.6%) claimed that they “always” or “almost always” do this (Figure 25).

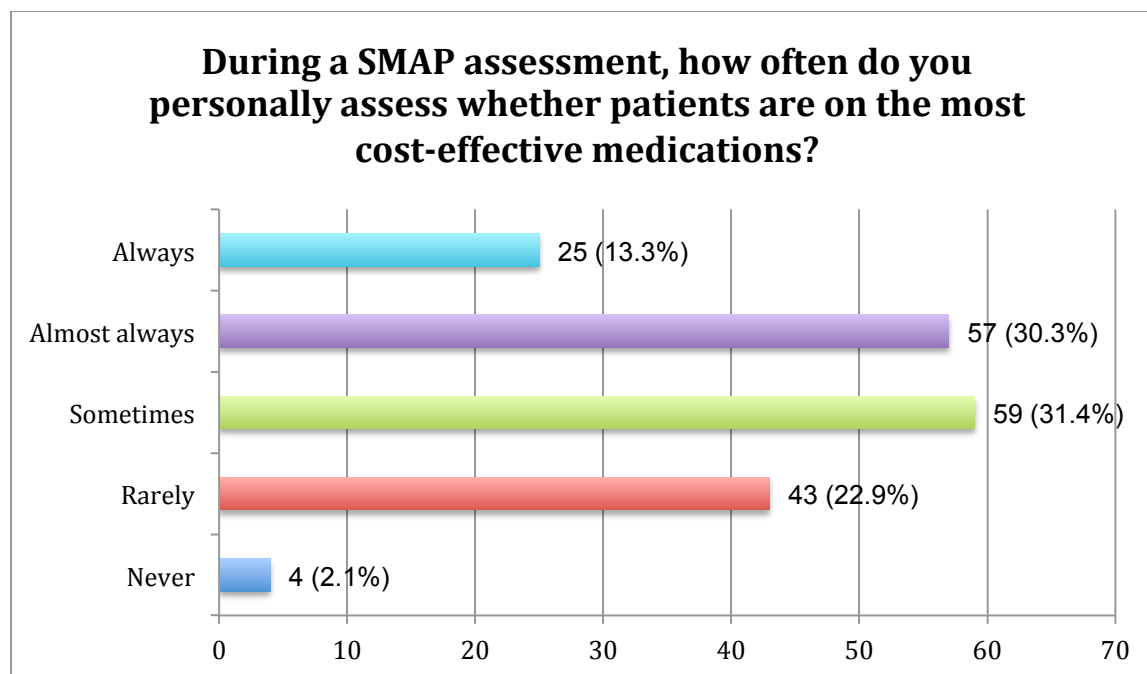


Figure 25: The number of respondents who indicated how often they assess whether patients are on the most cost-effective medications during a SMAP assessment. Total number of responses = 188.

As part of a complete SMAP medication assessment, pharmacists are required by the Ministry of Health to view the patient information available from the Pharmaceutical Information Program (PIP), which is a web-based database of prescription medications dispensed in any pharmacy across the province, for all patients who receive an SMAP assessment. Pharmacists were asked, “How often do you access and view information from the PIP Viewer when completing a SMAP assessment?”. Of the 187 respondents who answered this question, only 134 (71.7%) indicated that they “always” access and view information from the PIP Viewer to complete a SMAP assessment (Figure 26).

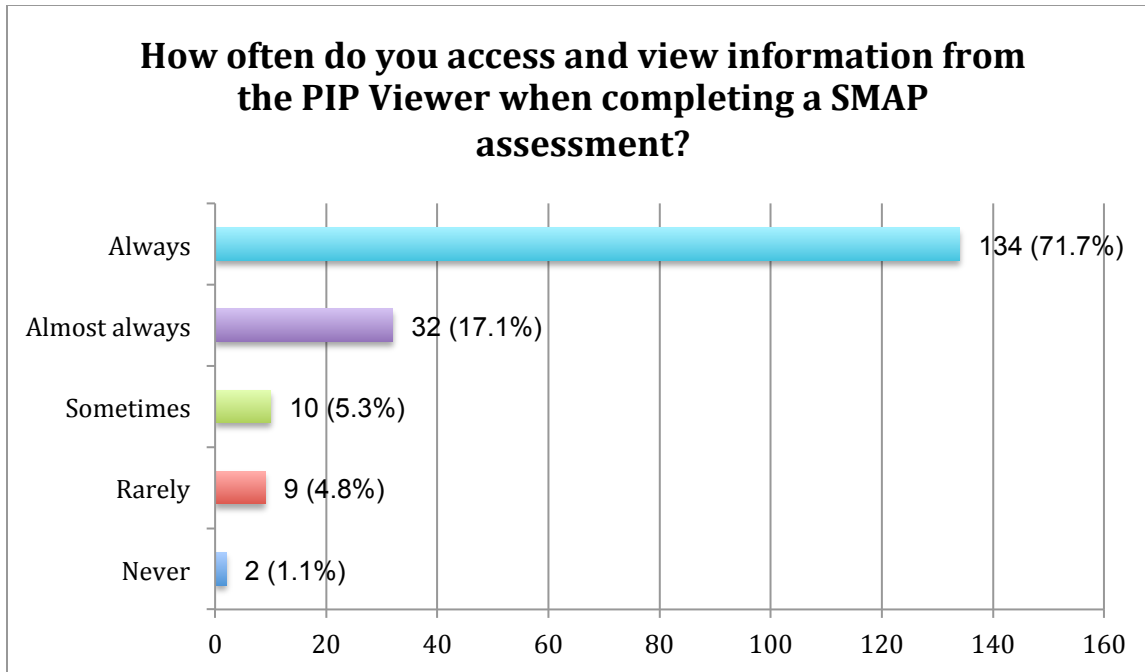


Figure 26: The number of respondents who indicated how often they access and view information from the PIP Viewer when completing a SMAP assessment. Total number of responses = 187.

Along with accessing the PIP, pharmacists have another resource available, the electronic health record (eHR) Viewer. As it was expected that some pharmacies and pharmacists have not completed the appropriate paperwork and training to access the eHR Viewer, all respondents (not just those who indicated that they had completed at least one SMAP) were asked, “Do you have access to the eHR Viewer in your pharmacy?” (Figure 27).

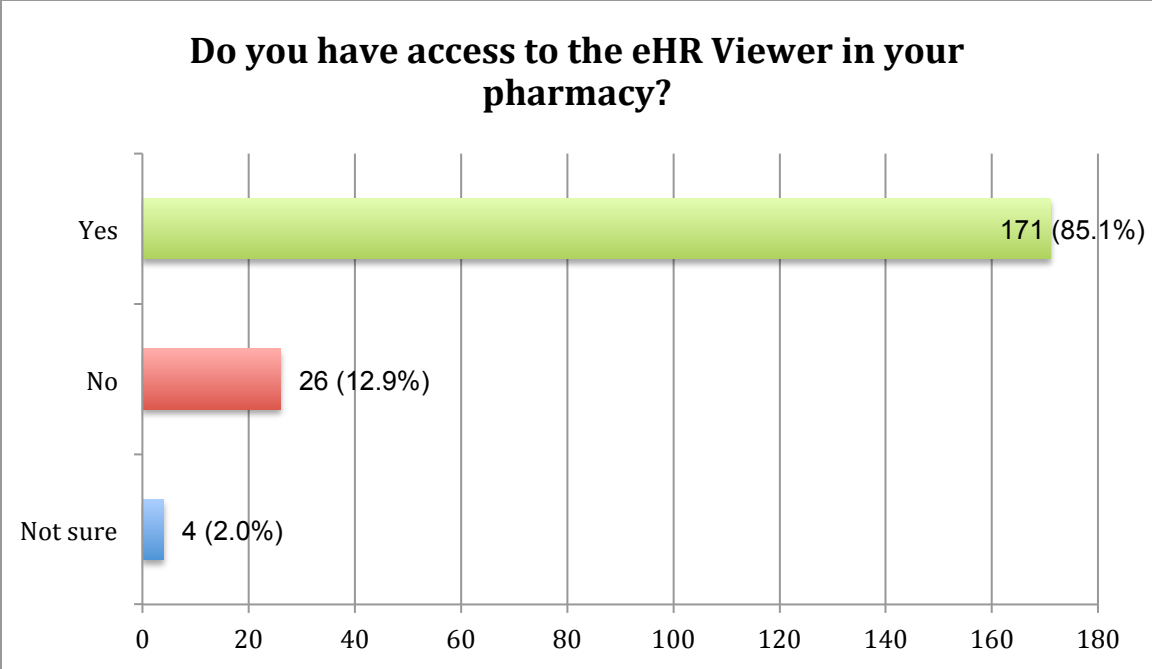


Figure 27: The number of respondents who indicated whether or not they had access to the eHR Viewer in the pharmacy where they work. Total number of responses = 201.

Pharmacists who indicated that they had completed at least one SMAP assessment and also indicated that they have access to the eHR Viewer were then asked, “How often do you use information from the eHR Viewer when completing a SMAP assessment?”. Ninety-six of the 161 respondents (59.6%) indicated that they “always” use information from the eHR Viewer when completing SMAP assessments (Figure 28).

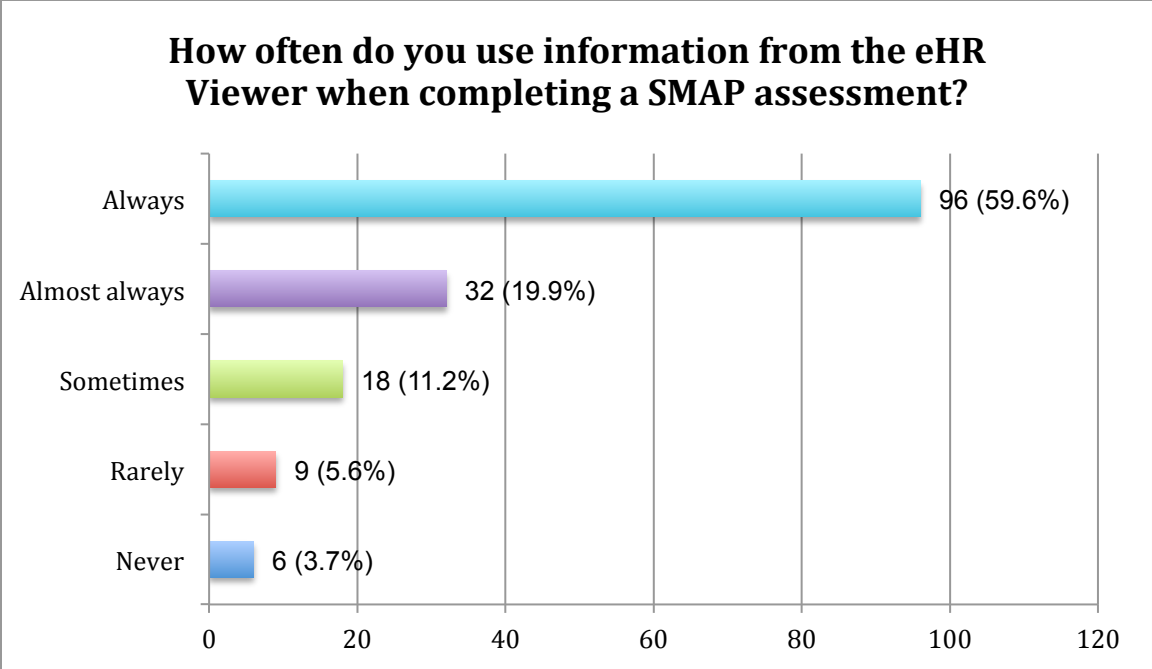


Figure 28: The number of respondents who indicated how often they use information from the eHR Viewer when completing a SMAP assessment. Total number of responses = 161.

The 26 respondents who had indicated that they did not have access to the eHR Viewer were asked to answer the additional question, “Why do you not have access to the eHR Viewer?” (Figure 29). Thirteen respondents indicated “other” and the main reasons pharmacists stated for not having access to the eHR Viewer were technical difficulties with the viewer working on their dispensary computers, waiting for approval from their “head office”, or having submitted an application to eHealth Saskatchewan for access and currently waiting on approval (Figure 29).

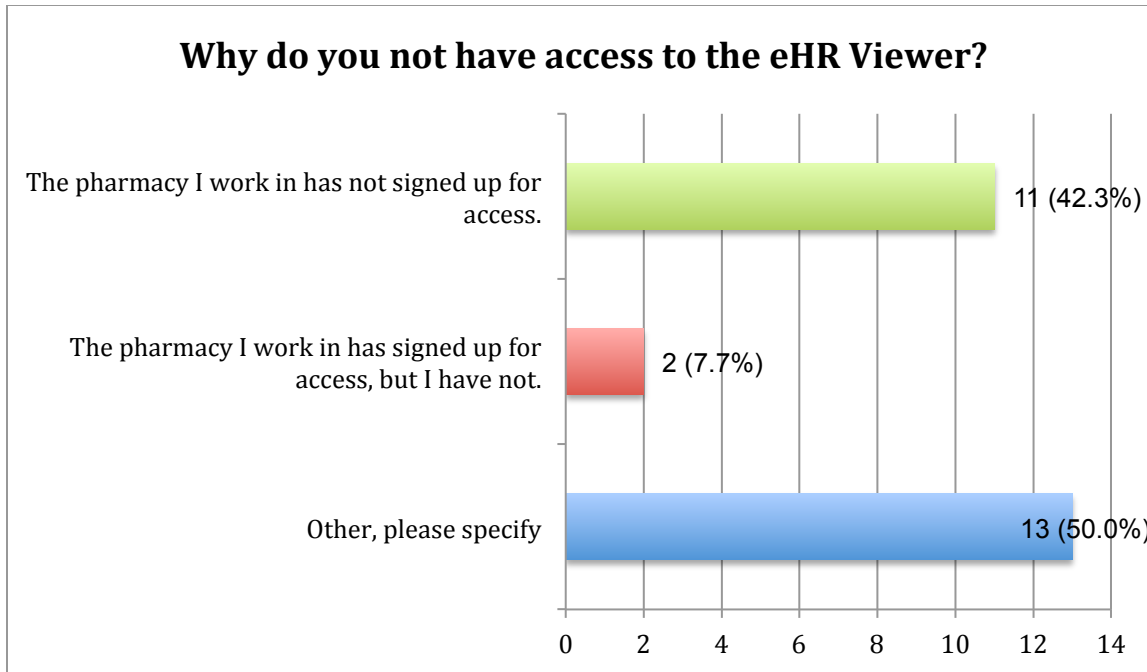


Figure 29: The number of respondents who indicated why they did not have access to the eHR Viewer in the pharmacy where they work. Total number of responses = 26.

6.6 Pharmacists' Attitudes towards the SMAP

Respondents were also asked questions regarding their attitudes towards the SMAP. All pharmacists, regardless of whether they have provided the SMAP service or not, were asked, “Do you think that providing medication assessments through the SMAP is good use of pharmacists’ skills?”. The majority, 185, of the 203 respondents (91.1%) responded positively (Figure 30).

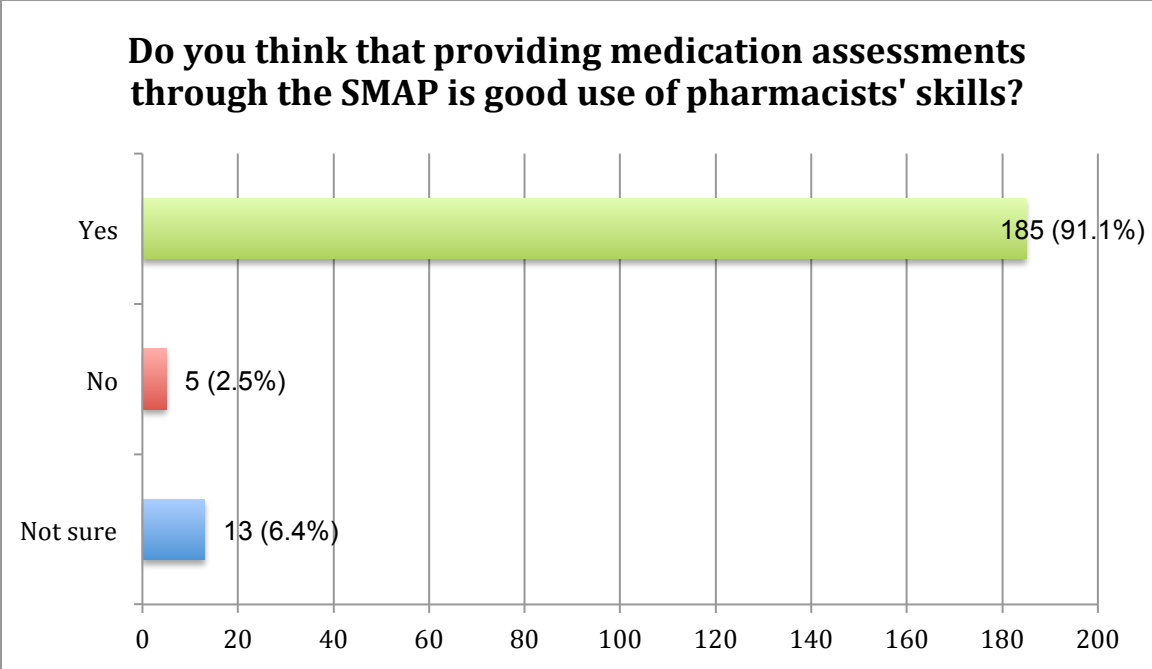


Figure 30: The number of respondents who indicated whether or not they think that providing medication assessments through the SMAP is a good use of pharmacists’ skills. Total number of responses = 203.

Respondents, regardless of their experience with the SMAP, were also asked, “Do you think that the pharmacy profession in Saskatchewan should focus more on services other than the SMAP?”. There was not as much agreement among respondents when it came to this question (Figure 31).

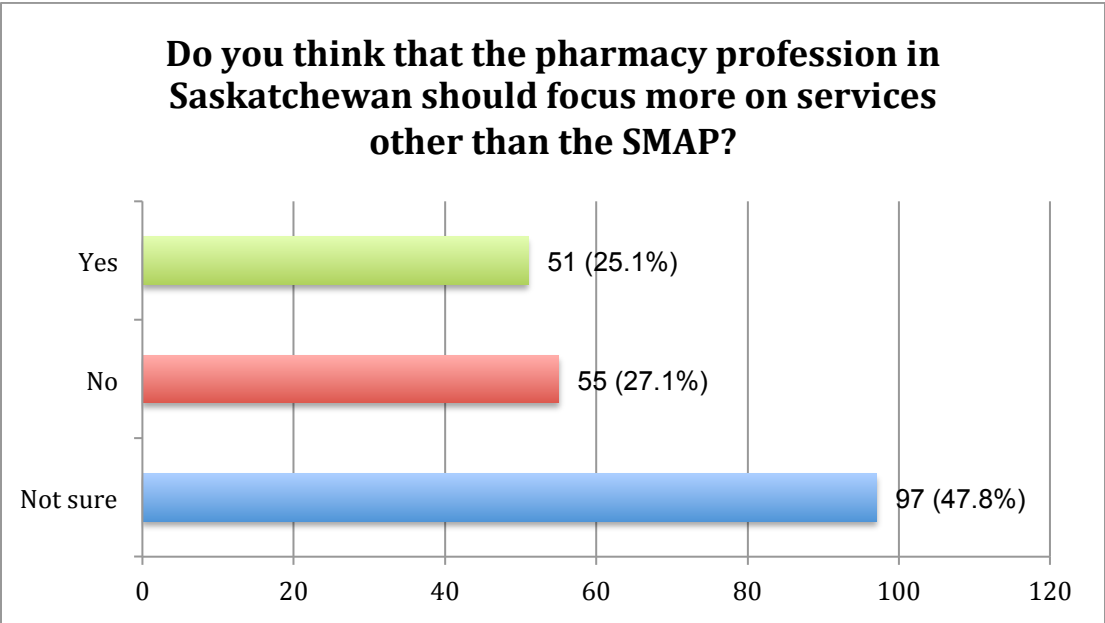


Figure 31: The number of respondents who indicated whether or not they think that the pharmacy profession in Saskatchewan should focus more on services other than the SMAP. Total number of responses = 203.

Pharmacists who indicated that they had completed at least one SMAP were asked to respond to the statement, “I enjoy performing SMAP assessments”. The majority of the 188 respondents, 159 (84.6%), indicated that they enjoyed performing SMAP assessments (Figure 32).

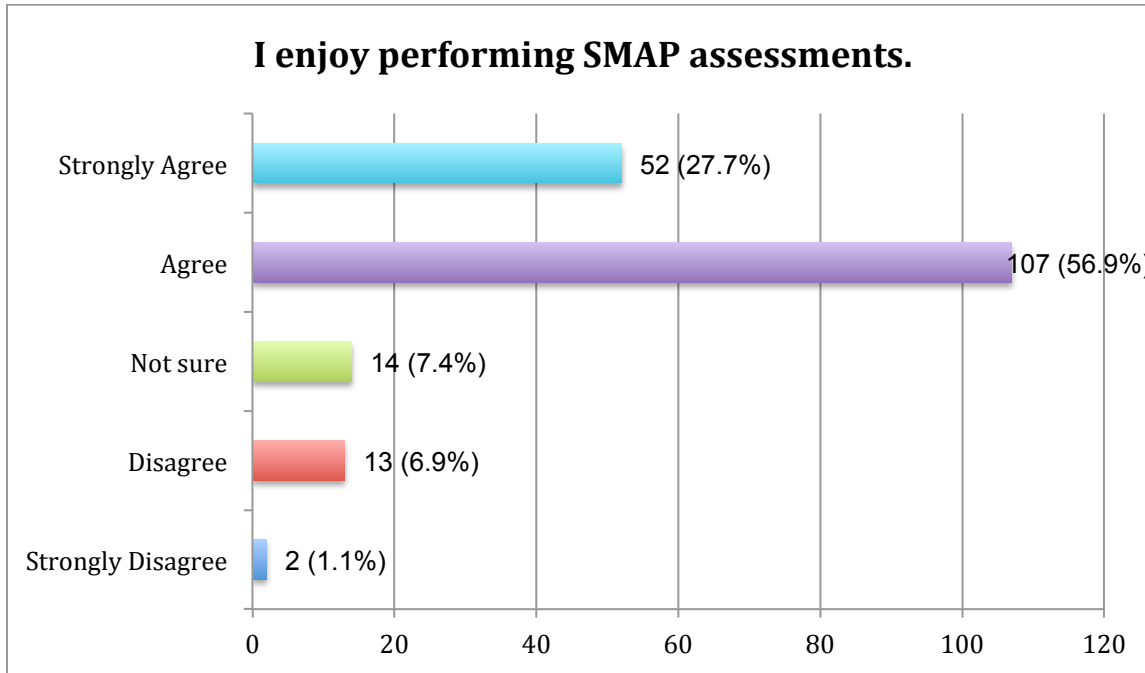


Figure 32: The number of respondents who indicated their level of agreement with the statement “I enjoy performing SMAP assessments”. Total number of responses = 188.

6.7 Barriers to Providing SMAP Medication Assessments

A list of potential barriers to providing SMAP assessments was developed (see Methods section for details). Respondents were asked to select all the barriers from the list of potential options that they feel make it difficult for them to provide SMAP services (Figure 33). The barriers that over half of the 199 respondents selected included: lack of time (n=144/199, 72.4%); many patients who need the service are not eligible (e.g., age <65, NIHB) (n=130/199, 65.3%); difficulty in having patients come to the pharmacy due to their reduced mobility (n=125/199, 62.8%); lack of patient interest in participating in the program (n=117/199, 58.8%); and poor patient awareness of the program (n=108/199, 54.3%) (Figure 33).

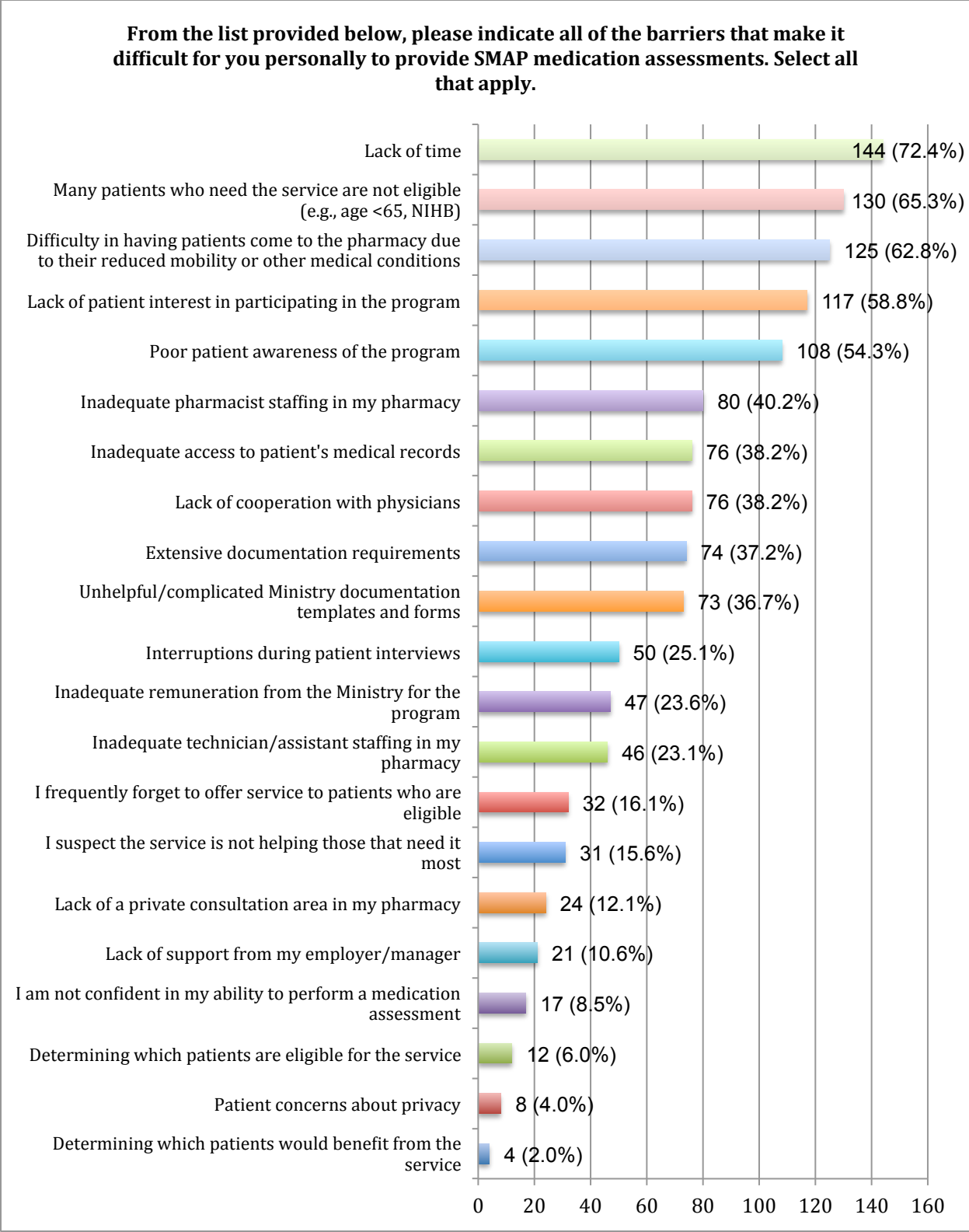


Figure 33: The number of respondents who indicated that a barrier from the list is a barrier that makes it difficult for them personally to provide SMAP medication assessments. Total number of respondents = 199.

A second question, using the same list of barriers, asked pharmacists to select only the top three barriers that make it difficult for them to provide the service (Figure 34). There was only one barrier that over half of the 199 respondents selected, which was 'lack of time' (n=112/199, 56.3%) (Figure 34).

From the list provided below, please indicate the top three (3) barriers that make it difficult for you personally to provide SMAP medication assessments.

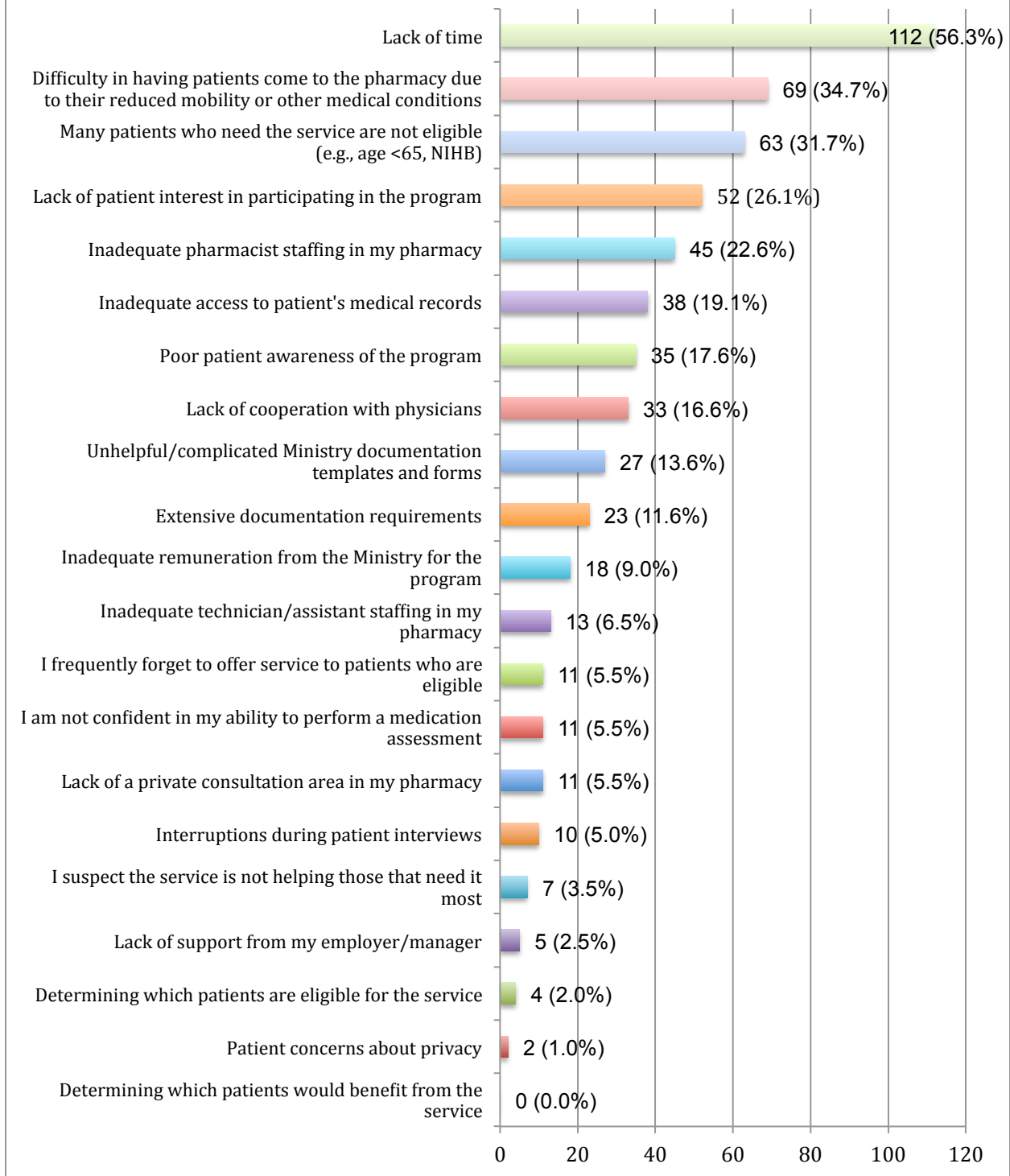


Figure 34: The number of respondents who indicated that a barrier from the list is one of the top three (3) barriers that make it difficult for them personally to provide SMAP medication assessments. Total number of respondents = 199.

6.8 Facilitators to Providing SMAP Medication Assessments

A list of potential facilitators to providing SMAP assessments was also developed from the literature.^{13,28,36-39} Respondents were asked to select the top three facilitators that help them to provide SMAP medication assessments. The facilitators that the 198 respondents chose most often included: good teamwork within my pharmacy (n=87/198, 43.9%); support from my employer/manager (n=76/198, 38.4%); and, my personal belief that medication assessments are important to improve the care of my patients (n=75/198, 37.9%) (Figure 35).

From the list provided below, please indicate the top three (3) facilitators currently helping you to provide medication assessments that fulfill the stated purposes of the SMAP.

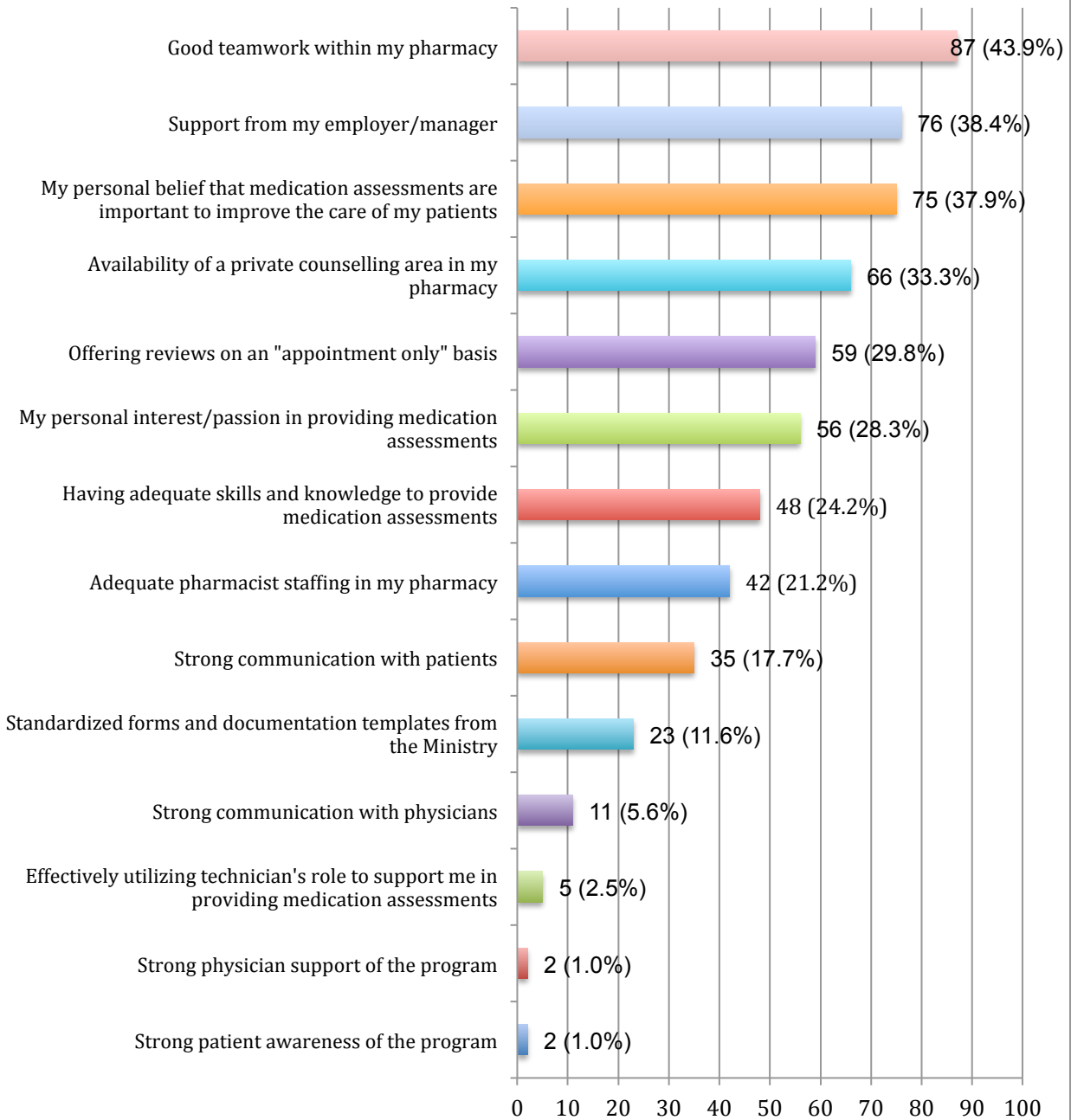


Figure 35: The number of respondents who indicated that a facilitator from the list is one of the top three (3) facilitators currently helping them to provide SMAP medication assessments that fulfill the stated purposes of the SMAP. Total number of respondents = 198.

6.9 Secondary Analysis: Comparisons of the Data to find Relationships

6.9.1 Question comparisons: One-way Analysis of Variance (ANOVA)

Seven comparisons were made in the secondary analysis using a One-way Analysis of Variance (ANOVA) in an effort to determine if differences exist between the data. A statistically significant difference ($p < 0.05$) was found with two of these comparisons (Table 3). The number of SMAP assessments completed in a typical month and respondent's level of agreement with the two statements, "I enjoy performing SMAP assessments" ($F(2,185) = 6.489, p = 0.002$) and, "When completing a SMAP assessment I feel comfortable making recommendations to physicians" ($F(2,188) = 4.862, p = 0.009$), were both found to be statistically significant.

Table 3: Question comparisons – One-way Analysis of Variance (ANOVA)		
	Comparison Questions	p-value
Indicate the number of SMAP medication assessments that you personally complete in a typical month. (0, 1-5, 6-21+)	I enjoy performing SMAP assessments.	0.002
	Sometimes I have trouble identifying drug related problems when completing a SMAP assessment because I do not have enough information about the patient's medical history.	0.823
	When completing a SMAP assessment I feel comfortable making recommendations to physicians.	0.009
How many years have you been a licensed pharmacist? (1 year or less, 2-5 years, 6-10 years, 11-20 years, 21-30 years, more than 30 years)	I am confident in my ability to identify drug related problems when I perform SMAP medication assessments.	0.854
	When you are completing a SMAP assessment, how often do you contact the physician to request additional information from the patient's chart?	0.435
	When completing a SMAP assessment I feel comfortable making recommendations to physicians.	0.339
What is the population of the community where your pharmacy is located? (Rural, Small City, Large City)	The SMAP encourages collaboration between pharmacists and physicians.	0.662

Table 3: The results of the question comparisons using One-way Analysis of Variance (ANOVA). Significant results are shown in bold.

6.9.2 Question Comparisons: Tukey Post Hoc Analysis

For the two comparisons indicated above that were shown to be statistically significant, Tukey post hoc analysis was done to compare the groups in an attempt to identify the source of the specific significant relationships (Table 4).

Table 4: Post Hoc Analysis – Tukey Test				
	N (%)	Mean	p-value	
Indicate the number of SMAP medication assessments that you personally complete in a typical month.	I enjoy performing SMAP assessments. Strongly agree = 1 Agree = 2 Not sure = 3 Disagree = 4 Strongly disagree = 5			
	0 vs 1 to 5	19 (10.1%) 149 (79.6%)	2.32 2.00	0.263
	0 vs 6 to 21+	19 (10.1%) 20 (10.6%)	2.32 1.40	0.002
	1 to 5 vs 6 to 21+	149 (79.6%) 20 (10.6%)	2.00 1.40	0.008
	Indicate the number of SMAP assessments that you personally complete in a typical month.	When completing a SMAP assessment I feel comfortable making recommendations to physicians. Strongly agree = 1 Agree = 2 Not sure = 3 Disagree = 4 Strongly disagree = 5		
0 vs 1 to 5		19 (9.9%) 151 (79.1%)	2.53 2.09	0.027
0 vs 6 to 21+		19 (9.9%) 21 (11.0%)	2.53 1.86	0.008
1 to 5 vs 6 to 21+		151 (79.1%) 21 (11.0%)	2.09 1.86	0.337

Table 4: The results of the post hoc analysis using the Tukey test. Significant results are shown in bold.

For the comparison between “Indicate the number of SMAP medication assessments that you personally complete in a typical month” and “I enjoy performing SMAP assessments”, post hoc analysis showed two significant relationships with significance set at $p = 0.05$. Respondents had statistically significantly less agreement with the statement, “I enjoy performing SMAP assessments” if they indicated that they complete zero (2.32 ± 0.885 , $p = 0.002$) and 1 to 5 (2.00 ± 0.854 , $p = 0.008$) SMAP assessments in a typical month than if they indicated they complete 6 to 21+ SMAP assessments (1.40 ± 0.503) (Table 4).

For the comparison between “Indicate the number of SMAP medication assessments that you personally complete in a typical month” and “When completing a SMAP assessment I feel comfortable making recommendations to physicians”, post hoc analysis also showed two significant relationships with significance set at $p = 0.05$. Respondents had statistically significantly more agreement with the statement, “When completing a SMAP assessment I feel

comfortable making recommendations to physicians” if they indicated that they complete 1 to 5 (2.09 ± 0.692, p = 0.027) and 6 to 21+ (1.86 ± 0.727, p = 0.008) SMAP assessments in a typical month than if they indicated they complete zero SMAP assessments (2.53 ± 0.697) (Table 4).

6.9.3 Barriers/Facilitators vs. Number of SMAP Assessments Performed: Pearson Chi-Squared

To determine if there was a relationship between whether or not respondents selected the most commonly indicated barriers and facilitators and the number of SMAP assessments that they completed in a typical month, this data was organized into cross tabulations and Pearson’s chi-squared was used to test for significance.

Part B, Question 2, “From the list provided below, please indicate the **top three (3)** barriers that make it difficult for you personally to provide SMAP medication assessments”, resulted in four popular answers including: lack of time (n=112/199, 56.3%); difficulty in having patients come to the pharmacy due to their reduced mobility or other medical conditions (n=69/199, 34.7%); many patients who need the service are not eligible (e.g., age <65, NIHB) (n=63/199, 31.7%); and lack of patient interest in the program (n=52/199, 26.1%). These four barriers were compared to Question 2, “Indicate the number of SMAP medication assessments that you personally complete in a typical month”, and no statistically significant results were found with significance set at p = 0.05 (Table 5).

Table 5: Number of SMAP assessments performed vs. Barriers – Pearson Chi-squared				
Barrier		Selected/ Not selected	N	p-value
Indicate the number of SMAP medication assessments that you personally complete in a typical month	Lack of time	Not selected	84 (45.4%)	0.204
		Selected	101 (54.6%)	
		Total	185	
	Difficulty in having patients come to the pharmacy due to their reduced mobility or other medical problems	Not selected	120 (64.9%)	0.200
		Selected	65 (35.1%)	
		Total	185	
	Many patients who need the service are not eligible (e.g., age <65, NIHB)	Not selected	125 (67.6%)	0.167
		Selected	60 (32.4%)	
		Total	185	
	Lack of patient interest in participating in the program	Not selected	135 (73.0%)	0.950
		Selected	50 (27.0%)	
		Total	185	

Table 5: The results of the comparison between the number of SMAP assessments performed by a pharmacist and whether or not the pharmacist had selected the top barriers. No significant results were found.

Part B, Question 4, “From the list provided below, please indicate the **top three (3)** facilitators that currently help you to provide medication assessments that fulfill the stated purposes of the SMAP”, resulted in six popular answers including: good team work within my pharmacy (n=87/198, 43.9%); support from my employer/manager (n=76/198, 38.4%); my personal belief that medication assessments are important to improve the care of my patients (n=75/198, 37.9%); availability of a private counseling area in my pharmacy (n=66/198, 33.3%); offering reviews on an “appointment only” basis (n=59/198, 29.8%); and my personal interest/passion in providing medication assessments (n=56/198, 28.3%). These six facilitators were compared to Question 2, “Indicate the number of SMAP medication assessments that you personally complete in a typical month”, using Pearson Chi-squared test and no statistically significant results were found with significance set at p = 0.05 (Table 6).

Table 6: Number of SMAP assessments performed vs. Facilitators – Pearson Chi-Squared				
	Facilitator	Selected/ Not selected	N	p-value
Indicate the number of SMAP medication assessments that you personally complete in a typical month	Good teamwork within my pharmacy	Not selected	101 (54.3%)	0.194
		Selected	85 (45.7%)	
		Total	186	
	Support from my employer/manager	Not selected	114 (61.3%)	0.445
		Selected	72 (38.7%)	
		Total	186	
	My personal belief that medication assessments are important to improve the care of my patients	Not selected	114 (61.3%)	0.144
		Selected	72 (38.7%)	
		Total	186	
	Availability of a private counseling area in my pharmacy	Not selected	124 (66.7%)	0.090
		Selected	62 (33.3%)	
		Total	186	
Offering reviews on an “appointment only” basis	Not selected	130 (69.9%)	0.057	
	Selected	56 (30.1%)		
	Total	186		
My personal interest/passion in providing medication assessments	Not selected	133 (71.5%)	0.122	
	Selected	53 (28.5%)		
	Total	186		

Table 6: The results of the comparison between the number of SMAP assessments performed by a pharmacist and whether or not the pharmacist had selected the top facilitators. No significant results were found.

6.10 Non-response Bias

A comparison of responses from early and late respondents to the closed-ended questions was done to assess for potential non-response bias. With significance set at $p=0.05$, there were no significant differences between the responses given by early and late respondents.

The second method used to assess for non-response bias was a comparison of the demographic characteristics of the respondents to the demographic characteristics of the entire population of pharmacists in Saskatchewan. The demographic characteristics between the respondents to this survey and the population of Saskatchewan pharmacists in 2014 are similarly distributed as seen in Table 7 below.

Table 7: Demographic Comparison of Respondents to the Population of Saskatchewan Pharmacists in 2014			
Demographics (questionnaire)	Respondents	Demographics (CIHI 2014)	Saskatchewan pharmacists
Position:		Position:	
Pharmacy owner	26 (13.1%)	Pharmacy owner/manager	355 (25.1%)
Pharmacy manager	36 (18.1%)	Staff pharmacist	955 (67.5%)
Staff pharmacist	128 (64.3%)	Other	103 (7.3%)
Relief/casual pharmacist	9 (4.5%)	Missing values	2 (0.1%)
Hours worked in a community pharmacy setting in a typical week:		Estimated weekly practice hours:	
Less than 10 hours	8 (4.0%)	0 – 14	87 (6.1%)
10 – 20 hours	11 (5.5%)	15 – 29	237 (16.7%)
21 – 30 hours	22 (11.0%)	30 – 39	475 (33.6%)
31 – 40 hours	115 (57.5%)	40 +	612 (43.3%)
More than 40 hours	44 (22.0%)	Missing values	4 (0.3%)
Gender:		Sex:	
Male	44 (22.0%)	Male	470 (33.2%)
Female	152 (76.0%)	Female	945 (66.8%)
Prefer not to answer	4 (2.0%)	Missing values	0
Years as a licensed pharmacist:		Years since graduation:	
0 – 10	93 (47.0%)	0 – 10	563 (39.8%)
11 – 20	48 (24.2%)	11 – 20	325 (23.0%)
21 – 30	36 (18.2%)	21 – 30	246 (17.4%)
31 +	21 (10.6%)	31 +	276 (19.5%)
		Missing values	5 (0.4%)
Location of graduation:		Location of graduation:	
International pharmacy graduate	8 (4.0%)	International	59 (4.2%)
Canadian pharmacy graduate	191 (96.0%)	Canada	1355 (95.8%)
		Missing values	1 (0.1%)

Table 7: The results of the demographic comparison of the respondents to the population of Saskatchewan Pharmacists in 2014.

6.11 Themes from Open-ended / Free-text Questions

There were nine open-ended/free-text questions included in the questionnaire, mostly asking respondents to expand on Likert scale answers or to provide additional comments or

recommendations (Appendix C). Each open-ended question was intended to explore a particular aspect of the SMAP and pharmacists' attitudes; however, when the data from the open-ended questions were analyzed it became evident that many respondents did not keep to the topic of the questions. For example in Part A, Section 1, question #16, which asked about potential changes to make communication with physicians more effective, one respondent wrote about decreasing the eligibility age limit for the SMAP to 60 years. Consequently, after analyzing the data from each question separately (to identify any common themes related to each individual question), the data from the nine open-ended questions were combined into one dataset and analyzed as a whole (to identify any common themes related to respondent's unsolicited commentary). Following the analysis, an external audit was done and the auditor agreed that the resulting themes aligned with the original responses to the survey questions.

6.11.1 Overall Themes from Combined Dataset

The overall themes that emerged from the combined data from all nine open-ended questions included: (1) lack of collaboration and communication between physicians and pharmacists; (2) lack of patient information and medical history to complete an assessment; (3) mandatory SMAP documentation forms are repetitive and require duplication of information; (4) workplace environment is not supportive of delivering high quality SMAPs; (5) pressure on pharmacists to complete a high volume of medication assessments (i.e., "quotas"); (6) eligibility criteria needs to be expanded; (7) concerns regarding the consistency and quality of the medication assessments; (8) lack of physician and patient awareness and understanding of the SMAP; and (9) difficulty assessing complex patients.

Theme 1: Lack of collaboration and communication between physicians and pharmacists

A lack of collaboration and communication between physicians and pharmacists was a common theme in many responses. Pharmacists believed that communication with physicians about the SMAP was poor and as a consequence collaboration between physicians and pharmacists to resolve the drug therapy problems identified during the SMAP often did not take place. One respondent pointed out:

The real issue is that there may be no significant impact with doing med assessments if physicians and pharmacists do not actually work together to resolve or prevent drug related problems. (respondent 220, staff pharmacist)

Respondents believed that the lack of communication and collaboration was due to a lack of effort or interest on the part of the physician:

I don't know what else I can do from my end to make communication more effective. I believe that the recommendations I make would benefit my patients and they are based on best available evidence, but quite often I get the impression that the physicians do not even read faxed recommendations. (respondent 101, staff pharmacist)

However, respondents also recognized that in order to improve communication and collaboration with physicians they must work to develop a relationship with the physicians:

Having a good relationship with the physician/clinic is key, so that is something that is up to the pharmacist/pharmacy (respondent 120, staff pharmacist);

I think the most effective solution would be to actually sit down with the doctors we deal with most often and see what they think of the program and the most effective means of communication (respondent 126, staff pharmacist).

Theme 2: Lack of patient information and medical history to complete an assessment

Many respondents commented on the lack of patient information and medical history that is available to community pharmacists. While respondents praised the availability of the electronic Health Record (eHR) Viewer and Pharmaceutical Information Program (PIP) to access lab work, immunization histories, and a complete list of prescription medications, they still felt that they lacked access to all the information necessary to complete a thorough assessment (e.g., specialist physician consultation reports, diagnostic test results).

Patients understanding of their medication and background knowledge is a huge barrier. Sometimes I will have a patient that literally knows nothing about their medication or medical conditions (respondent 28, staff pharmacist).

Some respondents, while recognizing that the eHR Viewer has the potential to be a valuable source of information, stated that it was either incomplete or displayed no information at all depending on the health region where the patient had lab work done.

EHR viewer does not display the local lab information, therefore unless my patient gets blood work elsewhere I am unable to see any of their blood work (respondent 109, staff pharmacist).

Respondents felt it was a barrier to not have direct access to the patients' medical chart and they commented that requesting this information from the patient's family physician was difficult and time consuming.

I would never even consider contacting the physician to get more info from the patient's chart due to time constraints (respondent 224, staff pharmacist).

Theme 3: Mandatory SMAP documentation forms are repetitive and require duplication of information

Respondents identified the mandatory SMAP documentation forms as a source of frustration. The forms were said to be repetitive and required duplication of information, which unnecessarily increased the time required for documentation. Respondents provided several suggestions to improve the forms, such as:

Condense the documentation. I feel like I repeat the same info on multiple forms (respondent 41, staff pharmacist);

I'm not sure about improvement but streamline the forms, and cut out the redundancy (respondent 67, staff pharmacist);

I am not a fan of the current forms. They do not have space for proper info to be written and seem unorganized in flow for asking questions (respondent 155, pharmacy owner).

Theme 4: Workplace environment is not supportive of delivering high quality SMAPs

The community pharmacy workplace, in general, was identified as an environment that is not supportive of delivering high quality SMAPs.

The retail pharmacy is NOT the place for such a process to occur. Pharmacists need to be employed and staffed in physicians' clinics – and meet with patients in this environment; with access to the patient chart, with access to the prescribing physicians to allow for open discussion. (respondent 75, staff pharmacist)

One pharmacist shed light on her typical workday in a community pharmacy setting:

I usually work 8hrs standing the entire time going nonstop and have to rush away to use the washroom and eat while standing at the computer. When you get home exhausted the last thing you think about is how to perform more SMAPs (respondent 221, staff pharmacist).

Respondents referred to a lack of staffing, workflow issues, poor access to resources and technology, and a lack of time as reasons why the community pharmacy setting is not the ideal place to perform medication assessments. Some respondents believed that a service such as the SMAP is too time intensive for the community practice setting.

I find there isn't enough time to offer, prepare for and then conduct the interview. . . . [T]here just isn't any spare uninterrupted time to work on the assessments (respondent 39, pharmacy manager);

Lack of time is by far our biggest barrier and we actually do have adequate pharmacist staffing but we have to improve our workflow and organize our time more efficiently. We

go through very busy periods and get behind on other things so we don't book as many SMAP's and they just start to fall by the wayside. (respondent 126, staff pharmacist)

Theme 5: Pressure on pharmacists to complete a high volume of medication assessments (i.e., "quotas")

Respondents felt that many pharmacists were being put under pressure by management to complete a high volume of medication assessments.

Corporate owners want quotas and we must do these at the most inopportune times with little prep time and being rushed to complete them (respondent 19, staff pharmacist).

Many respondents used the term "quotas" to describe the situation and suspected that pharmacies could be abusing the program. One respondent felt that the pressure of perceived quotas did not make them feel like a healthcare worker:

A lot of employers expect a certain number of SMAPs to be done per specific time period. Sounds like quotas.... doesn't exactly make one feel like a "healthcare worker" to me (respondent 162, relief/casual pharmacist).

Theme 6: Eligibility criteria needs to be expanded

The eligibility criteria for SMAP assessments was another focus for respondents, who felt that it should be expanded. Respondents specifically suggested that the program be expanded to include patients who are less than 65 years old, those who have chronic conditions, and individuals who are covered by Health Canada's Non-insured Health Benefits (NIHB) Drug Plan (which insures First Nations and Inuit people). It was also suggested that the requirement for a face-to-face interview be eliminated to allow assessments to be performed over the phone.

The annual review is sometimes difficult to perform because of mobility changes or decline in cognitive function doesn't allow us to perform a face to face interview but the compliance packaging is still important to the patient but no longer billable (respondent 214, staff pharmacist).

Theme 7: Concerns regarding the consistency and quality of the medication assessments

There was concern among respondents regarding the consistency and quality of the medication assessments provided across pharmacies and by other pharmacists. Respondents believed that poor quality assessments performed by other pharmacists affect how physicians and patients perceived the SMAP and the pharmacy profession.

Some pharmacies are encouraging SMAPs to be done in 10-15 minutes. We have come across patients that don't even know they had a SMAP, it was done that quickly. That really upsets me as somebody who takes time to do SMAPs with patients, out of respect to my profession and them. It's more than about finding drug therapy problems. It's about giving the patient a chance to be heard and have a say in their health. It's about learning more about them and their values. With the lack of consistency with SMAPs I am concerned how doctors perceive the SMAP. If a doctor wants a patient to have a medication assessment, will it affect our profession if some are given in 15 minutes and some in 60? The language needs to change. If it's going to be of a lower quality it shouldn't be called a medication assessment. (respondent 129, staff pharmacist)

Theme 8: Lack of physician and patient awareness and understanding of the SMAP

Respondents felt that there was a lack of physician and patient awareness and understanding of the purpose and the benefits of the SMAP. Respondents believed that physicians and patients would be more receptive of the SMAP if they had a better understanding of the program and what it was meant to accomplish.

Some patients associate medication assessments with age and a decrease in individual function. They assume that it's something you need when you don't understand your medications any more. It has been a challenge to explain that these can benefit all people at all stages of life, and that it can also be a maintenance check to learn more about medications. (respondent 129, staff pharmacist)

Theme 9: Difficulty assessing complex patients

Some respondents felt that it was difficult to assess very complex patients. There were a variety of reasons cited for this including: inadequate compensation, unsure of knowledge and skills, lack of time, and a lack of awareness of referral options.

SMAP does not pay enough for challenging patients (respondent 193, staff pharmacist),

It takes longer than one hour to go through the required forms and then go through what is important to the patient, then to fill out the forms, send them to their family doctor and follow up with both parties. This could take two or three hours for a complicated patient and community pharmacy does not in most cases allow for this. (respondent 43, pharmacy manager)

6.11.2 Themes from Individual Questions

The first open-ended question (Part A, Section 1, Question #9, Appendix C) asked respondents, “If you answered “disagree” or “strongly disagree” for the previous question, please explain why you are not comfortable making recommendations to patients”. The previous question (Question #8, Appendix C) was, “When completing a SMAP assessment I feel comfortable discussing my recommendations with patients”. Only five respondents (n=5/195, 2.6%) answered this open-ended question and these responses did not elicit adequate data to identify specific themes related to this question; however, the responses contributed to the previous list of overall themes.

The second open-ended question (Part A, Section 1, Question #13, Appendix C) asked respondents, “If you answered “disagree” or “strongly disagree” for the previous question, please explain why you are not comfortable making recommendations to physicians”. The previous question (Question #12, Appendix C) was, “When completing a SMAP assessment I feel comfortable making recommendation to physicians”. Eighteen of the 191 respondents (9.4%) answered this open-ended question and the responses did not elicit adequate data to identify specific themes related to this question; however, the responses contributed to the previously listed overall themes.

As it was suspected that a lack of communication with physicians would be a barrier to completing a high quality SMAP, respondents were asked in the third open-ended question (Part

A, Section 1, Question #16, Appendix C), “What changes (if any) would you make to the SMAP to make communication with physicians more effective?”. There were 112 responses to this question (n=112/228, 49.1%), which contributed to four of the previously listed overall themes, including: (1) lack of collaboration and communication between physicians and pharmacists; (3) mandatory SMAP documentation forms are repetitive and require duplication of information; (7) concerns regarding the consistency and quality of the medication assessments; and (8) lack of physician and patient awareness and understanding of the SMAP.

In Part A, Section 2, Question #1 of the questionnaire (Appendix C), respondents were asked, “Do you think providing medication assessments through the SMAP is a valuable use of pharmacist’s skills?”. To explore the reasoning behind respondents who indicated “no”, the respondents were asked in the fourth open-ended question (Part A, Section 2, Question 2, Appendix C), “If you answered “NO”, please explain”. Eleven respondents chose to answer the question (n=11/203, 5.4%), which did not result in enough data to identify specific themes related to this question. The responses did contribute to the previously listed overall themes.

In Part A, Section 2, Question #4, respondents were asked, “Do you think the pharmacy profession in Saskatchewan should focus more on services other than the SMAP?”. Section 2, Question #5, asked respondents, “If you answered “YES”, what other services should pharmacists be focusing on?”. There were 54 responses to the open-ended question (n=54/203, 26.6%). The services that were recommended by respondents included: providing immunizations and other injections, minor ailment prescribing, prescriptive authority, chronic disease management (e.g., diabetes, asthma and COPD), and ordering and interpreting laboratory tests. One respondent wrote:

I think we need to focus on other services that are available to us as pharmacists such as minor ailments, giving influenza vaccines, etc. but I don't think this should detract from our focus on SMAP's (respondent 126, staff pharmacist).

Respondents also expressed concern for the future of the pharmacy profession:

I believe we need to look at building other funding models for pharmacists going forward beyond SMAPs to ensure long term viability for our profession (respondent 202, unknown);

As well as focusing on the SMAP, I think we're going to need more 'fee for service' opportunities especially with technicians becoming regulated and the inevitable three month supply for one dispensing fee coming up (respondent 227, staff pharmacist).

In order to identify additional barriers that were not identified in the literature, Part B, Question #3, asked respondents to, “Please share any barriers to providing SMAP assessments that you have encountered in your practice that are not included in the previous list”. There were 47 responses to this question (n=47/228, 20.6%) and most of the barriers that were mentioned in the written responses were either already included in the list developed from the literature or were specific examples of the barriers already included in the list.

The only “new” barrier mentioned in these free-text responses was a concern about the variability in the quality of SMAP assessments performed in different pharmacies and by different pharmacists (which became one of the overall themes discussed previously).

In order to identify additional facilitators that were not already identified in the literature, Part B Question #5 asked respondents to, “Please share any facilitators to providing SMAP assessments that you have identified in your practice that are not included in the previous list”. There were 28 responses to this question (n=28/228, 12.3%). There were three facilitators that were frequently mentioned in these responses, which included: (1) pharmacists offering home visits to patients unable to make it into the pharmacy for an assessment, (2) a computer system which pre-populates the mandatory SMAP forms with some patient information to reduce the documentation burden, and (3) access to PIP and eHR Viewer. Other facilitators suggested less frequently by respondents included: longevity in the community creating a high level of trust in the pharmacist(s), seeking help from a clinical pharmacist to complete assessments, training through the CPhA’s ADAPT program that allows pharmacists too feel more prepared to offer medication assessments, and word of mouth, from patients who have had an assessment, about the benefits of the program.

Part B, Question #6, “Please use the space below to comment on any additional suggestion to improve the SMAP”, was the final open-ended question to gather additional suggestions from respondents. There were 63 responses to question #6 (n=63/228, 27.6%). These responses were used to compile the overall list of themes that were previously discussed.

CHAPTER 7

DISCUSSION

7.1 Do pharmacists believe that the Saskatchewan Medication Assessment Program is fulfilling its intended purposes?

Community pharmacists in Saskatchewan who responded to this survey appear to believe that the Saskatchewan Medication Assessment Program (SMAP) is fulfilling most of the intended purposes, based on the finding that the majority of respondents agreed or strongly agreed to many of the Likert scale survey questions. However, several inconsistencies and contradictions are evident when the Likert scale responses are combined with the free-text comments. For example, even though the majority of respondents (88.8%) agreed or strongly agreed that “assessments provided through the SMAP prevent drug related problems for seniors”, the majority of respondents (67.2%) also agreed or strongly agreed that they sometimes have trouble identifying drug related problems when completing a SMAP assessment because they do not have enough information about the patient’s medical history. It seems unlikely that drug related problems are consistently being prevented if over 60% of pharmacists are having trouble identifying them. In the responses to the free-text questions, respondents also had concerns about the community pharmacy workplace environment not being supportive of delivering high quality SMAPs and concerns regarding the consistency and quality of the medication assessments provided, which both bring into question the conclusion that the SMAP is consistently fulfilling its intended purposes.

Consequently, based on this combination of positive and negative responses, it is questionable whether the respondents consistently and confidently believe that the SMAP is meeting its intended purposes.

7.2 Key Barriers and Facilitators to providing the Saskatchewan Medication Assessment Program

The results of this study suggest that a lack of pharmacist time is the most significant barrier that respondents feel is interfering with their ability to provide SMAP medication

assessments. Respondents selected ‘Lack of time’ most often when asked to select all barriers that were relevant (n=144/199, 72.4%) and it was also amongst the top three barriers when respondents were asked to prioritize (n=112/199, 56.3%). Respondents also regularly made mention of the lack of time issue in their responses to the free-text questions by either simply stating that a lack of time was an issue or citing other issues that were related to a lack of time, such as time-consuming documentation forms, a work environment not suited to a time-intensive medication assessment service, pressure to complete high volumes of assessments in less time, and difficulty assessing complex patients partly due to the increased time commitment.

Two additional barriers that were of significant concern to respondents were: ‘difficulty in having patients come to the pharmacy due to their reduced mobility or other medical conditions’ and ‘many patients who need the SMAP service are not eligible’. Several suggested that program eligibility criteria be expanded to include younger patients and those who are federally insured (e.g., First Nations, RCMP) and to allow for phone interviews.

The facilitators most often selected from the list of facilitators included: ‘good teamwork within my pharmacy’ (n=87/198, 43.9%), ‘support from my employer/manager’ (n=76/198, 38.4%), and ‘my personal belief that medication assessments are important to improve the care of my patients’ (n=75/198, 37.9%).

These barriers and facilitators are similar to those that have been previously identified in the literature, suggesting that the experiences of Saskatchewan pharmacists are consistent with those in other provinces and countries^{13,28,36-39}. However, it is disconcerting that these same barriers were experienced with this relatively new program in Saskatchewan, despite the fact that multiple previous programs have struggled in similar ways. One would hope that a new program could have learned the lessons from those who came before them.

The findings of this study should be useful to the Pharmacy Association of Saskatchewan and the Saskatchewan Ministry of Health as they work collaboratively to improve and refine the SMAP so that the barriers can be addressed, the facilitators can be shared, and the program can achieve its intended purposes. This study should also be useful for other jurisdictions that are developing new medication assessment programs, allowing them to proactively incorporate these findings into their policies and procedures, in an attempt avoid some of the struggles that have been experienced in Saskatchewan.

7.3 Key strategies pharmacists would like to see implemented to assist them to fulfill the purposes of the Saskatchewan Medication Assessment Program (SMAP)

This study also aimed to identify some strategies that pharmacists would like to see implemented to assist them to fulfill the purposes of the SMAP. Some key suggestions that emerged were: (1) increased collaboration and improved communication between pharmacists and physicians, (2) better access to patient information and medical history, (3) improved documentation forms that do not require duplication of information, (4) policies to eliminate pressure or “quotas” imposed by employers or corporations, (5) expansion of the eligibility criteria and elimination of the requirement for a face-to-face interview, (6) auditing or other quality controls to ensure consistency and quality of assessments across pharmacies / pharmacists, (7) improved physician and patient awareness about the SMAP, and, (8) options to refer complex patients that can not be adequately assessed in the community pharmacy setting.

These suggestions are clearly linked to the key barriers that emerged from this study and therefore seem like reasonable and logical requests that could address many of the barriers and potentially lead to improvements of the SMAP. These findings should be useful to the Pharmacy Association of Saskatchewan and the Saskatchewan Ministry of Health as they work collaboratively to improve and refine the SMAP.

7.4 Findings Consistent with the Current Literature

Many of the findings in this study are consistent with previous studies of community pharmacy led medication assessment programs. For example, pharmacists who responded to the questionnaire in this study reported positive perceptions with regard to the value of the SMAP. The majority of pharmacists either agreed or strongly agreed that the SMAP was fulfilling its intended purposes. This finding is consistent with studies performed in Ontario²⁸, British Columbia¹³, and the United Kingdom³⁷, which all reported positive perceptions by practicing pharmacists. Pharmacists responding to a mailed questionnaire or telephone interview about the MedsCheck program in Ontario believed that it improved patient health outcomes, adherence, and knowledge.²⁸ They also believed that it allowed pharmacists the opportunity to better educate and build relationships with their patients.²⁸ Pharmacists involved in semi-structured focus groups and interviews regarding the program in British Columbia believed that it made patients more informed about their medications, increased effectiveness and/or decreased

adverse effects of medications, and strengthened the patient-pharmacist relationship.¹³

Pharmacists responding to a mailed questionnaire about a program in the UK believed that medication assessments improved their understanding of their patient's views about medications and that the assessments improved patients' use of medications.³⁷

There were several other similarities between the results of this study and responses from pharmacists in other surveys regarding similar medication assessment programs. When pharmacists were asked in this study if they thought that providing medication assessments was a good use of pharmacist's skills, 91% agreed. Similarly, 86% of pharmacists responding to a survey about a similar service in the United Kingdom agreed that it allowed for better use of pharmacists' professional skills.³⁷ A survey performed in Qatar, intended to evaluate pharmacists' attitudes about a medication assessment program prior to implementation, found that 95.7% of respondents agreed that the program would be an excellent use of pharmacists' skills.³⁸

As another example of consistency with previous research, the majority of respondents in this study agreed or strongly agreed that they enjoyed performing SMAP assessments. Ontario pharmacists responding to a survey about the MedsCheck program indicated that providing medication assessments improved their job satisfaction and BC community pharmacists felt that medication assessments increased pharmacists' professional fulfillment.^{13,28} As well, findings from a systematic review found that pharmacist-led medication assessments resulted in positive satisfaction outcomes for both physicians and pharmacists.⁶

Extensive research has been previously conducted to identify barriers and facilitators to community pharmacists providing clinical services such as medication assessments.^{13,28,36-39} The responses from Saskatchewan pharmacists in this study revealed that they experience similar barriers and facilitators to providing SMAP services, compared with pharmacists in other provinces and countries who provide similar medication assessment services. For example, in a survey of Ontario pharmacists, respondents indicated that the major barriers that they faced when completing medication assessments were a lack of time and lack of pharmacist overlap to cover the dispensary.²⁸ Similarly, many Saskatchewan pharmacists responding to this study indicated that a 'lack of time' and 'inadequate pharmacist staffing in my pharmacy' were significant barriers that made it difficult for them to provide SMAP medication assessments.

Focus groups and interviews with pharmacists from British Columbia found that, much like studies in Saskatchewan and Ontario, time-consuming documentation and the financial feasibility of offering this type of service in a community pharmacy setting were important barriers.¹³ Pharmacists in British Columbia had identified an additional barrier that was not identified by Ontario pharmacists, which was a negative attitude by physicians towards the program.¹³ Similarly, respondents in this study regarding the SMAP indicated ‘lack of cooperation with physicians’ as a significant barrier.

In another example of the consistency between the barriers and facilitators identified in this study with the previous literature, a survey conducted in the United Kingdom revealed similar barriers to those found in this study.³⁷ Seventy-four percent of pharmacists responding to the medicines use review (MUR) survey indicated that a lack of time was a barrier to conducting MUR, making it the most selected barrier by both UK and Saskatchewan pharmacists.³⁷ Like pharmacists from Saskatchewan, Ontario and BC, 50% of respondents to the UK questionnaire cited the lack of a reasonable financial incentive as a barrier to providing MUR services.^{13,28,37} Similar to Saskatchewan pharmacists indicating a lack of cooperation with physicians and BC pharmacists feeling physicians had a negative attitude toward the program, 43% of the responding UK pharmacists had doubts about general practitioners’ beliefs that the service was valuable.^{13,37}

The survey of Ontario pharmacists regarding initial experiences with the MedsCheck program was the only research that reported on the facilitators that pharmacists identified to providing medication assessments.²⁸ Ontario pharmacists identified several facilitators that were similar to those identified in this study, including: pharmacist overlap, offering reviews on an appointment only basis, availability of a private counseling area, good teamwork, and having adequate skills and knowledge.²⁸

Respondents to the open-ended questions in this study also shared the concerns identified by a *CBC Marketplace* investigation⁴⁰ and a recent survey of BC pharmacists⁶² that identified the community pharmacy was a workplace environment that is not supportive of delivering high quality advanced pharmacy services and that pharmacists are often pressured to complete a high volume of medication assessments (i.e. “quotas”).^{40,62}

It is encouraging that several findings in this study align with findings from others in Canada and internationally because it adds to the trustworthiness and credibility of the results.

However, the consistency of findings related to program barriers is also somewhat disappointing, as one would hope that new programs would be able to avoid the struggles that previous programs have experienced. It is impossible to determine from the findings of this study if these common barriers are explained by the fact that the developers of the SMAP were not aware of the experiences of previous medication assessment programs or if they attempted to proactively address the barriers, but were unsuccessful.

This study provides a useful addition to the existing body of literature on the topic, reinforcing and strengthening what is already known. This consistency of findings also demonstrates that the challenges faced by community pharmacy based medication assessment programs are consistent across Canada and around the world, which should encourage pharmacy organizations to work collectively to improve these types of programs based on the clear and consistent areas of concern shown in the research.

7.5 Findings Contradicting the Current Literature

This study also reported some results that conflict with previous research on community pharmacist-led medication assessments. For example, respondents to the MedsCheck survey in Ontario identified some barriers that were not highly ranked in this study, such as: forgetting to offer the service and lack of a private room.²⁸ Data from the UK and Qatar have also identified the lack of a private counseling area as a barrier.^{37,38} Very few respondents to this SMAP study selected ‘I frequently forget to offer service to patients who are eligible’ (n=11/199, 5.5%) and ‘lack of a private consultation area in my pharmacy’ (n=11/199, 5.5%) as one of their top three barriers. In fact, 33.3% of respondents in this study indicated ‘availability of a private counseling area in my pharmacy’ was one of the top three *facilitators*. An explanation for this discrepancy may be the span of time between when the surveys were conducted. The UK and the Ontario based surveys were conducted in 2006 and 2007 respectively, and at the time the MedsCheck program was the only funded medication assessment program in Canada.^{28,37} The survey in Qatar was conducted in 2012, prior to any medication assessment programs being implemented in that country.³⁸ This survey of Saskatchewan pharmacists was conducted several years later (in 2016) when conducting medication assessments within the community pharmacy setting had become a more common practice. It is likely, although not supported by any publications, that in the nine-

year span, many pharmacies in Saskatchewan and in Canada have either been built or renovated to include a private consultation area to facilitate the provision of clinical services.

An additional barrier that was reported in the focus groups conducted with pharmacists in British Columbia, that was not ranked highly in this study, was pharmacists' stating that they had difficulty determining which patients would benefit from a medication assessment.¹³ In this study, 'Determining which patients would benefit from the service' was the least selected barrier (n=4/199, 2%). A possible explanation for this discrepancy is the difference in the eligibility criteria in BC and Saskatchewan. Patients were eligible to receive a medication assessment through the BC pilot project if they were simply taking at least one medication.¹³ Saskatchewan residents are eligible for the SMAP if they are 65 years or older, living in their own residence and are taking five or more chronic medications, or taking an anticoagulant medication, or taking a medication listed in the most current Beers Criteria.^{4,5} Consequently, the Saskatchewan eligibility criteria may be assisting pharmacists with identifying patients to recruit for the service.

Saskatchewan pharmacists responding to this study also appear to have demonstrated more confidence in their ability to provide medication assessment services than what has been previously documented in the literature, despite the fact that no additional training was provided to pharmacists in Saskatchewan prior to launching the SMAP. Only 8.5% of respondents in this study selected 'I am not confident in my ability to perform a medication assessment' as a barrier and only 5.5% selected this as one of their top three barriers. As well, when asked for their level of agreement with the statement "I am confident in my ability to identify drug related problems when I perform SMAP medication assessments", 88.2% respondents agreed or strongly agreed. The majority of respondents, 96.4%, also agreed or strongly agreed that they felt comfortable discussing their recommendations with patients and 81.7% agreed or strongly agreed that they felt comfortable making recommendations to physicians.

Data from other studies have found much lower levels of confidence amongst community pharmacist respondents. In semi-structured interviews conducted with community pharmacists who participated in the General Practitioner-Pharmacist Collaboration study in New Zealand, one of the four themes was a feeling that the pharmacists' clinical knowledge and skills were not adequate to provide medication assessments.³⁹ From the results of a survey of pharmacists in Qatar, it was found that only 16.4% of respondents agreed that they had sufficient training to

provide MUR services and 95.6% of respondents agreed that a training program to orient and educate pharmacists should be provided.³⁸

It is difficult to explain why Saskatchewan pharmacists appear to feel more confident in their ability to provide medication assessments than what was previously documented in the literature. However, there was some inconsistency between the positive responses to the Likert-scale questions related to confidence and the more negative tone of the responses to the open-ended questions. Respondents to the open-ended questions made comments regarding feeling unprepared to offer medication assessment services and the lack of training and support available to help them provide a high quality service. Comments in the open-ended responses were also made in regard to pharmacists not having the knowledge and skills to assess and manage complex patients.

The results from the Likert-style/closed-ended questions may have been affected by social desirability bias, “the tendency of research subjects to give socially desirable responses instead of choosing responses that are reflective of their true feelings”.⁶³ This means that some pharmacists may have answered the questions according to what they felt the socially acceptable response should be. The effects of a social desirability bias may help to explain why pharmacists appear to be more confident in providing medication assessment services than what had been previously documented in the literature. Pharmacists may feel that they should possess the skills and knowledge and be confident in their ability to offer medication assessments and therefore they may have felt inclined to answer questions in this way. The answers to the closed-ended questions may have been more afflicted by this bias, as they were overwhelmingly positive in contrast to the responses to the open-ended questions. This highlights the importance of collecting different types of data such as the addition of open-ended questions in a questionnaire consisting mainly of Likert-style questions. Had this questionnaire only consisted of the Likert-style and multiple-choice questions it may have appeared that there were very few issues with the SMAP as most of the responses were positive. The additional data from the open-ended questions, although time consuming to analyze, were very valuable to creating a more accurate picture of the SMAP and the struggles faced by some pharmacists.

7.6 New Findings that add to the Existing Literature

7.6.1 SMAP Eligibility and Access

Two of the barriers identified in this study have not been previously reported in the literature, both of which were ranked in the top three barriers by the respondents (Figures 33 & 34). These barriers are: ‘many patients who need the service are not eligible’ and ‘difficulty in having patients come to the pharmacy due to their reduced mobility or other medical conditions’. It is not completely surprising that these issues were not identified in previous studies, as not all medication assessment programs outside of Saskatchewan limit the service to people over the age of 65 and not all require the service to be provided in-person. However, patients who have their prescription drugs insured by Federal programs (such as NIHB) are not eligible for any of the medication assessment programs in Canada, so it is surprising that this finding has not been identified previously in the literature, as it would be a problem with all medication assessment programs in Canada, including those that have already been investigated. This finding suggests that health policy decision makers might consider revising the SMAP accordingly to improve access to this service. In an article summarizing the eligibility criteria for medication assessment programs in Canada, it was found that the eligibility requirements were highly inconsistent across the provincially funded programs and none were based on validated criteria for selecting high-risk patients.³ Perhaps a combined effort across all Canadian provinces to develop a common set of eligibility criteria would be useful solution to this issue.

The requirement for a face to face interview is likely meant to encourage a high quality interaction where both the patient and the pharmacist are fully engaged in the interview, however pharmacists responding to the survey brought to light that requiring patients to physically come to the pharmacy for the interview was a barrier for some patients due to mobility or medical conditions. Allowing telephone interviews could make the SMAP more accessible to patients who might benefit from the service, but who cannot attend an in-person appointment.

7.6.2 Quality of assessments by some pharmacists

Another finding from this study that has not been reported in previous research was respondents’ concern regarding the quality of the medication assessments of other pharmacists. Respondents in this study felt that poor quality assessments performed by other pharmacists would not only affect patient care, but also how physicians and patients viewed the program. This study did not assess the quality of the services being provided under the SMAP, but this

finding suggests that additional investigations be performed to determine if there is indeed a quality issue with some pharmacists within the program.

7.6.3 Lack of patient information

Respondents to this study indicated that they lacked adequate patient information to complete their assessments, which has been reported in other research, however, in this survey pharmacists were asked additional questions to explore this topic further. There was an interesting trend seen in the answers to some of the Likert-style questions. First, 88.2% of respondents indicated that they agreed or strongly agreed that they were confident in their ability to identify drug related problems when performing SMAP assessments; however in the question immediately following, 67.2% of respondents indicated that they agreed or strongly agreed that they sometimes have trouble identifying drug related problems because they do not have enough information about the patient's medical history. It seems inconsistent that the majority of respondents are confident in their ability to identify drug related problems and the majority of respondents also have trouble identifying drug related problems because of a lack of patient medical history. Interestingly, even though the majority of respondents identified that a lack of patient information hindered their ability to identify drug related problems when providing SMAP assessments, the majority of respondents (57.4%) also indicated that they "rarely" or "never" contacted the physician to request additional information from the patient's chart. The inconsistency seen in this line of questioning may also be explained by the affects of a social desirability bias. As mentioned previously, pharmacists may have felt inclined to agree that they were confident in their ability to identify drug related problems when responding to that question whether they truly were confident or not because they felt that they should be confident. However, when presented with the questions regarding a lack of patient information to identify drug related problems and whether or not they contact physicians for additional information, they may have been able to objectively identify what actually takes place in their practice and would provide responses to these questions that more closely represented reality.

The inadequate patient information barrier that was noted by respondents of this study may at least partially be explained by poor utilization of existing electronic health information sources that are available to all Saskatchewan pharmacists. Pharmacists in Saskatchewan have access to patient information in the Pharmaceutical Information Program (PIP) and electronic

Health Record (eHR) Viewers, which have information related to prescription medications and laboratory test results from any pharmacy or lab in the province. Accessing and reviewing the information in the PIP is a mandatory requirement to complete a SMAP assessment, however only 71.7% of respondents in this study indicated that they “always” access and view information from the PIP when completing a SMAP assessment. Similarly, only 85.1% of respondents indicated that they have access to the eHR Viewer (all pharmacists can access the database, but they must set up an account prior to the first time they use it), and of those with access, only 59.6% indicated that they “always” access information from the eHR Viewer when completing a SMAP assessment.

7.6.4 Managing complex patients

Pharmacists in this study also reported that it was challenging to manage complex patients under the SMAP, which is a finding that has not been previously reported in the literature. This is not surprising, considering the fact that respondents also found that a lack of time was the key overall barrier to providing these services within community pharmacies, and managing complex patients would be particularly time consuming. Respondents suggested that these complex patients should be managed by pharmacists in a different practice setting (e.g., a hospital or clinic), who might have more time and additional expertise. However, respondents did not mention any available referral sources for this purpose, nor did any report actually referring a complex patient to a pharmacist in a hospital or a clinic. This suggests that there is a lack of awareness of pharmacists who work these non-community pharmacy settings in Saskatchewan who might be able to accept referrals and manage these complex patients. Consequently, it may be helpful to develop and disseminate a referral database for this purpose.

7.6.5 Factors affecting the number of SMAP assessments performed

The secondary analysis performed in this study also revealed some previously unreported, but also unsurprising results. A comparison between whether or not pharmacists indicated that they enjoyed performing SMAP assessments and the number of SMAP assessments completed found that pharmacists indicating that they enjoy performing SMAP assessments are likely to complete more assessments. This stands to reason that pharmacists who enjoy doing the assessments would seek out more opportunities to complete them. Similarly,

pharmacists who indicated that they feel comfortable making recommendation to physicians were also found to be more likely to indicate they complete more SMAP assessments. This also seems logical as pharmacists who are uncomfortable making recommendations to physicians would be unlikely to seek out opportunities to deliver a service that is intended to discover drug related problems and requires the pharmacist to contact the physician with recommendations.

7.7 Limitations of the Study

As with all research, this study faced a number of limitations. The response rate of this study (20.3%) is a limitation that creates the potential for non-response bias, which is the possibility that there are differences between individuals who responded to the survey and those who did not. This may affect the generalizability of the results to the entire population of Saskatchewan community pharmacists.⁶⁴ The optimal response rate to a survey suggested by some medical journals in Canada and the United States can be as high as 60%.⁶⁵ Consequently, the response rate in this study would appear quite low compared to what is considered optimal. However, this is a challenge that has been experienced by many studies that have attempted to recruit practicing healthcare professionals. It has been well documented that response rates from healthcare professionals are lower than response rates from the general population and that the response rates to surveys targeting healthcare professionals are continually declining.^{64,66,67} In a sample of surveys sent to various healthcare practitioners and published between 2001 and 2007, the response rate varied between 13-85% for web-based surveys and 23-81% for postal surveys.⁶⁸ It was reported in 2002 that response rates ranging from 13-39% are typical for surveys targeting healthcare workers.⁶⁶ More recently, to investigate the response rate of pharmacists practicing in the United States, researchers sent out a survey by postal mail, email, or a hybrid (postcards with an online link) and varied the length of the questionnaire, the location of the demographic questions, and recorded the gender of the respondents.⁶⁷ It was found that the delivery mode was the only variable that affected the response rate, with the hybrid approach having a total response rate of 3.2%; email, 6.8%; and postal mail, 21.0%.⁶⁷ The researchers suggested that their response rates may have been slightly higher had they offered an incentive, as incentives have been shown to improve response rates, however they argued that there is still a large gap between the reality of the response rates that are now typically obtained when surveying healthcare practitioners and those desired by reviewers and publishers.⁶⁷

The response rate in this study may have been improved had the survey been administered by postal mail, if an incentive had been offered to all respondents instead of a limited number, and if additional reminder contacts had been made with the respondents. Unfortunately, we did not have access to practicing pharmacists mailing addresses, nor the funds required to mail questionnaires (and reminders) to over 1000 potential respondents. It was also not possible to send more than one reminder email, as the Pharmacy Association of Saskatchewan (PAS) preferred not to burden its members with multiple emails.

Although the response rate in this study was not optimal, the analyses that were performed to assess for non-response bias (See section 6.10: Non-response Bias), suggest that the respondents were representative of typical practicing community pharmacists in Saskatchewan.

A second limitation of this study is that the organization that distributed the survey on behalf of the researchers (PAS) is a voluntary professional organization that does not include 100% of pharmacists in Saskatchewan. Originally the Saskatchewan College of Pharmacy Professionals (SCPP) was approached to distribute the questionnaire, because all pharmacists in Saskatchewan must be SCPP members in order to be licensed in the province. However, SCPP preferred that the questionnaire be distributed by PAS, as the SMAP is a program was created and is overseen by PAS. At the time of questionnaire distribution 82.6% of all pharmacists in Saskatchewan were PAS members.^{41,46} Consequently, some pharmacists who may have been eligible to complete the questionnaire were excluded. This could limit the generalizability of the results if pharmacists practicing in community and not having a PAS membership had opinions or experiences with the SMAP that differed from pharmacists with PAS memberships. However, since this potential limitation represents a relatively small proportion of practicing pharmacists, it is unlikely that it would have impacted the overall findings and conclusions of the research in a meaningful way.

A further limitation is the possibility that pharmacists not practicing in community pharmacy could have completed the questionnaire. Pharmacists are able to voluntarily self-declare their primary practice site (e.g. community, hospital, industry, etc.) when they apply for a PAS membership, however it was decided to not use this information to distribute the questionnaire to only those pharmacists identifying their primary practice site as 'community pharmacy' because there was a greater risk of excluding pharmacists who chose not to declare a

primary practice site, who practiced in community pharmacy on a part-time or casual basis (but who declared another site as their primary site), or who had changed practice sites but had not updated this information with PAS. Consequently, the invitation was sent to all PAS members and only those who worked in community pharmacy were asked to respond. This created the risk that pharmacists not currently practicing in the community pharmacy setting could choose to respond to the survey. Responses from pharmacists not practicing in the community pharmacy setting could affect the results, however it was decided that the risk of this was small compared to the risk of excluding pharmacists from answering the survey by only distributing to those who had declared community pharmacy as their primary practice site. To further minimize the risk of collecting data from pharmacists without experience with the program, respondents were asked about their level of involvement with the SMAP. Only 20 (8.8%) respondents indicated that they had never completed an SMAP and these pharmacists were excluded from responding to further questions regarding their experiences with providing SMAP services.

The potential for researcher bias is also a consideration for this study. Since the primary investigator is also a practicing community pharmacist who has personal experience with the SMAP, pre-conceived notions about the SMAP had the potential to affect the line of questioning that was developed in the questionnaire and the interpretation of the free-text responses. To reduce the potential impact of researcher bias, the questionnaire was developed with input from several faculty members at the College of Pharmacy and Nutrition and was reviewed by several key stakeholders. As well, three different individuals analyzed the free-text responses following the content analysis guidelines (Appendix D) and final themes were developed through discussion between the three individuals. An external (non-pharmacist) auditor then reviewed the free-text responses and the final themes to confirm that the themes aligned well with the original responses.

Another potential area for bias was that the three individuals who analyzed the free-text responses were the primary investigator, her supervisor, and another graduate student overseen by the same supervisor. As these individuals were working together on projects and were all involved in the pharmacy profession, they may have shared similar opinions and biases that could affect how they analyzed the responses. This may have been minimized by the fact that the three individuals came from different backgrounds and experiences in the pharmacy profession. As mentioned earlier, Dr. Derek Jorgenson, is a faculty member at the University of

Saskatchewan with experience in clinical pharmacy and research; Katherine Lysak, is a former graduate student with experience working in hospital pharmacy; and Krysta Currie, the primary investigator, had experience working in community pharmacy. As well, to detect if the analysis was biased, another graduate student who was not involved in the pharmacy profession and who did not have the same supervisor acted as an external auditor. The external auditor confirmed that the themes developed did align with the original responses provided by the respondents, strengthening the trustworthiness and credibility of the analysis and resulting themes.

Since the invitation to participate in the survey was distributed by PAS, the association responsible for creating and overseeing the SMAP, respondents may have also felt wary of selecting negative responses. Had the survey been distributed by a different party or directly from the researchers themselves, respondents may have felt more comfortable selecting negative responses. This potential issue was hopefully mitigated by the guarantee of anonymity and the fact that no identifying information was requested from respondents in the SMAP survey. Although the responses to the majority of the Likert-style questions were overwhelmingly positive, the responses to the open-ended questions were more negative, suggesting that there was at least some level of respondent comfort in sharing negative viewpoints.

All responses to the survey were included in the analysis regardless of how many questions the respondent answered. In some research a minimum number of items must be answered for the data from that respondent to be included in the final analysis or adjustments are made to account for the missing information. For this research project there was no minimum number of answers required for the respondents data to be included in the analysis and no attempt was made to make adjustments to account for missing information. The resultant missing data could potentially affect the reliability of the data for individual questions. To be transparent about missing responses, the number of respondents was included for each question.

Finally, respondents' limited exposure to the SMAP may be an additional limitation to the findings. The majority of respondents (79.2%) indicated that they complete between one and five SMAP assessments in a typical month and 10.6% indicated that they do not complete any SMAP assessments in a typical month. Given this information, it appears that the respondents to the survey did not have a great deal of experience in providing the SMAP service, which may limit the generalizability of the results. The majority of the respondents were basing their perceptions and experiences on a limited amount of actual experience in providing the services.

However, there were 30,173 SMAP medication assessment billed to the Ministry of Health from June 2013 to June 2016, which averages to approximately 838 SMAP assessments completed per month, provided by over 1000 pharmacists.⁴¹ Therefore, the number of monthly SMAP assessments performed by the respondents of this study is representative of the typical pharmacist's SMAP workload in Saskatchewan.

7.8 Suggestions for Future Research

This project was intended to explore pharmacists' attitudes towards and experiences with the SMAP, and several areas of further research still exist.

The SMAP has not been evaluated to determine if the program is actually fulfilling its intended purposes; however, research on other similar medication assessment programs suggests that it is possible for these types of services to achieve at least some of these goals (e.g., resolution of drug related problems, improved prescribing, reduction in adverse drug reactions, improved quality of life, reduced drug costs).⁶⁻¹⁵ Nevertheless, future research should focus on confirming the perceptions of the pharmacists in this study by determining if the SMAP is actually fulfilling its intended purposes. As well, research to investigate the SMAPs potential to reduce hospitalizations and mortality would be worthwhile pursuing.

Research building on the results of this study could also be done to attempt to rank the barriers and facilitators to determine which are more important to Saskatchewan pharmacists. As well, follow-up focus groups could be done to obtain additional data on pharmacists perceptions and experiences with the program. A focused study on pharmacies and pharmacists who are high users of the SMAP to identify how they have been able to overcome barriers and what facilitators are helping them to complete more SMAP assessments than the majority of pharmacies, would also be valuable.

In the responses to the free-text questions, respondents expressed concerns over SMAP quotas and poor quality assessments performed by their colleagues. Future research to investigate how many pharmacies in Saskatchewan impose quotas for clinical services such as the SMAP and if these quotas impact the quality and benefit received is needed. In addition, this study did not assess the quality of the services being provided under the SMAP, but the findings suggest that additional investigations need to be performed to determine if there is a quality issue.

Respondents to the survey also seemed to have higher confidence in their ability to perform medication assessments and identify drug related problems than what had been documented in previous research. As such, further research focused on Saskatchewan pharmacists' confidence and actual performance in conducting SMAP medication assessments would be valuable. Interestingly, it was found that the respondents recognized that they were lacking patient information to complete assessments and identify drug related problems, but also did not make efforts to seek out this information. Research to identify the reasons why pharmacists do not seek out additional information from physicians, that they have acknowledged they are lacking, would be useful to identify and resolve the issues so that pharmacist can have access to the information needed to effectively identify and attempt to resolve drug related problems.

7.9 Suggestions for Improvements to the SMAP

Based on the findings of this research project as a whole, some areas for improvement to the SMAP emerged. As stated previously in Section 7.3, respondents suggested several areas for improvements that would help them to fulfill the purposes of the SMAP. Some of the improvements suggested by the respondents will likely require substantive changes to the program, community pharmacy practice, and the attitudes and practices of prescribers; however some less complex improvements (that could be possibly be implemented in the near future) were also identified.

Many respondents identified the SMAP documentation forms as an area of frustration. Specifically, the need to duplicate information in several places was mentioned by many respondents. To amend this, the forms could be revised to eliminate the need to duplicate information. Some pharmacists also mentioned that the SMAP documentation forms were integrated into their pharmacy dispensing software, making documentation quicker and retrieving the information at a later date more convenient; however, not all dispensing software currently offers this option. As an alternative to integrating the forms into dispensing software, some respondents suggested that the SMAP documentation forms should be accessible through each patients PIP profile so that all healthcare providers have access to the information on an as needed basis and it could easily be updated from year to year. Integrating the SMAP documentation forms into an online resource accessible to all healthcare providers in

Saskatchewan, such as the PIP or eHR Viewer, could ease the burden of documentation and make the information accessible for future use by healthcare providers in the patient's circle of care.

Many respondents seemed to believe that physicians are either not aware of the SMAP or had negative thoughts towards it. It is difficult to determine if this is accurate without surveying physicians about the SMAP; however, these perceptions by pharmacists, whether justified or not, may be hindering communication between physicians and pharmacists. If pharmacists are not comfortable contacting physicians for additional information to complete a comprehensive assessment or to make suggestions to optimize a patient's drug therapy, then the medication assessments may offer little benefit to patients. To rectify the communication gap, one respondent suggested sending a pre-SMAP notification to the patient's physician before conducting a SMAP to let the physician know that one will be completed and to offer the physician an opportunity to suggest anything that should be reviewed during the assessment. This pre-notification may strengthen awareness of the program and would give physicians an opportunity to contribute to the discussion, which would perhaps encourage them to see value in the program. Some other respondents also suggested that patients be asked to make an appointment with their physician to discuss changes suggested by the pharmacist as a result of a SMAP medication assessment. This would allow physicians an opportunity to have a discussion with their patients and would ensure that physicians are compensated for their time reviewing the suggestions and making the appropriate changes. Several respondents also suggested using a personalized physician communication form, as they felt the one provided by PAS was not reader-friendly and that they received more responses from physicians when using their own form. Making a pre-SMAP communication with a prescriber a common practice, using personalized forms for communication with prescribers, and suggesting that patients requiring major drug therapy changes book an appointment to see their physician could all be strategies to improve communication about SMAP medication assessments.

Several respondents felt that patients who would benefit from a medication assessment were prevented from participating in the service due to the requirement for a face-to-face interview. Many felt that telephone interviews should be permitted in circumstances in which the patient is unable to come to the pharmacy for the interview. Some respondents also suggested that another option would be to fund in-home medication assessments, meaning that pharmacies

would be paid an additional fee when they were required to visit a patient in their home to complete the SMAP.

Lastly, many respondents felt that they could not adequately assess complex patients in the community pharmacy setting. They suggested that complex patients be referred to pharmacists (in other settings) with more expertise and time, however, based on the responses it was clear that pharmacists were not aware of the referral options (to other pharmacists in other settings) that already exist. It would be beneficial to include a list of referral options along with the other SMAP documentation forms so that community pharmacists are made aware of the referral options and the contact information is readily accessible.

CHAPTER 8

CONCLUSIONS

This study revealed that pharmacists in Saskatchewan perceive that the Saskatchewan Medication Assessment Program (SMAP) is fulfilling its intended purposes, however examination of some participant responses raises suspicion that underlying issues with the program and its current implementation may be interfering with the fulfillment of its intended purposes. The findings revealed that community pharmacists experience several barriers to providing SMAP assessments, the most notable being a lack of time. In their responses, pharmacist also provided several suggestions for overcoming the barriers that they had identified. Ultimately it appears that Saskatchewan pharmacists see potential for the SMAP, but also deal with several barriers to providing the service that need to be addressed.

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APPENDICES

APPENDIX A: INVITATION

From: Pharmacy Association of Saskatchewan (PAS)
To: (PAS member)
Sent: (Date)
Subject: SMAP Pharmacist Experience Survey Invitation

Dear Saskatchewan Pharmacist,

We are seeking help from Saskatchewan pharmacists practicing in community pharmacies to improve the Saskatchewan Medication Assessment Program (SMAP). We are looking to capture pharmacists' experiences with and perceptions of the SMAP. The questionnaire focuses on whether or not pharmacists believe the SMAP is meeting its intended objectives and identifying opportunities to improve the program. Your responses will be extremely valuable in strengthening SMAP for the future.

Please fill out this questionnaire only if you currently practice in the community pharmacy setting on a full, part-time or casual basis.

The questionnaire should take about 15 minutes to complete and is compatible on a desktop computer or mobile device. To show our appreciation for your participation, the first 50 respondents can receive a \$10 Tim Hortons e-gift card and all respondents will be entered into a draw to win one of eight \$250 Visa gift cards. Pharmacists who complete the questionnaire will also have access to the findings soon after completion of the study. To begin the questionnaire, click on the link below:

<https://fluidsurveys.usask.ca/s/SMAP/>

This questionnaire is anonymous. Responses will be kept secure and cannot be linked to the respondent. In the interest of protecting participants' confidentiality, the identifying information gathered for the purposes of providing participants with incentives cannot be associated with the questionnaire responses. Although the data from this research project may be included in a master's thesis, published and presented at conferences, the data will be reported in aggregate form, so that it will not be possible to identify individuals.

Participation is voluntary and individual questions can be left blank if desired. Completing the online questionnaire implies consent for your participation in the study and for the researchers to use the data for the purposes of conducting the study.

The Pharmacy Association of Saskatchewan (PAS) has provided funding to make this research possible.

This survey is hosted by Fluid Survey, a USA owned company, see the following for more information on [Fluid Survey Data Privacy in Canada](#).

This research project has been approved on ethical grounds by the University of Saskatchewan Behavioural Research Ethics Board. 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 (888) 966-2975.

By completing and submitting the questionnaire, YOUR FREE AND INFORMED CONSENT IS IMPLIED and indicates that you understand the above conditions of participation in this study.

Should you have any questions or concerns, please contact Derek Jorgenson at derek.jorgenson@usask.ca.

Thank you for considering this request,

Dr. Derek Jorgenson
Associate Professor of Pharmacy
Director, Medication Assessment Centre
College of Pharmacy and Nutrition
University of Saskatchewan
Health Sciences Bldg, E-wing, Rm 3206
104 Clinic Place
Saskatoon, Sask S7N 2Z4

APPENDIX B: REMINDER

From: Pharmacy Association of Saskatchewan (PAS)
To: (PAS member)
Sent: (Date)
Subject: Reminder: SMAP Pharmacist Experience Survey Invitation

Dear Saskatchewan Pharmacist,

A couple weeks ago you received a request to complete a questionnaire regarding your experiences with the Saskatchewan Medication Assessment Program (SMAP). If you have already completed the questionnaire, thank you for your time. If you have not, we would be very pleased if you took a few moments now to complete the questionnaire before it closes and your opportunity to provide feedback to improve the SMAP will be lost.

Please fill out this questionnaire only if you currently practice in the community pharmacy setting on a full, part-time or casual basis.

The questionnaire should take about 15 minutes to complete and is compatible on a desktop computer or mobile device. To show our appreciation for your participation, the first 50 respondents can receive a \$10 Tim Hortons e-gift card and all respondents will be entered into a draw to win one of eight \$250 Visa gift cards. Pharmacists who complete the questionnaire will also have access to the findings soon after completion of the study. To begin the questionnaire, click on the link below:

<https://fluidsurveys.usask.ca/s/SMAP/>

This questionnaire is anonymous. Responses will be kept secure and cannot be linked to the respondent. In the interest of protecting participants' confidentiality, the identifying information gathered for the purposes of providing participants with incentives cannot be associated with the questionnaire responses. Although the data from this research project may be included in a master's thesis, published and presented at conferences, the data will be reported in aggregate form, so that it will not be possible to identify individuals.

Participation is voluntary and individual questions can be left blank if desired. Completing the online questionnaire implies consent for your participation in the study and for the researchers to use the data for the purposes of conducting the study.

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By completing and submitting the questionnaire, YOUR FREE AND INFORMED CONSENT IS IMPLIED and indicates that you understand the above conditions of participation in this study.

Should you have any questions or concerns, please contact Derek Jorgenson at derek.jorgenson@usask.ca.

Your time is very much appreciated.

Thank you,

Dr. Derek Jorgenson
Associate Professor of Pharmacy
Director, Medication Assessment Centre
College of Pharmacy and Nutrition
University of Saskatchewan
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APPENDIX C: QUESTIONNAIRE

1. Please indicate your level of involvement with the Saskatchewan Medication Assessment Program (SMAP).

- I have never heard of the SMAP. (Skip Part B and go directly to Part C: Demographics)
- I am aware of the SMAP, but I have never completed a medication assessment through this program. (Skip questions relating to a pharmacist's personal experience with performing a SMAP medication assessment: 2; Section 1: 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 24, 25; Section 2: 3; Section 3: 1, 3(yes))
- I have completed at least one medication assessment through the SMAP.

2. Indicate the number of SMAP medication assessments you personally complete in a typical month.

- 0
- 1-5
- 6-10
- 11-20
- 21 +

3. How many SMAP assessments are completed at your pharmacy (by all pharmacists including yourself) in a typical month? If you work in multiple community pharmacies, select the answer for the pharmacy you work in most often.

- 0
- 1-5
- 6-10
- 11-20
- 21+
- not sure

Part A

When the Saskatchewan Medication Assessment Program (SMAP) was created, the Drug Plan and Extended Benefits Branch of the Saskatchewan Ministry of Health released a document that outlined the policies and procedures for Saskatchewan pharmacists. This document can be accessed at the Pharmacy Association of Saskatchewan (PAS) website under Professional Services "Saskatchewan Medication Assessment Program (SMAP) Policy Sept 2015". A section of this document lists seven purposes of the SMAP, which are:

- *To provide safe and effective medication therapy to seniors living in the community;*
- *To improve patient safety and patient outcomes;*
- *To prevent drug related problems, emergency room visits or hospitalizations;*
- *To reduce duplication and/or wastage of medication;*
- *To optimize medication adherence;*
- *To provide support to seniors living in the community that will allow them to age within their own home;*

- *To assist the patient and/or caregiver with appropriate and cost-effective medication administration*

Saskatchewan residents who are 65 years or older and living in their own residence, a personal care home, approved private service home or a group home are eligible for SMAP medication assessments if they are:

- Taking 5 or more chronic medications (prescription and non-prescription) **OR**
- Taking and anticoagulant **OR**
- Taking a medication on the Beers List **AND**
- Give expressed written consent to receive the service

Please refer to the “Saskatchewan Medication Assessment Program (SMAP) Policy Sept 2015” link above if you wish to have more detailed information on patient eligibility.

The questions in Section 1 of this questionnaire focus on determining your perceptions of whether or not the SMAP is achieving the seven stated purposes.

Considering the way the SMAP is currently utilized in your pharmacy please answer the questions in Section 1 and 2.

Section 1:

1. Assessments provided through the SMAP improve medication safety for seniors.

Strongly Agree Agree Not sure Disagree Strongly Disagree

2. Assessments provided through the SMAP ensure that seniors are taking the most effective medication therapy.

Strongly Agree Agree Not sure Disagree Strongly Disagree

3. Seniors who receive a SMAP assessment are more likely to have improved health outcomes compared with seniors who do not receive an assessment.

Strongly Agree Agree Not sure Disagree Strongly Disagree

4. Assessments provided through the SMAP prevent drug-related problems for seniors.

Strongly Agree Agree Not sure Disagree Strongly Disagree

5. I am confident in my ability to identify drug-related problems when I perform SMAP medication assessments.

Strongly Agree Agree Not sure Disagree Strongly Disagree

6. Sometimes I have trouble identifying drug-related problems when completing a SMAP assessment because I do not have enough information about the patient's medical history.

Strongly Agree Agree Not sure Disagree Strongly Disagree

7. When you are completing a SMAP assessment, how often do you contact the physician to request additional information from the patient's chart?

Always Almost Always Sometimes Rarely Never

8. When completing a SMAP assessment I feel comfortable discussing my recommendations with patients.

Strongly Agree Agree Not sure Disagree Strongly Disagree

9. If you answered "disagree" or "strongly disagree" for the previous question, please explain why you are not comfortable making recommendations to patients.

10. How often do patients agree with the recommendations that you make when completing a SMAP assessment.

Always Almost always Sometimes Rarely Never I don't know

11. The SMAP encourages collaboration between pharmacists and physicians.

Strongly Agree Agree Not sure Disagree Strongly Disagree

12. When completing a SMAP assessment I feel comfortable making recommendations to physicians.

Strongly Agree Agree Not sure Disagree Strongly Disagree

13. If you answered "disagree" or "strongly disagree" for the previous question, please explain why you are not comfortable making recommendations to physicians.

14. When completing a SMAP assessment, how often are your recommendations accepted by the physician?

Always Almost Sometimes Rarely Never I don't know
always

15. How do you typically communicate with physicians regarding SMAP assessments? (select all that apply)

- Fax
- Phone
- In-person
- Other: _____

16. What changes (if any) would you make to the SMAP to make communication with physicians more effective?

17. An assessment completed through the SMAP is likely to decrease the incidence of emergency room visits for seniors.

Strongly Agree Agree Not sure Disagree Strongly Disagree

18. An assessment completed through the SMAP is likely to decrease the incidence of hospitalizations for seniors.

Strongly Agree Agree Not sure Disagree Strongly Disagree

19. SMAP assessments reduce duplication of medication therapy for seniors.

Strongly Agree Agree Not sure Disagree Strongly Disagree

20. Providing SMAP assessments to seniors reduces medication wastage.

Strongly Agree Agree Not sure Disagree Strongly Disagree

21. Seniors who receive an assessment through the SMAP have improved medication adherence following the assessment.

Strongly Agree Agree Not sure Disagree Strongly Disagree

22. SMAP assessments provide support to seniors living in the community that will allow them to age within their own home.

Strongly Agree Agree Not sure Disagree Strongly Disagree

23. SMAP assessments provide an opportunity for pharmacists to assist their patients and/or caregivers in administering their medications appropriately

Strongly Agree Agree Not sure Disagree Strongly Disagree

24. During a SMAP assessment, how often do you have patients who use devices (e.g., inhalers, eye drops, etc.) demonstrate their technique?

Always Almost Always Sometimes Rarely Never

25. During a SMAP assessment, how often do you personally assess whether patients are on the most cost-effective medications?

Always Almost Always Sometimes Rarely Never

Section 2:

1. Do you think providing medication assessments through the SMAP is a valuable use of pharmacist's skills?

- Yes
- No
- Not sure

2. If you answered NO, please explain:

3. I enjoy performing SMAP assessments.

Strongly Agree Agree Neutral Disagree Strongly Disagree

4. Do you think the pharmacy profession in Saskatchewan should focus more on services other than the SMAP?

- Yes
- No
- Not sure

5. If you answered YES, what other services should pharmacists be focusing on?

Section 3:

1. How often do you access and view information from the *PIP Viewer* when completing a SMAP assessment?

Always Almost Always Sometimes Rarely Never

2. Do you have access to the *eHR Viewer* in your pharmacy? *The eHR Viewer provides health care providers in Saskatchewan with access to patient information such as laboratory results, immunization records, and clinical encounters.*

- Yes (Skip 3 “no”)
- No (Skip 3 “yes”)
- Not sure (Skip 3 “no” and “yes”)

If respondent answers “yes”

3. How often do you use information from the *eHR Viewer* when completing an SMAP assessment?

Always Almost Always Sometimes Rarely Never

If respondent answers “no”

3. Why do you not have access to the *eHR Viewer*?

- I have never heard of the *eHR Viewer*
- The pharmacy I work in has not signed up for access
- The pharmacy I work in has signed up for access, but I have not
- Other: (please specify) _____

Part B:

This section (questions 1-5) deals with the barriers and facilitators to fulfilling the official SMAP purposes. Please keep the official purposes of SMAP in mind (below) when answering questions 1-5:

- *To provide safe and effective medication therapy to seniors living in the community;*
- *To improve patient safety and patient outcomes;*
- *to prevent drug related problems, emergency room visits or hospitalizations;*
- *To reduce duplication and/or wastage of medication;*
- *To optimize medication adherence;*
- *To provide support to seniors living in the community that will allow them to age within their own home;*
- *To assist the patient and/or caregiver with appropriate and cost-effective medication administration*

1. From the list provided below, please **indicate all** of the barriers that make it difficult for you personally to provide SMAP medication assessments. **Select all that apply.**

- Inadequate access to patient's medical records
- Lack of cooperation with physicians
- Inadequate remuneration from the Ministry for the program
- I suspect the service is not helping those that need it the most
- Poor patient awareness of the program
- Patient concerns about privacy
- Lack of patient interest in participating in the program
- Difficulty in having patients come to the pharmacy due to their reduced mobility or other medical problems
- Lack of a private consultation area in my pharmacy
- Lack of time
- Inadequate pharmacist staffing in my pharmacy
- Interruptions during patient interviews
- I frequently forget to offer service to patients who are eligible
- Many patients who need the service are not eligible (e.g., age<65, NIHB)
- Extensive documentation requirements
- Unhelpful/complicated Ministry documentation templates and forms
- Determining which patients would benefit from the service
- Determining which patients are eligible for the service
- Inadequate technician/assistant staffing in my pharmacy
- Lack of support from my employer/manager
- I am not confident in my ability to perform a medication assessment

2. From the list provided below, please indicate the **top three (3)** barriers that make it difficult for you personally to provide SMAP medication assessments.

- Inadequate access to patient's medical records
- Lack of cooperation with physicians
- Inadequate remuneration from the Ministry for the program
- I suspect the service is not helping patients that need it the most
- Poor patient awareness of the program
- Patient concerns about privacy
- Lack of patient interest in participating in the program
- Difficulty in having patients come to the pharmacy due to their reduced mobility or other medical problems
- Lack of a private consultation area in my pharmacy
- Lack of time
- Inadequate pharmacist staffing in my pharmacy
- Interruptions during patient interviews
- I frequently forget to offer service to patients who are eligible
- Many patients who need the service are not eligible (e.g., age<65, NIHB)
- Extensive documentation requirements
- Unhelpful / complicated Ministry documentation templates and forms
- Determining which patients would benefit from the service
- Determining which patients are eligible for the service

- In adequate technician/assistant staffing in my pharmacy
- Lack of support from my employer/manager
- I am not confident in my ability to perform a medication assessment

3. Please share any barriers to providing SMAP assessments that you have encountered in your practice that are not included in the previous list.

4. From the list provided below, please indicate the **top three (3)** facilitators currently helping you to provide medication assessments that fulfill the stated purposes of the SMAP.

- Good teamwork within my pharmacy
- Support from my employer/manager
- Adequate pharmacist staffing in my pharmacy
- My personal interest/passion in providing medication assessments
- My personal belief that medication assessments are important to improve the care of my patients
- Strong communication with physicians
- Strong communication with patients
- Offering reviews on “appointment only” basis
- Strong physician support of the program
- Strong patient awareness of the program
- Standardized forms and documentation templates from the Ministry
- Effectively utilizing technician’s role to support me in providing medication assessments
- Availability of a private counselling area in my pharmacy
- Having adequate skills and knowledge to provide medication assessments

5. Please share any facilitators to providing SMAP assessments that you have identified in your practice that are not included in the previous list.

6. Please use the space below to comment on any additional suggestions to improve the SMAP.

Part C)

1. What best describes your position?

- Pharmacy owner
- Pharmacy manager
- Staff pharmacist
- Relief/casual pharmacist

2. How many hours do you work in a community pharmacy setting in a typical week?

- Less than 10 hours
- 10 – 20 hours
- 21 – 30 hours
- 31 – 40 hours
- more than 40 hours

3. Please indicate your gender:

- Male
- Female
- Prefer not to answer

4. How many years have you been a licensed pharmacist?

[Enter actual number](#)

5. What is the population of the community where your pharmacy is located? If you work in multiple community pharmacies, select the answer for the pharmacy you work in most often.

- Rural (<5,000)
- Small city (5,000 – 100,000)
- Large city (Saskatoon or Regina)

6. How would you classify the pharmacy you work in? If you work in multiple community pharmacies, select the answer for the pharmacy you work in most often.

- Independent/Banner
- Franchise
- Chain/Supermarket/Mass merchandiser

7. Are you a(n):

- International pharmacy graduate
- Canadian pharmacy graduate

8. How many prescriptions are filled at your pharmacy in a typical day? If you work in multiple community pharmacies, select the answer for the pharmacy you work in most often.

- < 100
- 101-200
- 201-300
- >300

9. Please indicate any/all additional training/education that you have completed (select all that apply):

- Residency (ACPR)
- ADAPT Certificate in Patient Care Skills (CPhA)
- CPhA Medication Review Services Program
- Certified Diabetes Educator (CDE)
- Certified Respiratory Educator (CRE)
- Certified Geriatric Pharmacist
- Advanced Method Certification (Immunization and Injection Training)
- Board Certification in United States (BPS)
- Post baccalaureate PharmD
- Masters Degree
- PhD Degree
- Other: (please specify) _____

APPENDIX D: CONTENT ANALYSIS GUIDELINES

1. Read through the responses once over without highlighting or noting categories.
2. Read through responses a second time and highlight substantive statements (the statements that make a key point).
3. Note categories that form in your mind as you highlight substantive statements, but do not record them at this time.
4. Take a break from the material.
5. Go through the responses a third time, mainly the highlighted portions, and make a list of categories that the highlighted statements fit into.
6. Look at the list of categories and determine if some need to be combined or split up. Edit the category headings as appropriate.
7. Go through the responses a fourth time with the list of categories. Check off each highlighted statement that fits into one of the categories and put a ? beside each highlighted statement that does not fit into one of the categories. Revise or add new categories as necessary so that the highlighted statement with ? can now fit into a category. You should now have a final list of categories.
8. Go through the responses a fifth and final time and mark each highlighted statement (by colour coding or numbers) to indicate which category it belongs to. Mark key statements for use in the final written report. (The book suggests making a grid (or two – one for positive statements and one for negative) that has the categories across the top and the respondent codes down the side and to make a mark in the corresponding grid when a respondent made a statement that fit into the category. It also suggested to type out key statements in the corresponding grid so that they could be used in the final report.)

Adapted from: Gillham B. Developing a questionnaire. 2nd ed. London: Continuum; 2007.