INCORPORATION AND EVALUATION OF EQUITY PRINCIPLES IN PHARMACY PROVIDED SEXUAL HEALTH SERVICES

by

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Dalhousie University is located in Mi'kma'ki,
the ancestral and unceded territory of the Mi'kmaq.
We are all Treaty people.

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ABSTRACT

Background: Rates of sexually transmitted infections (STIs) have increased over the past ten years in Canada and are disproportionately impacting underserved, stigmatized, and racialized populations. Although screening, prevention, and treatment services exist for STIs, these may not be accessible to underserved populations due to a variety of reasons, including historical trauma, systemic oppression, and service availability in all geographical regions. A potential solution to addressing service accessibility may be through service provision by community pharmacists. Pharmacists are ideally located within the communities that they serve and may offer increased points of contact with these patients for STI services and other linkages to care.

Aim: This thesis aims to further our understanding of how pharmacy practice and services can be leveraged to improve equitable access of STI healthcare services to underserved, stigmatized, and racialized populations.

Methods: This thesis consists of an introduction chapter and literature review, a structured scoping review to identify, summarize, and evaluate published literature pertaining to equity-focused pharmacy-based STI service delivery, a qualitative evaluation study using interviews with pharmacists and community representatives to determine how pharmacy-based STI services and research projects can better reach underserved populations, and a discussion chapter that integrates findings from the thesis as a whole.

Results: Findings from the primary two studies show that pharmacy-based STI services are well-suited to reach underserved populations but implementation of specific considerations that may impact effectiveness of service delivery are lacking. The scoping review showed that patient recruitment to services and research studies primarily occurred through location-based approaches where interventions were implemented in areas known to contain high numbers of the target population. The qualitative evaluation study found that historical trauma and systemic oppression of underserved populations are major drivers for lack of service uptake due to the fear and judgement expected of

patients upon service delivery. Findings also found that community engagement, population representation, and targeted promotion strategies may help to overcome these barriers and improve STI service uptake.

Conclusions: Pharmacy-based STI services, when carefully planned and promoted, may have the potential to successfully improve accessibility of services to underserved populations. Multi-pronged recruitment strategies that engage community, improve representation in promotions, and use media relevant for target populations should be developed and evaluated to further improve health equity in STI service delivery.

CHAPTER 1: INTRODUCTION

BACKGROUND

Health equity and the social determinants of health

There is a misconception that health is obtained when a person has no illnesses, diseases, or medical issues occurring within the body. However, in addition to physical wellness, a person's health can be determined by mental and social wellness which are impacted by a multitude of external factors.[1]

Determinants of health are a combination of the currently known internal and external factors which impact our health, wellness, and happiness. These factors, outlined by the Public Health Agency of Canada,[2] include but are not limited to the following:

1. Income and social status
2. Employment and working conditions
3. Education and literacy
4. Childhood experiences
5. Physical environments
6. Social supports and coping skills
7. Healthy behaviors
8. Access to health services
9. Biology and genetic endowment
10. Gender
11. Culture
12. Race / Racism

The determinants of health can be divided further based on whether they are environmental, personal, social, or economic in nature. The subsection known as the social determinants of health are a result of a person's place in society as well as the

behaviours and beliefs of others within society.[2] Some social determinants of health impact certain groups in particular. Discrimination for example impacts those in the 2SLGBTQ+, Indigenous, and Black communities disproportionately. Differences in the impact of the social determinants of health on specific populations of people can result in health inequities which include increased risk of illness, and worse health outcomes as a result of illness.[3] Health inequities are defined by the National Collaborating Centre for Determinants of Health as being systematic, avoidable, unfair, and unjust.[4]
The social determinants of health are modifiable and therefore should be actively identified in communities as factors to target in an attempt to improve health equity.[5] Health equity is therefore the aim of achieving optimal health for all peoples of a population regardless of their individual demographics. Health equity can therefore be improved with fair access to health promoting factors, and removing barriers to accessibility.[6]

A person's "health" can be measured in a few ways. In Canada, health is measured by looking at 53 indicators which fall under 6 main topics: health status, social factors, substance use, childhood and family factors, chronic disease and mental health, and communicable diseases.[7] Health status measurements include life expectancy, perceived health, perceived mental health, and adult obesity. Social factors include community belonging, poverty, and education. Smoking, drug, and alcohol use fall within substance use. Childhood and family factors include things such as low birthweight, vaccination status, and bullying. Rates of chronic diseases and mental health conditions such as cancer, diabetes, heart disease, dementia, and suicide are measured. Communicable diseases are infectious and encompass those which are sexually transmitted.

Health outcomes can be measured to indicate the overall health of a population, or measured within a specific sub-population to determine the existence of inequities. Health outcomes include morbidity, mortality, life expectancy, and burden of disease. Currently, there is a lack of demographic data associated with these indicators, however the collection of this important data will occur in future epidemiological studies conducted by the Canadian Government. The health inequalities data tool made available

by the government of Canada allows graph plotting of census data to show current patterns relating to a limited number of racial groups, however the census data itself has a distinct lack of information regarding how health differs between all the many different groups within society.[8]

Canada's chief public health officer (CPHO) identified health equity as the primary focus of the 2022-2025 priorities which includes "health system transformation".[9] The CPHO specifically mentions uplifting voices of those from marginalized communities, and de-colonisation of the healthcare system as part of Truth and Reconciliation with First Nations, Inuit and Métis peoples. Despite a lack of demographic data within the census, the 2018 executive summary on the Key Health Inequalities in Canada was able to identify a number of concerning health disparities in some key groups.[10] The overlapping relationships between socioeconomic status, education, and ethnicity was shown to have an obvious impact on health outcomes. Those with a low socioeconomic status who live in a low income area tended to have attained a lower level of education and were more likely to be a racial minority. Populations in low income areas had lower life expectancies, higher infant mortality rates, and unintentional injury than those living in more affluent areas. Additionally, Indigenous people living in low income areas had higher rates of arthritis, diabetes, obesity, and asthma compared to those living in more affluent areas. Poor mental health was more common in people with low incomes and less education, as well as people who identify as gay or bisexual, or are transgender or non-binary.[10,11]

Understanding how to reduce these health disparities is part of the CPHO's aims in addressing health equity. In particular, encouraging research and next-generation analytics is an aim to gain evidence-based public health interventions which can be implemented to improve the health of all Canadians.[9] Like the rest of Canada, health inequities also exist in Nova Scotia. Not all people are afforded the same treatment, quality of care, or available access to health services which has resulted in poorer health in some groups than others. Approximately 5.5 % of Nova Scotians identify as indigenous, and 9.8% are a visible minority.[12] There are a growing number immigrants

arriving to the province, one in every three people has a disability, and Nova Scotia also has the highest rates of gender diversity compared to anywhere else in the country.[11] The Nova Scotia government also acknowledges the damaging impact of practices and policies have had and continue to have on populations which were victims of colonization. The Mi'kmaw people, African Nova Scotians, refugees and immigrants, the gender and sexual diverse, and people with disabilities that make up such a large proportion of the population have a right to receive and achieve equitable healthcare. Equity, Diversity, Inclusion, Reconciliation, and Accessibility (EDIRA) therefore underpin the 2023 Health Equity framework which informs how healthcare in Nova Scotia is delivered.[13]

Sexually transmitted infections and equity

The 2019 report on sexually transmitted infection surveillance in Canada highlights some concerning statistics. Within the preceding decade the rates of chlamydia, gonorrhea, and infectious syphilis have increased by 33.1%, 181.7%, and 393.1% respectively.[14] In 2021, the rate of cases of chlamydia, gonorrhea, and infectious syphilis were 273.2, 84.2, and 30.2 cases per 100,000 population respectively.[15] Rates of HIV have also shown a positive trend with 1833 new cases of HIV diagnosed across Canada in 2022.[16] This evidence suggests that STIs are on the rise.

STI rates and the burden these infections have on people is disproportionate in a number of communities in Canada. Indigenous people, racial and ethnic minorities, men who have sex with men, people experiencing homelessness, and people living with HIV have been identified by the Public Health Agency of Canada as experiencing higher burden of STIs.[17] The social determinants of health of socioeconomic status, stigma, discrimination, and culture have a particularly strong impact exacerbating STI inequities. These specific social determinants are more commonly experienced by marginalised community groups which contributes to disproprotionatly higher STI rates and burden of disease in these communities when compared to the general population.[18] Stigma and discrimination are experienced more extensively in Canada minority groups such as First Nations, Inuit,

Métis, Black people, seniors, and members of the 2SLGBTQ2+ community. In addition, certain health conditions are also more highly stigmatized such as mental illness, substance use, tuberculosis, HIV, and obesity. Marginalized minority groups also tend to experience increased prevalence of stigmatized conditions such as STIs and there is an accumulation of stigmatization and discrimination[19] leading to greater negative impact on health outcomes.

In response to the increased rates of chlamydia, gonorrhea, syphilis, and HIV over the past decade, the Government of Canada published a five-year action plan in 2019 specifically to target sexually transmitted and blood-borne infections.[20] This has been followed more recently by the 2020-2022 progress report[21] which identifies 7 priorities including those which address inequitable STBBI care. The 7 priorities are as follows:

1. Moving toward truth and reconciliation with First Nations, Inuit and Métis Peoples
2. Stigma and discrimination
3. Community innovation—putting a priority on prevention
4. Reaching the undiagnosed—increasing access to STBBI testing
5. Providing prevention, treatment and care to populations that receive health services or coverage of health care benefits from the federal government
6. Leveraging existing knowledge and targeting future research
7. Measuring impact—monitoring and reporting on trends and results

STI health care service provision in Nova Scotia

From a community health perspective, STIs are managed in a population through the screening, diagnosis, treatment, and prevention of infections. Screening for STIs involves the testing of individuals despite no signs or symptoms of active infection. This is important as the majority of STIs can be asymptomatically past on to others without knowing. Screening allows for the chain of transmission to be halted sooner and therefore reduces the number of additional people potentially being exposed to infections. Those

who are sexually active are encouraged to get STI screening regularly however additional opportunities should be made available to encourage testing. Screening initiatives are often organized by local health authorities with the support of community groups, educational facilities such as universities, or to coincide with public events.[22,23]

There are two main avenues by which people can access STI diagnostic healthcare services in Nova Scotia. The first is to visit a primary healthcare site such as a family doctor who will be able to screen and if applicable, provide a diagnosis and appropriate treatment based off the patients' signs, symptoms, and test results. The second avenue through community health services such as pop-up STI testing sites, and other drop-in and scheduled appointments provided by clinics which specialize in sexual health. Depending on the resources available, primary healthcare and community healthcare clinics may provide an array of STI tests including swabs and blood tests on sight or refer the patient to an alternative location where samples can be collected.[24,25]

Although these options are available, the healthcare system is stretched which limits the accessibility of these services. There are a lack of primary care providers, increased emergency department wait times, specialist wait times, emergency department closures, and sometimes a lack of funding resulting in patients paying out of pocket for necessary services. As of June 2024, 16.2% of Nova Scotians are without a primary care provider.[26] The resultant wait times and lack of available appointments can be very off-putting to patients.[27] Screening therefore may be reduced as the perceived hassle is far greater than the benefit of getting a clear result or treatment of a symptomless infection.

As with other infectious diseases, management of STIs is threatened by antimicrobial resistance (AMR) which results in infections that cannot be treated using available pharmaceutical options. AMR has emphasised the importance of preventative measures and ensuring antimicrobial use is appropriate.[28] Screening to prevent STIs may reduce antimicrobial use and contributed to less AMR. Condoms, vaccines, or prescription antimicrobial medication are three STI prevention methods available, but each has its limitations and doesn't protect from all infection types.[20] A multi-faceted approach is

therefore required so that people are being protected from the broadest array of possible infections. Education is an additional avenue by which rates of STIs can be reduced. Healthcare professionals play an important role in educating their patients on the signs and symptoms of STIs, risk factors which increase rates of transmission, and options available to people regarding diagnosis, treatment, and prevention.[29]

Pharmacy services impact on equity and reach to minority populations

Allied health is taking on an increasingly important role in the healthcare system as the full scope of practice and expertise of these professionals is realized. Specifically, pharmacists have seen a huge expansion of scope in terms of provided services which now commonly includes medicine management, vaccination, harm reduction services, and an increased number of prescribed medications being available following pharmacist consultation.[23,24,30] Community pharmacies are well placed to increase accessibility to STI services as they are already integrated into communities and provide readily available health advice from professionals over a larger number of work hours than is available from many general practice clinics.[30] Visibility of available STI services at community pharmacies may also contribute to reduced stigma surrounding sexual health services, and also in general increase the number of available avenues for people to seek care.[31] Increasing access to services is important for the reduction of health disparities, and by reducing stigma and increasing availability to receive care therefore may help increase health equity.[10,19] Collaboration between health professionals is also increasingly being encouraged as patients receive improved quality and continuity of care. Involving pharmacies in the prevention and treatment of STIs provides a more well-rounded and thorough approach for managing and preventing STIs in the community.[32]

RESEARCH QUESTIONS

How can we improve equity in STI service delivery within community pharmacies?

a. What examples exist of pharmacist provided STI healthcare service implementation which promote health equity?

b. How can pharmacy-based STI services reach diverse populations to improve health equity?

AIMS AND OBJECTIVES

The aim of this research is to further develop our current understanding of how pharmacy practice and services can be leveraged to improve equitable access of STI healthcare to diverse populations. As equity is a complex subject, this research will first focus on understanding our current knowledge base, and how this is currently applied in the Canadian healthcare system and more specifically to Nova Scotia. Identification of potential avenues of improvement from the perspective of pharmacists and members of diverse populations can be used to direct future studies and implementation of equitable health care services.

Specific objectives are to:

- Determine how health equity is addressed within STI services offered through community pharmacies
- Evaluate a pilot study to identify challenges encountered in health research patient recruitment as well as facilitators and barriers to participation, and how this impacted reach of underserved communities
- Determine strategies of improving reach in future to underserved communities to improve equity in pharmacy-based sexual health services

SIGNIFICANCE

Health equity is an identified priority both internationally, nationally, and provincially by the World Health Organization, Health Canada, and Nova Scotia Health respectively. Understanding how delivery of services through community pharmacies can be utilized as part of a sexual health team to reduce STI disparities aligns with healthcare organisation goals. It is a responsibility of healthcare researchers, professionals, and

health systems therefore to actively implement and evaluate healthcare services in a practical and meaningful way to improve health equity.

The significance of this research is therefore to provide knowledge which will actively contribute to the implementation of positively impactful pharmacist provided STI care services which reduce health disparities. This could involve services requiring expanded pharmacist scope of practice within their skillset, and increased collaboration between healthcare providers. Availability of additional services in pharmacies may increase accessibility to STI treatment and prevention opportunities, as well as reducing stigma and encouraging cultural change so that seeking STI services is normalized.

THESIS STRUCTURE

This thesis aims to answer the research question of how can we improve equity in STI service delivery within community pharmacies in two parts.

First, a *scoping review* will be conducted to uncover current equity focused STI services provided within pharmacies globally. Pharmacies can provide an additional avenue of increasing accessibility of STI services to underserved populations, and therefore investigation of how this has occurred is required. This will allow for more accurate identification of knowledge gaps regarding equity-promoting pharmacist-provided STI services.

Secondly, a *qualitative evaluation study* will be conducted using the PrEP-Rx as a case study. The PrEP-Rx study involved pharmacist prescribing of HIV pre-exposure prophylaxis in community pharmacies in the Halifax Regional Municipality, Nova Scotia, Canada. Eligible criteria to enrol in PrEP-Rx included being sexually or gender diverse, and it was hoped ethnic diversity would also be achieved. The aim of the evaluation study is to uncover the experiences of pharmacists and participants regarding the implementation and delivery of equity focussed STI services. Additionally, patient

and pharmacist feedback and suggestions will provide insight into potential improvements that can be implemented and identify future research areas.

Integration of the findings uncovered in both the scoping review and evaluation study will follow in the discussion section.

PROPOSED METHODOLOGY

To achieve the overarching research aims of this thesis, a scoping review will be conducted to identify knowledge gaps and answer the following objective:

- Determine how health equity is addressed within STI services offered through community pharmacies

Additionally, a qualitative study will be conducted to provide further understanding of the topic within the context of of the Canadian and Nova Scotian healthcare systems by speaking to pharmacists and stakeholders with experience within these systems. This study aims to answer the following objectives:

- Evaluate a pilot study to identify challenges encountered in health research patient recruitment as well as facilitators and barriers to participation, and how this impacted reach of underserved communities
- Determine strategies of improving reach in future to underserved communities to improve equity in pharmacy-based sexual health services

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CHAPTER 2: IMPROVING EQUITY OF SEXUAL HEALTH SERVICES THROUGH COMMUNITY PHARMACIES: A SCOPING REVIEW

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ABSTRACT

Background: Pharmacists are an underutilized resource for populations missed within the healthcare system. Stigmatized and racialized groups may not find traditional health services accessible. Research focused on healthcare access for these underserved populations is fundamental in understanding how to improve health equity.

Objectives: This scoping review aimed to determine how health equity is addressed within services offered through community pharmacies for sexually transmitted infections (STIs).

Methods: This review follows the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews Checklist. A comprehensive search strategy was developed with an academic librarian to capture studies containing search terms related to each of the following three topics: sexually transmitted disease, pharmacy, underserved groups. PubMed and Embase search results were uploaded to the screening software Covidence. Two researchers independently screened titles, abstracts, and full texts.

Results: A total of 10 articles were identified which described services implemented for underserved groups. Four groups of underserved populations were identified: injection drug users, men who have sex with men, racial minorities, and those with low

socioeconomic status. Patient recruitment for the studies occurred through either a population-based approach of self-identification and enrollment, or a location-based approach where interventions were implemented in areas known to contain high numbers of the target population. All studies involved interventions for the prevention or testing of STIs rather than assessment and treatment.

Conclusions: Pharmacist provided STI care can successfully target underserved populations. Additional recruitment strategies and novel interventions designed for underserved populations should be developed and evaluated to further encourage health equity. The outcome of this research could be used to inform further investigation into, or implementation of pharmacist led sexual health services.

BACKGROUND

Health disparities continue to exist within many vulnerable populations worldwide, and lack of access to healthcare and healthcare professionals is consistently cited as a major contributing factor.[1] New solutions, including supporting full scope practice of healthcare professionals, is essential to improving health outcomes.[2] Recognition of the ability of pharmacists to provide high quality clinical interventions has rapidly increased throughout the COVID-19 pandemic, as community pharmacists played a vital role in vaccination roll outs, education, knowledge distribution, and as freely accessible healthcare providers while other primary care providers and hospitals were inundated with increased demand for care.[3,4] Previous studies have shown that pharmacists are willing and able to provide additional clinical services and are considered a trusted healthcare provider by their patients.[5] Community pharmacists are ideally positioned to address some of these health disparities by providing clinical services in more accessible environments for underserved populations.[6,7]

STI prevention, prompt diagnosis, and treatment is a major challenge as people are often asymptomatic and unknowingly passing on infections.[8,9] Left untreated, implications of chronic STI may include infertility, organ damage, cancer, or other life-long medical

conditions.[10] In addition to stigma and challenges in accessing STI care, racial minorities, people of colour, sexual and gender minorities (SGM), and other vulnerable populations are disproportionately impacted by STIs and are therefore more likely to have negative health outcomes because of delayed access to care.[11,12] Surveillance data reported by the Centers for Disease Control and Prevention (CDC) indicate the scale at which STIs impact Americans. In 2021 there were 1,644,416 cases of chlamydia, 710,151 of gonorrhoea, and 176,713 of syphilis in the United States.[13] Therefore, interventions aimed at improving health equity by reducing systemic oppression and improving access to health services are urgently required, especially for sexual health services and other highly stigmatized conditions such as STIs.[1]

In Canada the scope of pharmacists has grown to include prescribing medications for several common infections, including STIs.[14] This may include screening, testing, diagnosis, and treatment prescribing, dependent on the province or territory of residence. Therefore, the accessibility of pharmacies and pharmacists may offer an excellent context to enhance provision of these services through the lens of health equity.[15,16] Some notable examples from the literature of other successful pharmacist-led health equity initiatives include needle exchange programs, and harm reduction initiatives for injection drug users.[17] However, the ability of pharmacists to improve health equity in STI care is currently unknown.

OBJECTIVES

This scoping review aimed to determine how health equity is addressed within STI services offered through community pharmacies.

METHODS

Search Strategy

This scoping review was conducted following the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist.[18]

A search strategy was developed containing search terms related to each of the following 3 topics: STIs, pharmacy, and underserved groups. The search strategy is presented in Appendix 1. The electronic search was conducted in both Pubmed and EMBASE with no limits on article publication dates. The search was conducted in December 2022 and updated in July 2023. References of identified articles and pertinent review articles were hand searched for any study not captured by the electronic search. Search results were uploaded into Covidence software and duplicates were removed.

Study Selection

Article screening by title and abstracts was conducted independently by two investigators (PR, KW). Discrepancies between the two investigators were resolved using discussion. The same process occurred for screening based on full-text review. No limits were placed on date or country of origin but articles were required to be published in English. Articles were included if they reported primary studies that evaluated a clinical service for STI management provided by a pharmacist which was implemented with the aim of improving health equity. For this context, health equity was considered to include any strategy or intervention described that targeted improved access of the service to members of underserved populations. Keywords related to underserved groups, STIs, and pharmacists included in the search is provided in Appendix 1.

Underserved groups were defined as any vulnerable minority group based on race, gender, sexuality, religion, socioeconomic status, disability status, or other social factors (e.g., incarcerated, refugees). Pharmacist provided STI services were defined as ones in which the pharmacist assesses, prescribes, or provides other services beyond usual scope of practice to a patient for the prevention or treatment of an STI. Studies were required to focus on STIs and be a primary study collecting data from or about patients. Studies were excluded if services were part of the usual scope of practice of a pharmacist which includes dispensing, or clinical checks of prescriptions. Nonclinical interventions provided by the pharmacy such as delivery services or selling of screening tests without clinical intervention were also excluded. Studies were considered regardless of the setting

in which the pharmacist conducted the intervention (hospital, community pharmacy, testing centre, other).

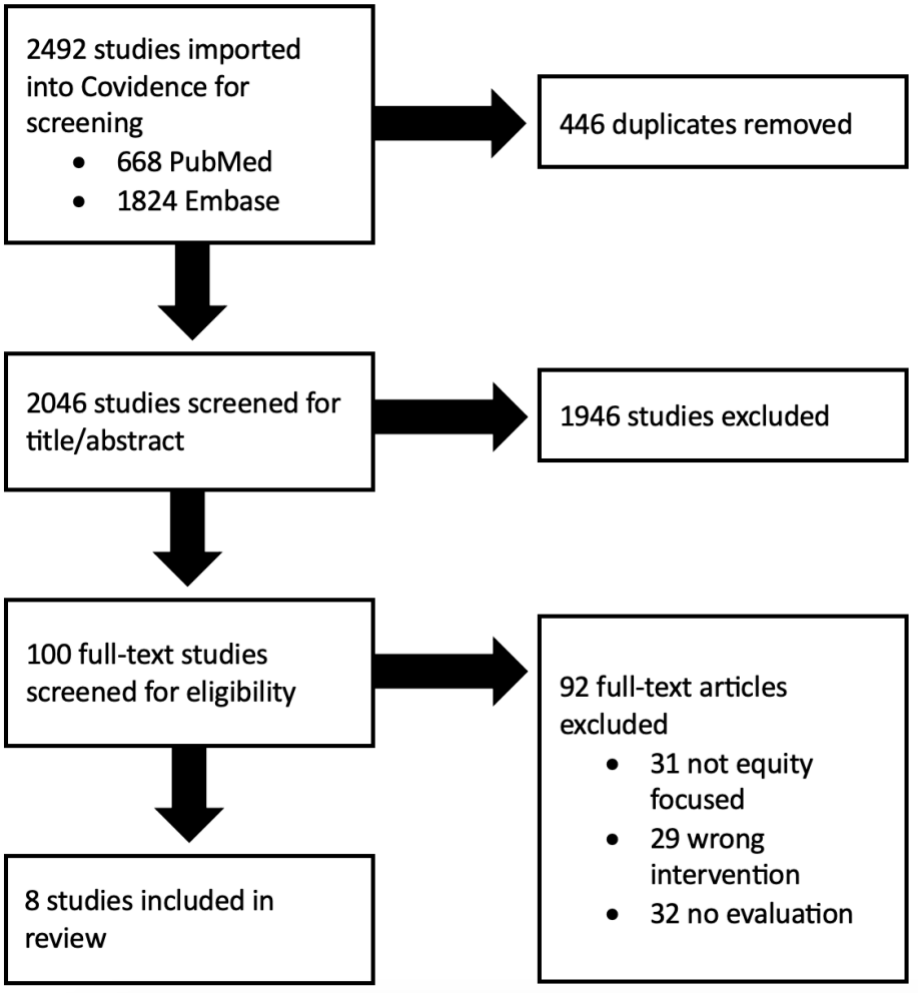
Data Extraction

Data extraction was conducted by one investigator (PR) and checked by another (KW). Extracted data included study information, objectives, study design, population of interest, intervention, outcomes, and results pertaining to equity-related outcomes.

RESULTS

Search strategy results are provided in Figure 1. A total of 2492 studies were retrieved from database searching. After the removal of 446 duplicates, 2046 articles were screened by title and abstract with 1946 not meeting eligibility criteria. A further 100 studies subsequently underwent full-text screening and 8 were identified as eligible for inclusion in the review. Of the 8 studies included, the vulnerable populations identified were racially diverse individuals (n . 4), SGM individuals (n . 2), syringe users (n . 1), and those living with low socioeconomic status (n . 1). Most studies (n . 6) identified were completed in the United States of America, and the remaining 2 studies were conducted in Tanzania and Puerto Rico.

Figure 1. Flowchart of the systematic review search strategy for article inclusion



Studies reported on 2 ways that equity is being addressed in pharmacy-based STI services. Equity-based interventions were categorized as those that directly targeted a population such as SGM or injection drug users (n . 3) or interventions that were implemented based on location in communities with specific racial or socioeconomic demographics (n . 5). Interventions included testing (n . 3), vaccination (n . 2), initiation of prophylactic treatment (n . 2), and general STI care from pharmacists (n . 1). Education was incorporated into the intervention in most studies with 3 of them specifically testing the impact of patient education and improved knowledge to the uptake of a pharmacist-provided service. All services implemented involved prevention of STIs

rather than the assessment, diagnosis, and treatment of infections. Studies focused on human immunodeficiency virus (HIV) (n . 5), human papillomavirus (HPV) (n . 2), and general STI care (n . 1). A summary of each study is presented in Table 1.

Table.1 Comprehensive summary of included studies

Study	Objective(s)	Population	Setting	Outcome measures	Findings
Agardh et al. 2017[28]	Investigate perceptions MSM have of pharmacy STI care and why they may avoid these services.	MSM who had made 3 visits to a pharmacy or drug store for sexual health issues and are at least 18 years old. (n=15)	Dar es Salaam, Tanzania	Themes related to different aspects of MSM perceptions/experiences of pharmacy provided STI sexual health care.	MSM see pharmacies as a first choice when seeking STI care. MSM may avoid seeking care due to safety threats and issues accessing the pharmacist is a private way. MSM have experienced unreliable services at pharmacies.
Amesty et al. 2015[24]	Examine associations between demographics and risk behaviours with receiving in-pharmacy HIV testing.	Customers aged over 18 years in pharmacies participating in a non-prescription syringe program. 80% Black, 88% use hard drugs. (n=233)	New York City, USA	In-pharmacy HIV testing (yes or no), sociodemographic characteristics, sexual and drug risk behaviours, HIV testing behaviours, and health care access/utilization.	39.5% received HIV testing. Testing was associated with being a woman, having multiple sex partners, having an HIV test over 12 months ago, injecting drugs in the last 3 months, and having continuous care.
Collins et al. 2018[19]	See if walk-in HIV testing outside of traditional business hours increase rates of first-time testers. Does choosing test sites based on demographic characteristics associated with higher rates of HIV	Patients aged 18 and older from 32 pharmacies located in census tracts with at least 30% Black and/or Hispanic/ Latino population and/or at least 20% of the population lives below the federal poverty level. 50.3% were Black (non-Hispanic), and 10.1% were Hispanic of any race (n=3630)	Virginia, USA	Receipt of a previous HIV test. Demographic characteristics.	46.0% of those tested had never been tested before or were unsure if they'd been tested. 0.8% of tests were reactive which is higher compared to HIV testing in clinics and community based outreach testing.

	infection increase HIV identification rates.				76.7% of people who received a reactive test were Black (non-Hispanic), and 56.7% hadn't been tested before or were unsure if they had been.
Crawford et al. 2016[20]	Does HIV exceptionalism impact willingness to test, and what is the impact of incorporating HIV testing with other chronic disease screening tests.	Patients from 3 pharmacies located in low-income, minority neighbourhoods. 49.6% Latino, 33.1% Black/Black Hispanic. 12.2% reported currently using illicit drugs. (n=688)	New York City, USA	Uptake of HIV testing in the 3 different treatment arms. Demographics. Substance use/sexual behaviours. HIV stigma scale.	HIV testing was accepted by 30.6% of those in the comprehensive arm (1.61 times more likely than control arm), 28.5% in the video arm (1.59 times more likely than control arm), 20.4% in the control arm.
Jiménez-Quiñones et al. 2017[21]	To observe whether vaccination rates are improved by education programs.	Current pharmacy patients living in a low socioeconomic area within the ages of 18 and 26 years. (n=7)	Lares, Puerto Rico	Rate of HPV vaccination 4 months post initiation of the educational program.	4 of the 7 patients received vaccination.
Khosropour et al. 2020[25]	Are pharmacists successful at initiating PREP (same-day).	MSM, trans women and cis women (with additional requirements) aged 18 years and over who present to the walk-in HIV/STI testing center and test negative. Those prescribed PrEP were 57% MSM, 77% Black, 65% uninsured. (n=69)	Jackson, Mississippi, USA	PrEP prescription numbers, prescription fill rates, clinical appointment attendance within 6 weeks of filling their prescription. Demographic information.	Of all 69 patients 77% filled their PREP prescription, and 33% attended their clinical appointment.
Navarrete et al. 2014[22]	To describe the development and implementation of an HPV vaccine PAP for underinsured university	Underinsured university students. (n=89)	US/Mexico border	Results from a needs assessment questionnaire. Utilization data from qualifying students and if	The questionnaire indicated a need for this service. 79.8% of those who received their 1st dose got their 2nd and

	students, and observe the number who accessed the program and completed the vaccination series			they finished the HPV vaccine series.	48.3% got their 3rd. Program completion rate of this study was higher than rates reported by CDC (33% in 2012).
Lopez et al. 2019[23]	Observe the design and implementation of a community pharmacy-initiated HIV PREP and PEP program.	Patients at a community pharmacy in a historically Hispanic/Latino/Latinx neighbourhood. Approximately 47% of those who started PREP self-identified as Hispanic or Latino, 10% were black/African American, and 82% MSM. (n=59)	San Francisco, USA	Demographics PEP and PrEP initiation visit, and prescription filling data.	96% of those prescribed PREP filled their prescription.

Studies That Addressed Health Equity by Targeted Specific Locations

Five studies assessed pharmacy services implemented in a location known to have a large density of an underserved population to improve equity. Participating pharmacies were chosen for the studies based on local population data. Pharmacies were located in certain towns, districts, or neighbourhoods with a higher than average percentage of certain underserved groups.

Two studies specifically focused on HIV testing. Collins et al.[19] recruited 3630 patients for voluntary HIV testing from 32 pharmacies located in areas made up of at least 30% black and Hispanics and 20% of the population living below the federal poverty level in the United States. A total of 50.3% of the 3630 patients tested were non-Hispanic black and 10.1% were Hispanic of any race. Results found that 40.0% of participants had never been tested or were unsure if they had been tested previously. This indicates that HIV testing in pharmacies was used by underserved groups, of whom many would go untested and potentially undiagnosed otherwise.[19]

Crawford et al.[20] recruited 688 patients for HIV testing from three pharmacies located in low-income, high drug-activity, minority neighbourhoods in the United States. Each pharmacy provided either a comprehensive intervention or a video only intervention as well as a control pharmacy to gauge whether destigmatizing and normalizing HIV testing can improve uptake. The comprehensive arm consisted of providing optional HIV testing alongside chronic disease screening and an educational video. The video-only intervention provided optional HIV testing with the video, and the control arm provided optional HIV testing without additional interventions. A total of 49.6% of participants were Hispanic, 33.1% were black/black Hispanic, 87.1% earned $5000 or less in legal income per year, and 12.2% and 20.5% were current drug users or have reported ever using drugs respectively. Results found that 30.1% of those in the comprehensive arm received HIV testing, compared with 28.5% in the video arm and 20.4% in the control arm, indicating that interventions targeted towards destigmatizing and normalizing HIV testing may improve uptake of testing services.[20]

Two studies were location based and aimed to improve HPV vaccination rates. Jiménez-Quiñones et al.[21] recruited current patients from a pharmacy located in a low socio-economic area who according to their pharmacy patient profile were eligible for an HPV vaccine series in Puerto Rico. Participants received a group educational intervention with the option of HPV vaccination afterward. A total of 200 eligible patients were identified through their profile and 79 were contacted by phone but most were unable to attend the group education session. Only 7 patients were able to participate and were instead asked to complete an individual education session, with 4 subsequently accepting vaccination afterward.[21] This study indicates that group education sessions may not be favorable to patients and individual-based interventions may be better suited to reach target populations.

A second study by Navarrete et al.[22] assessed HPV vaccine uptake within a population of underinsured students studying at a university with a predominantly Hispanic population in the United States. Patients were identified by pharmacists or were referred by clinicians to the pharmacy based off their insurance status and were offered to receive an HPV vaccination series. A total of 89 students were enrolled and 48.3% received all three doses of the vaccine compared to a 33% national completion rate reported by the CDC for 2012.[22]

One study was specific for provision of post-exposure prophylaxis (PEP) and pre-exposure prophylaxis (PrEP). Lopez et al.[23] reported a study that provided pharmacist prescribed PEP and PREP from a pharmacy located in a historically Latinx/Hispanic neighbourhood in the United States. PEP was given to 6 patients, and 53 patients underwent a PREP initiation visit. Of those who filled their prescription and started PrEP, 82% self-identified as men who have sex with men (MSM), approximately 47% as Hispanic/Latinx, and 10% as black.[23]

Studies That Addressed Health Equity Through Population Targeting

A total of 3 studies assessed pharmacy services by targeting self-identified members of target populations. The recruitment of participants relied on patients openly self-identifying and enrolling in the studies themselves or by using a pharmacy service associated with the target population (e.g. persons who inject drugs).

Amesty et al.[24] recruited patients for HIV testing at 2 pharmacies registered with an expanded syringe access program in high-risk HIV areas in the United States. Participants filled a survey and then elected whether they wanted to take an HIV test. A total of 80% of participants identified as black and 88% had used "hard drugs". Findings showed 39.5% of patients enrolled received in-pharmacy HIV testing; many had taken drugs within the past 3 months, had not been tested before, and had multiple sexual partners.[24]

Khosropour et al.[25] recruited patients for initiation of PrEP for HIV by a clinical pharmacist from those who presented to a walk-in HIV/STI testing center and tested negative in the United States. The intervention was aimed to target black MSM. Eligible patients were then given the option to initiate PrEP provided by a clinical pharmacist. Of the 69 patients who were referred to the pharmacist by the testing center for same day PrEP, 77% filled their prescription, and 33% filled their prescription as well as being linked to ongoing care. Findings showed 76.8% of patients who were referred to the pharmacist were black, and 55.1% identified as MSM.[25]

Agardh et al.[26] targeted MSM to gain understanding of their perceptions and experiences of seeking STI-related sexual health treatment and advice from pharmacists in Tanzania. Same-sex relations are illegal in Tanzania resulting in discrimination and stigma. Recruitment occurred in conjunction with a local organization which works with MSM, and resulted in 15 participants who were invited to give an interview. Findings showed balancing threats with need for treatment, strategies to approach pharmacists, and unreliable pharmacy services as contributing barriers to seeking care.[26]

DISCUSSION

This review aimed to determine how health equity is addressed within the provision of STI services through pharmacies. Results showed that there is evidence that pharmacists have potential to provide services that address equity but in limited ways (i.e., location-based services or through population targeting). These findings suggest that investigation into the role of pharmacists and pharmacy services to improve health equity is not yet well established. Although evidence may be limited at this time, this review provides a foundation for consideration of health equity in the development of future service implementation and evaluation studies.

The finding of location-based approaches may be a viable strategy to offer services within proximity of target populations but may not fully address other underlying issues that may reduce service uptake such as patients' previous experiences with stigma or discrimination within care settings. Although these studies suggest that this approach may be beneficial to target specific populations, it must be considered that cities are becoming more and more diverse with traditionally underserved populations not necessarily centralized to specific locations.[27] Therefore, location-based service delivery should be paired with additional promotion and destigmatization efforts to improve the reach of services to all those that may benefit. This may be especially important for rural populations, where it is known that disparities in STI management commonly exist.

Studies that targeted specific populations offer another strategy to improve health equity in STI management. These studies are based on the population data of those high risk for contracting STIs. Although this strategy has proved beneficial from the studies identified, a targeted approach may narrow the reach of service delivery and neglect populations not traditionally deemed to be at high risk. This is especially important because many STIs are asymptomatic and readily transmitted throughout these emerging high-risk populations. That being said, targeted approaches likely have a role in STI service provision and should be considered alongside other interventions to improve equity, such as destigmatization as discussed above.

This review has implications for practice and future research. From a practice perspective, pharmacies that are offering STI management services should be encouraged to consider how equity is addressed in their services and use iterative evaluation data to determine how to best reach underserved populations. Those solely focused on location-based service delivery or population-specific targeting should attempt to evaluate the reach of their services and speak with patients on how to better promote and deliver services to vulnerable groups. As more pharmacy-based services are implemented, the profession must also work with public and private funders to ensure that pharmacists are adequately compensated to provide and sustain these services. From a research perspective, it seems that the concept of equity focused service delivery is new and more research is needed to determine the effectiveness of the strategies identified, as well as to identify other strategies that may useful in service design and implementation. Participatory action research through engagement with target communities and populations may offer valuable insight into how services can be developed in collaboration with patients, rather than attempting to modify existing services that may not be fit for purpose. In addition, research should move beyond the reach of services and move into other areas such as destigmatization and inclusivity within service offerings.

This review has limitations that should be addressed. First, the concept of "equity" in service development and delivery is new, and therefore, the small number of studies identified is not unexpected. That being said, other studies may have addressed equity within service implementation but may not have explicitly included in their descriptions or evaluations. Second, STI services within pharmacies are also a relatively new concept and may not be within pharmacists' scope of practice in many settings. As scope of practice expands to include considerations of STI management by pharmacists, the results of this review should be used to help improve equity of service development and delivery. Finally, only 2 databases were searched to identify relevant studies and this may have missed some studies. However, no study was identified through searching outside of databases and the consistency in the results obtained provide confidence that that search identified the most relevant literature for the stated objectives.

CONCLUSION

As pharmacists' scope of practice expands to include management of STIs in some places in the world, health equity must be addressed within service delivery to ensure all populations are provided with appropriate care. This review found that location-based services and population-targeting services may be effective to reach those traditionally underserved by health care systems. Findings support the notion that pharmacy-based services may have potential to reduce gaps in care and improve equity when using these strategies. Future research is required to identify and understand how other strategies may improve equity in care, such as destigmatization and fostering inclusivity within pharmacy settings.

DISCLOSURE

The authors declare no relevant conflicts of interest or financial relationships.

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CHAPTER 3: EVALUATION OF EQUITY AND DIVERSITY IN RECRUITMENT STRATEGIES EMPLOYED IN THE PREP-RX STUDY

BACKGROUND

Nova Scotia has great diversity in its population and recruitment strategies for research and health services must be tailored to reach those underrepresented in society. According to 2021 census data, of the 25% of private households, 16% of people in the Halifax (census metropolitan area) were of a visible minority,[1] defined by The Employment Equity Act as "persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour".[2] Groups included under this term are black (4.5%), South Asian (3.7%), Chinese (2.1%), and Arab (2.1%). Additionally, 4.1% of those in private households self-identify as indigenous.[1] Health research which takes this diversity into consideration can yield results that support health equity resulting in services inclusive for all.

The PrEP-Rx Study (Pharmacists Prescribing of Pre-Exposure Prophylaxis)

The PrEP-Rx study took place in ten pharmacies across the Halifax Regional Municipality (HRM), Nova Scotia, Canada, in 2023 and involved pharmacist independent prescribing of pre-exposure prophylaxis (PrEP) for prevention of HIV (human immunodeficiency virus) in population groups which are disproportionately negatively impacted by HIV infection. These populations were identified from the Canadian guideline on HIV pre-exposure prophylaxis and nonoccupational postexposure prophylaxis. Populations included being a member of one of the following groups: gay, bisexual, and other men who have sex with men (MSM) and transgender women (TGW), people who inject drugs, and people in a heterosexual relationship with an HIV positive partner.[3]

Strategies used to recruit participants for the study mirrored strategies that would likely be employed to advertise pharmacy-based services to the general public. These included

the use of social media, media announcements on television, online news websites, and advertising by study pharmacists. Social media posts were developed by the research team and distributed using a snowball technique by providing to community organizations and members for sharing on their own platforms. Participating pharmacies also shared social media advertisements on Facebook, Instragram, X, and other platforms. As it was expected that the demand for the study would be high, broader community advertising did not occur. It should also be noted that participants received 6 months of PrEP at no cost through funding provided by the study, in an effort to attract those individuals who would not have access to PrEP without private insurance (cost ~$750 CAD per 3 month supply of medication).

Demographic data obtained from the PrEP-Rx study was analyzed to show that of the 44 participants recruited, 100% were deemed to be gay or bisexual men who have sex with men (MSM) or TGW, and 82% were white. Of these people, 86% identified as sexually diverse and 5% as gender diverse. The ethnicities of other participants included: African Nova Scotian, African Canadian, South Asian, Southeast Asian, First Nations, Hispanic or Latinx, Middle Eastern, and others. Of the 39 participants who picked up their first prescription, 59% had private insurance and 38% had no insurance.

Recruitment of Diversity

The challenges of recruiting a diverse cohort is not isolated to PrEP-Rx but rather a commonly experienced challenge of clinical research and studies investigating equity in healthcare.[4] Barriers to participation include a lack of trust due to historic trauma, lack of trust, financial barriers, poor understanding of clinical trials, time and travel commitments, as well as a multitude of others factors.[5,6] An investigation into the recruitment of diverse populations into clinical research and trials identified that how genetics, environmental factors, and the social determinants of health interrelate is still not well understood.[7] It is therefore imperative that this be investigated to understand the rationale behind underserved demographics participating or not in healthcare research,

and to uncover new avenues of recruitment to increase diversity and meaningful research findings contributing to more equitable healthcare services.

Evaluation studies investigating strategies used to recruit diverse patient populations are scarce. As per Chapter 2, evidence to support delivery of pharmacist-led care for sexually transmitted infections (STIs) in underserved populations is limited.[8] Pharmacist-led management of STIs is an important consideration for primary care as accessible pharmacies can provide access to care to populations with the greatest challenges in healthcare access.[9] Studies with an equity focus often recruit underserved/minority populations via implementation of pharmacy services in specific communities with known population density. Location based services tend to result in non-generalizable data, and often target only one underserved demographic.[10–12] Further research on how to recruit inclusive study cohorts that better represent the diversity of the general population is a priority.

RATIONALE

Previous research has identified acceptability and feasibility of implementing pharmacy-based sexual health services by patients and pharmacists.[13,14] The pharmacist as a health professional is respected and trusted, and the accessibility of community pharmacies make pharmacy a promising sector for development of strategies to improve health equity.[15] However, the utilization of clinical pharmacy services by underserved and equity deserving groups is largely unknown.[9] Additionally, the most effective ways to reach underserved and equity deserving groups to pharmacist provided services through promotional strategies are not known. Therefore, this study aims to answer the following research question: "How can pharmacy-based sexual health services be tailored and promoted to reach underserved and equity deserving populations?" The findings of this study may provide useful knowledge in relation to equitable recruitment and implementation of pharmacist provided services generally or STI services specifically.

OBJECTIVES

1. Identify facilitators and barriers to access/uptake of pharmacist-led STI healthcare services
2. Evaluate the effectiveness of PrEP-Rx recruitment strategies and identify facilitators and barriers associated with recruitment/promotional strategies
3. Determine strategies to improve reach of promotion and recruitment strategies to underserved communities to improve equity in pharmacy-based STI services

METHODS

Study Design

This was a qualitative evaluation case study using in-depth semi structured interviews.

Participants

Eligible participants were community pharmacists who participated in the PrEP-Rx study (n=10) and community stakeholders who are members of underrepresented demographic groups (eg., ethnic minorities, gender and sexual minorities, and injection drug users). Community group leaders and representatives were the stakeholder participants of choice as they have knowledge of their community's understanding, thoughts, and opinions of health and social topics as a result of active engagement within their communities. The principle of data sufficiency was used to guide the study sample size,[16] realizing that the pharmacist population was small and community groups are commonly burdened with participation in research projects which could result in low uptake.

Stakeholders were identified by utilizing Dalhousie University[17] and Halifax Regional Municipality[18] published resources for community engagement, through pre-existing networks between researchers and community group members, and online searches. Identified organizations were contacted directly by publicly available email addresses. Pharmacists were contacted via email.

Interview Guide Development and Content

The interview guide consisted of two parts: one for interviews with pharmacists and the other for community stakeholders. The guide was developed based on the study objectives. Learnings from the PrEP-Rx study, past investigator experience of interview guide development, and literature[19] were drawn upon in the guide development. The interview guide was written by P.R.G., checked and refined by K.J.W., and sent to E.B. and S.T. for feedback and approval. The final interview guide included questions for both pharmacists and community stakeholders regarding the recruitment strategies used by the PrEP-Rx study and how improvements could be made for future pharmacist provided STI services. Stakeholders were asked additional questions about their community and experiences to provide context to their suggestions. Pharmacists were asked about their pharmacy and observations from participating in PrEP-Rx to provide additional detail on the success and/or challenges of employed recruitment strategies. The interview guides are provided in Appendix 2.

Data Collection

Eligible stakeholder community group organizations and individuals were invited to participate in an interview through publically available email addresses acquired online. Pharmacists involved in PrEP-Rx had provided permission to be contacted by email in future regarding the PrEP-Rx study and were also invited to participate. The emailed invites included an outline of the project, and an information sheet about the PrEP-Rx study recruitment strategies. The email was resent if there is no response within 1 week of sending the first email. Those who showed interest in participating were then sent a consent form and the discussion guide in advance, and were given an opportunity to choose a time and date for the interview to occur.

Virtual interviews were conducted and recorded using Microsoft Teams. Interviewers conducted these interviews from private locations without the presence of others besides the participants and interviewers. P.R.G and K.J.W were the two investigators involved in conducting the interviews. P.R.G has a pharmacy background, identifies as racially

diverse, and is a newcomer to Nova Scotia and Canada. K.J.W is a pharmacist by training, identifies as sexually diverse, and has lived and worked in Ghana, Qatar, New Zealand, and Canada. Two interviews were conducted with two interviewers (P.R.G. and K.J.W.) and one participant, and the following 7 interviews were conducted with 1 interviewer (P.R.G.). Each interview took up to 30 minutes to complete. Interview recordings were transcribed verbatim by P.R.G. An Amazon.ca voucher valued at $50 was offered as compensation to those who consented to the interview.

Data Analysis

Data analysis occurred using thematic analysis, a commonly used method for interpreting themes from interview data obtained in qualitative health research.[20,21] An initial coding guide was developed by P.R.G and K.J.W. following analysis of three transcripts where researchers independently inductively coded data according to the study objectives. Discrepancies were resolved during a meeting between P.R.G and K.J.W. The remaining transcripts were inductively coded by P.R.G with modifications made as required, and checked for consistency and accuracy by K.J.W. Upon completion of coding, two investigators (PRG, KJW) met to interpret preliminary themes. Results from this process were shared with the wider team to insure trustworthiness of the process. Transcripts were then re-reviewed to search for confirming or refuting evidence for each theme and extraction of supporting evidence in the form of participant quotes. All investigators agreed upon the final themes.

RESULTS

Following recruitment, 9 participants (5 stakeholders and 4 pharmacists) consented to undergo the interview process. All participants completed study procedures. Stakeholders and pharmacists who participated in this study were representatives of the Black, Indigenous, Middle Eastern, injection drug users, and 2SLGBTQ+ communities. Intersectionality of varying identities between communities was not measured.

Objective 1: To identify facilitators and barriers to access/uptake of pharmacy-based STI services

Five themes were identified which encompass facilitators and barriers to uptake of pharmacy-based sexual health services by underrepresented communities. Themes, descriptions, and supporting evidence are provided in Table 2 and briefly summarized below.

1. Convenience

The first theme was convenience. Participants felt that the convenience and accessibility of pharmacies was a facilitator to uptake of pharmacy-based sexual health services. The locations and abundance of pharmacies was mentioned positively, as well as the extended hours in certain locations. While appointments were favoured in some circumstances, participants believed the opportunity for walk-in based services would also facilitate uptake, with groups that may have faced previous discrimination or stigma and prefer to seek care in the moment, rather than making plans in advance.

2. Misunderstandings

The second theme was misunderstandings. Participants felt that a large barrier to service uptake was a misunderstanding or confusion around what services are provided, what they involve, and how to navigate the pharmacy space to access them. In addition, participants noted that inconsistencies between pharmacies contribute to misunderstandings. Participants believe that more thorough advertising and explanation of what services involve would increase uptake as patients may not know services are provided at pharmacies, may believe they are required to disclose private information which they do not, or may not realise the availability of consultation rooms in pharmacies.

3. Historical harm and past experiences

The third theme was historical harm and past experiences and was described by participants as a barrier preventing entry to the pharmacy space. Healthcare experiences encountered by individuals or entire communities both currently and historically can impact access as there is often associated negativity or physical/emotional harm. Participants noted that acknowledging historical harm and actively working to make current encounters with the healthcare system positive could work to reduce this barrier.

4. Current forms of systemic oppression

For the fourth theme, participants noted that there are currently many barriers encountered in the pharmacy space which fall within the umbrella of system oppression. This theme includes systemic barriers including a lack of privacy, financial and physical barriers, and others which may be encountered in pharmacies when attempting to access STI services. Participants believe that healthcare professionals lack education about race, gender, sex, etc. and thus addressing this may improve service uptake.

5. Perceptions and Fears

An emotional component was mentioned by participants to be involved when deciding whether to access a service within pharmacies. This last theme describes how perceptions and fears around STIs may impact the willingness of people to access pharmacy-based services. Emotions experienced such as fear and shame may elicit a behavioural responses by patients such as avoidance or concealment. Without addressing these barriers, these services may remain inaccessible to paients experiencing these reactions.

Objective 2: To identify facilitators and barriers of promotional strategies/recruitment for recruiting patients for pharmacy based STI services/research participation

Four themes were identified which encompass facilitators and barriers for the effectiveness of recruitment strategies employed by PrEP-Rx. Themes, descriptions, and supporting evidence are provided in Table 3 and briefly summarized below.

1. Type of recruitment strategy

The first theme related to the type of recruitment strategy is used. Participants believe the form of recruitment impacts the resultant recruited diversity. Participants spoke of how strategies such as social media will only reach certain demographics and can therefore determine how far-reaching promotion can be. Using a limited number of promotional or recruitment strategies was suggested to be a barrier to healthcare as underserved demographics remain unaware or are aware that promotional strategies are not targeted at them therefore perpetuating the idea that they do not belong in the healthcare space.

2. Service type and its perceived benefits/relevance

This second theme describes how the potential negative emotions or experiences of an STI service (ex. Embarrassment, invasive questions or tests) need to be outweighed by

the benefits of accessing a service. Participants believed that patients' willingness to access a pharmacy-based service may be influenced by factors including whether a service is actually desired and beneficial. Appropriate compensation (monetary or otherwise) was also a factor mentioned as impacting participant recruitment into health research.

3. Awareness of service options

This third theme "awareness of service options" related to the lack of familiarity with services offered. Participants believed the barriers under this third theme could be addressed through clear, concise, and easily understood promotional material. Participants believed that a lack of awareness or misunderstandings about what accessing a service involves could result in reduced access, and therefore improving the general awareness and understanding about what services exist and what they entail may improve the uptake of pharmacist provided services. This theme also encompasses the misunderstandings surrounding STIs and the risks of contracting them.

4. Difficulties requesting a service

The nature of conversation surrounding STI services may decrease the likelihood of engaging in conversation regarding a service. For this last theme, both stakeholders and pharmacists spoke of difficulties encountered when trying to talk about perceived taboo and uncomfortable topics including STIs and sex/gender. Pharmacists spoke of the difficulty in suggesting available services due to lack of understanding of the topic and what language is appropriate, and not wanting to make assumptions or say something to upset a patient.

Objective 3: To identify strategies to optimize the reach of pharmacy based STI services to improve health equity

Four themes were identified encompassing strategies for increasing reach of underserved communities in future to improve equity in pharmacy-based STI services. Themes, descriptions, and supporting evidence are provided in Table 4 and briefly summarized below.

1. Multi-pronged approaches

The first theme described the requirement for a multi-pronged and long term recruitment approach. This recommendation maximizes exposure of the public including underserved demographics to promotional and educational materials therefore resulting in service uptake. Participants believe using multiple approaches can reduce gaps in understanding and improve overall service awareness. For these strategies to result in successful recruitment requires a completely transparent description of what the patient should expect from a service, and how to access it. Long term approaches are also believed by participants to improve access by giving underserved populations the time to think about and feel comfortable to access a service.

2. Accessible promotional material and recruitment strategies

The second theme was accessible promotional material and recruitment strategies. Participants believed that to achieve this, promotional material must be available in a large number of diverse places to increase reach. Participants referenced their own experiences in health/research promotion to suggest more "novel" locations which could be considered for advetisements in future. Some such locations include in churches, sexual health clinics, public libraries, etc.

3. Collaboration

The third theme is collaboration. Participants described the desire for respectful collaboration with community groups/members when developing, implementing, and promoting a service. Collaboration is believed by participants to be a large factor which could contribute to improving reach by creating STI services that diverse groups actually want, and which are promoted in a way that is meaningful to these groups.

4. Dismantling of systemic oppression.

The final theme is dismantling systemic oppression. This theme is multi-faceted in that systemic oppression will need to be dismantled in promotional and recruitment materials, in pharmacies themselves, and by the healthcare system in general. Participants touched on topics of representation, education, collaboration, and compensation to address systemic oppression.

Research Question: How can pharmacy-based STI services reach diverse populations to improve health equity?

Table 2.Objective 1 themes

Objective 1. To identify facilitators and barriers to access/uptake of pharmacy-based STI services.		
Theme	**Description**	**Corresponding quotes**
Convenience of pharmacy-based services	This theme describes how participants feel that convenience improves access. Specifically, they spoke to pharmacies being readily available in most locations, having accessible hours, and not always requiring booked appointments. However, there remain areas for improvement.	"If they were new to the province, they didn't have a healthcare practitioner who could provide that service, then they didn't really understand where they could go, so it was easy for them to just come to us." - Pharmacist "I think that like a selling feature is that, you know, pharmacists are often open better hours than your doctor and they have, you know. It's a little more casual atmosphere in some ways, right?" "I think one of the greatest benefits to pharmacists is like, again, there's also that they're everywhere, right. There are so many of them, and they're visible, which is nice." "The only one that is run by Nova Scotia Health or Department of Health and Wellness is open one or two evenings a week at the VG, which is b*****t, and you have to make appointments the day of you know, what about folks that work shift work? What about folks that can't go in the evening? What about folks that have kids that like you know?"
Misunderstanding of **what services** pharmacies provide, and **how to navigate** the pharmacy space.	This theme describes how participants believe a lack of understanding of what pharmacies provide, and confusion about how to access pharmacy-based services can contribute to reduced access. Inconsistencies between pharmacies contribute to misunderstandings.	"I also think people don't, you know, people have a general idea of like, how their relationship with their quote unquote family doctor is supposed to go, but not necessarily with their pharmacists." "So when we think about Equitable Health, you know there's a lot of things that afford us, even if we are people of colour, to navigate spaces of healthcare. So, for example, education, financial literacy, health literacy, things of that nature" "I think a lot of people are unaware of what you can actually get through pharmacies."

		“I think people still just default to going to their family doctor.” “It's something also, it's something it's something new for people here. When they come here and then they see that oh, certain things are doing get a certain way that are not done back home. OK, so they need- they need more explanation of what's happening.” “I don't think people know that they can just essentially walk into their pharmacist and ask health questions, and specifically health- sexual health questions” “I mean, I've got a great pharmacist, but I don't know how to like, book an appointment with him, right? I know how to book appointment with my doctor, but you know, because like I don't necessarily talk about sexual health just at the counter. I wanna go into that little consultation room.” “The pharmacist healthcare space is still broadly unknown to a lot of people, right, like they just see the premises, the place they go and get their pills. They don't think of it as a health care setting necessarily.”
Historical harm and ***past*** experiences in healthcare.	This theme describes how healthcare experiences encountered by individuals or entire communities both currently and historically can negatively impact access.	“Some of us are old enough to remember when healthcare system did not treat us very well.” “There's a massive amount of distrust with healthcare providers. Based on discrimination, based on a lack of awareness or education, based on bigotry and also historic and current forms of systemic and structural oppression as well.” “But when we look at indigeneity and what that means like in our Indigenous population, there is also, you know, a lot of trauma, whether it is looking at forced sterilization, whatever it may be with health care.” “I've heard a lot of stories where people, you know, people's gender identity or sexual orientation is assumed, you know, even in conversations about PrEP, how well educated are not only the pharmacist but also the other staff working there.”

		"From what I've heard and some of the research, there's a lot of mistrust because there's been a lot of harm done by healthcare throughout history."
Current forms of systemic oppression surrounding pharmacies and STI related healthcare.	This theme describes the systemic barriers associated with pharmacies and STI services which minimise access. The mentioned barriers include but are not limited to: • Lack of privacy • Financial barriers • Physical barriers Healthcare professionals lack of education about race, gender, sex, etc.	"And I feel like a lot of marginalised communities don't feel like they belong in healthcare settings because they've been set up for cis, straight, white, people of privilege." "Another challenge with that is that, like, not a lot of pharmacists are the same competency in this matter, right? Again, some pharmacies are really engaged in this sort of work and more, then some are just like, "here's your pills. Thank you, bye."" – regarding 2SLGBTQ+ associated healthcare. "They needed the PrEP, but they don't have the means or the funds to pay for the medication." - Pharmacist "Sadly, I don't think that community is accessing the spaces in the way that they could, but also I don't think that a lot of pharmacies have created a space that community would like to access." "I think our systems are not currently set up, including like electronic medical record or EMR systems…EMR systems right now don't have a place for pronouns. They don't have a place for use versus just people's legal name. And there there's only two gender markers." "We require people, whether it's a pharmacy or any other kind of healthcare setting, we call out people's names… in most places, and especially if you are being misgendered or dead named and you're, you know, that's said in front of a whole crowd of people. In my mind, that's actually a breach of privacy information." "Community pharmacies really are one of those unique marriages between a health care space, as well as a like a shopping kind of experience. So a lot of the issues that you find, whether it is profiling or whatever it may be in retail spaces, you also feel those in, in that healthcare space."

Perceptions and fears	This theme describes how perceptions around pharmacies and STIs can manifest in emotional and behavioural responses which participants say impact the willingness of people to access pharmacy-based services.	"If people feel like they're going to go in and ***be judged*** by somebody, they're never going to access that service." "They don't like to talk about the drugs that they're taking, the medical conditions that they have and then ***they feel that somehow, they will be judged*** or something like this, especially if you're from the community." "It's very important to remember that a lot of them or some of them, ***they hide their sexual identity*** just because of their culture and because of their community." "A lot of people would assume because they tend to associate with HIV with like homosexual men. Maybe they're just worried if they're transgender, that, oh, they're like, oh, ***I don't really want this to be associated with me***, because that's not what my gender identity is." - Pharmacist

Table 3. Objective 2 themes

Objective 2. To identify facilitators and barriers of promotional strategies/recruitment for recruiting patients for pharmacy based STI services/research participation.		
Theme	**Description**	**Corresponding quotes**
Type of recruitment strategy.	This theme describes how recruitment of diversity is impacted by the type of promotional/recruitment strategy used. Participants speak to how different strategies (and particularly social media) can determine how far-reaching promotion can be, and which demographics may be missed.	"I think it can be quite successful to recruit through, you know, social media and like speaking at events and things. But who's actually attending those events and where are they held?" "Perhaps like lower socioeconomic groups don't use social media as much, so they may not have been able to see those advertisements and see that this was an opportunity." - Pharmacist "I think like from my own experience, like just recruiting people to the pharmacy who I know are of target demographic, social media was probably the number one driver and I think it's what captured people's attention." - Pharmacist "Those people who have that educational background versus the population that we really also want to hear from are those who are maybe living with poverty or living with or experiencing homelessness, things of that nature. And we're not going to get that engagement if our recruitment is only on social media." "The social media, they don't, they don't like. Some of them they don't have access or some of them they don't like. They just like pass by it like an ad or something like this. So, I think that's the main thing." "Anytime some things like mainly or only computer based. I always think that creates barriers. So, I think it's great because it reaches a lot of people and I think there needs to be something else." - Pharmacist "There's of course people you'll never reach, but online was great because it's easy to share."

		"There's a lot of social media sharing, right, like somebody saw a post, they shared it with their friends, who are, probably also look like the same general demographics as them, and they were the first people to get to the door."
Service type and perceived benefit/ relevance (e.g., PrEP).	This theme describes how the kind of service being offered (e.g., PrEP) may impact the extent of patient uptake of either a service or to participate in service implementation research. Participants comment on aspects which they believe may increase or decrease a patient's willingness to access a pharmacy-based service.	"I think it was the convenience of it being in a pharmacy and not having to be attached to a primary care practitioner, and then also the incentive of this is actually going to be free for you for six months. I think that was very beneficial." - Pharmacist "I think a big part of it for the patients who enrolled was the savings, the cost savings as a part of the study." - Pharmacist "And I think a big factor was they wanted to kind of advance, like, the availability of these services to other people in their community. Like, as long as the pilot project did well, like, they wanted to kind of be a part of that." - Pharmacist "If I participate and it demonstrates the benefits, maybe we'll help build the argument and case towards it being more universally covered." "Underemployment is a real issue and in lot of the community. We don't necessarily value people enough [for their] time." *Context: Being appropriately reimbursed for participation is a perceived benefit of participation in research.*
Lack of awareness of the range of service options	This theme describes how a lack of awareness or misunderstandings about what accessing a service involves can result in reduced access. These barriers in particular may be reduced through clear, concise, and easily understood promotional material.	"How do they actually access pharmacies? Maybe they don't have money. Maybe they don't know it's free. Maybe they don't know how to access those sorts of pieces. Maybe they've just written it off, you know?" "So I think a lot of the people who were participating were people who are very conscious about their health in general, had a good understanding of what prep actually was. And I mean, a lot of people, unfortunately don't really know what it is or have any information about it." - Pharmacist

		"We need that sort of like more broad cultural shift to recognizing pharmacy as a health care space, not just, again, not just the pill dispenser."
Difficulties requesting a service.	This theme describes both the barriers which prevent people from requesting a service and those that prevent a pharmacist from inviting a patient to use a service. Participants touch on how the nature of conversation may decrease the likelihood of engaging in conversation regarding a service.	"Like approaching someone and asking them about the service, like if they qualify, because I feel like that's a really touchy sort of sensitive topic that might not go as well as it could." - Pharmacist "So talking about like, what sex looks like for different people, and like when you're not familiar with sexual acts or like, whatever, whatever it is…It's hard for people to know how to appropriately respond to those things, to make people feel like they're not being judged." "It's hard to, to talk to people about that. Like, if you're not gonna ask every single person, then it's kinda hard to just ask the ones that you think might be eligible." - Pharmacist

Table 4. Objective 3 themes

Objective 3. To identify strategies to optimize the reach of pharmacy based STI services to improve health equity.		
Theme	**Description**	**Corresponding quotes**
Multi-pronged promotional strategies	This theme explores the strategies discussed by participants as having potential to increase reach. Participants put emphasis on the requirement for more than one strategy to be implemented to increase awareness of services among multiple underserved demographics. For these strategies to result in successful recruitment requires a completely transparent description of what the patient should expect, and requires a prolonged effort to ensure the public has time to be educated.	"And I think the second thing is just a lot of education, offer the services to speak about it, openly engage community leaders." "I mean, you can't force people to come if they don't want to. So I would say just more awareness for advertising and hopefully even by word of mouth, it will spread by time." - Pharmacist "I think if you were like kind of spinning it in a way of like, are you potentially at risk and then like letting the- the person themselves like stratify themselves? Like, I think that that would be like, are you someone that uses IV drugs? Are you someone that has sex with men, like all these different criteria and then like allowing them to kind of like think about that and having a QR code, I think that would take them to pharmacies that are able to provide the service for them." - Pharmacist "It's all about just explaining to them like how things are working… and what's the purpose…and showing them what's the benefit accepting the services." "If we have capacity, I think word of mouth is often free and we really need to start, you know, utilising that a bit more in terms of connecting with- with organisations, and with people in community." "Rather than just putting up the general ads first, do the target population specific ones right? Like this one specifically for like black gay men, this one specifically for trans women. And do those ads first and then the more like anyone who's in this in the 2SLGBTQ community can go because at least they got like a little head start essentially." "'Cause, I think that's another thing like that makes folks feel safe that they're like, "Oh yeah, look, this person has more training, so maybe it's

		like gonna be easier than going to my own, like, Primary Health care provider or walk in clinic”.”
Accessible promotional materials and recruitment strategies	This theme describes the requirement for promotional material to be accessible in a large number and diverse places to increase reach. Participants speak on their own experiences in health/research promotion and provide a number of more “novel” locations which could be considered when trying to increase diversity among those who utilise a service.	“…but then I thought, I'm sure there's patients who go through the [Halifax] Sexual Health Centre who can't afford medication who potentially want to be on PrEP but can't afford it. They don't have insurance. I mean, we could have tapped into those folks.” “So I think just some awareness around what/who you are reaching out to and how to reach out to these communities.” “So what I've learned through my experience is that if you are going to do recruitment, you have to go to places that these participants or possible participants can feel comfortable.” “…you have to go to those historical churches or those historical communities, or reach out to people that work within that space and have that engagement that way” “Maybe in ER if you put a poster up there, they would be aware of it. Um, sexual health clinics? Potentially, once they get in, if they can, or if they call the sexual health clinic and when they're giving them an appointment a month later, they could actually tell them that you can use that service.” - Pharmacist “Are we looking at, you know, people that are undereducated or, you know, that can't access university? Are we looking at folks that are homeless populations? What about sex workers that you know may not have access to those forms of- of education or connection? So I think, you know, the public libraries is a huge piece that we- we undervalue a lot of people that are, you know, on or below the poverty line.”
Collaboration with community groups	This theme describes the desire for respectful collaboration with community groups/members when developing, implementing, and promoting a service. Participants describe what occurs when collaboration doesn’t occur, and how collaboration may improve reach.	“We see all these research studies happening to improve our health. We never hear anything back and then even worse, things aren't changing” “It's very difficult to get engagement with communities when you are not engaging with the communities themselves.”

		"You know when you are presenting the possibility of doing research with indigenous people, there are practices that they take, whether it's asking an elder or, you know, there are groups that you reach out to first before you engage the community." "In our communities, we have our leaders, it's a very almost not a hierarchy, but it's a very, very like family, traditional kind of community where you know we look up to our elders or we look up to our community leaders. So you need engagement on that front as well before you bring services into these populations." "I find a lot of times when we're, we're doing research, or we're trying to recruit or creating programming. We as folks of privilege are often doing something for people, not with people." "So I think just more on the ground recruitment and also engaging elders or people from the community that can at least advocate on your behalf. And rather than just being a stranger and just entering a community because historically, you know when you look at research and the trauma within black communities or indigenous communities around health, health research, there's a lot of mistrust." "Working with Community, working with community organisations that serve them directly, you know, we have lots of really great resources, especially here in Halifax region." "I think there's a couple challenges in Nova Scotia specifically which is that we don't have any population specific queer groups really… So there's not this built-in like partner that we can go to be like, hey, could you reach out?" *Context: e.g. Asian queer groups or black queer groups* "Rather than just having like generic model, have local community leaders from the populations that you want to reach be either quote unquote ambassadors or like representatives in your campaign in some way."
Dismantle systemic oppression in pharmacies,	This theme describes the way in which systemic oppression reduces access and should be targeted so as to improve health equity and	"But also I think the main thing, and one of the things we don't do enough, is understand the history or the trauma behind the services that

promotional material, and healthcare.	increase reach. Participants touch on topics including representation, education, collaboration, and compensation.	we could be offering…And then we're always kind of surprised when it's not up taken or people aren't accepting of it." "But if you don't have an understanding of the history, then there's no way that you can provide trauma informed care, and that's just, people are not going to be receptive to that." "People really want big cultural shifts that just are not happening at this time." "I think the trauma around sexual health or, you know the stigma around whether you think about syphilis with the Tuskegee trial or where you think about HIV, where there's so much stigma around black people and HIV, I think one of the main things for engagement is the people that are doing the engagement have to represent the population that they are serving." "As somebody that has worked in this realm of HIV stigma and PrEP… I'm not even represented in that [eligibility criteria] list" "So what I think it really needs is, you know, background education as a from us by us, like as researchers to know how to kind of approach these communities in a respectful way too." "So many healthcare providers don't have mandatory training when it comes to any marginalized population." "So how are we now going to change the healthcare system to create more access? But it's still being created and run by people of privilege which, you know, leads to a lot of issues." "Asking community what they actually need and wants, and then following through on that is another big thing." "And that's how a lot of queer, trans, and two-spirit people feel, sometimes about health research like someone comes in, does research on them and then disappears."

		“Recruitment materials that represents those communities is always a good idea.” “If you have recruitment posters with two white guys, it's automatically-it's automatically saying like you know, this is for white guys.”

DISCUSSION

This study aimed to identify facilitators and barriers faced by underserved populations when accessing STI care from pharmacists in a community pharmacy setting, as well as what is beneficial or potentially problematic with the way these services are promoted and implemented. Additionally, suggestions for improvements were sought from both pharmacists and stakeholders to overcome the discussed challenges.

The themes identified indicated how varied the reasons are which prevent available services from being accessed. The reasons for not accessing a pharmacy may occur within the pharmacy environment or before a patient even enters the space, and the stigmatization of STIs and certain minority groups adds an additional barrier to access. Availability compared to accessability both play a role in uptake of pharmacy provided STI services. Availability can increase access, and community pharmacies certainly have benefits over more traditional healthcare spaces. Examples mentioned by participants include the availability of pharmacies in many different locations, longer opening hours enabling people to access care who are typically inhibited by their work hours or other committments. Additionally, many pharmacy services can be acquired without needing a booked appointment thereby increasing flexibility and convenience for patients. Increasing availability of services is therefore greatly beneficial to those who may otherwise struggle to access more traditional healthcare due to limited locations, hours, and appointment availability. Underserved populations may struggle to overcome these barriers due to a lack of resources, support, transportation, finances, etc. Increasing availability is therefore a comparatively easy way to improve access. However, availability of a service can only exist when a patient is aware of it's existance. Both pharmacists and stakeholders spoke to the lack of understanding the general public has about what pharmacies provide, and inconsistencies regarding how to go about obtaining a service. Educating the general public is therefore paramount in ensuring patients are aware that pharmacist provided services are available, and they know the process to accessing them.

The challenge of increasing the uptake of healthcare services by underserved populations requires more than just increasing availability, but to improve accessibility itself. This poses a more complex challenge as systemic oppression is deeply rooted in our societies, is multi-faceted, but can be experienced differently by each individual.[22] This means more than one solution is required. The issues that participants experienced in pharmacies fell within the lens of systemic oppression, a "lens" which helps improve understanding of the world "view" others experience.[23] This lens divides forms of system oppression into three main categories: Individual, interpersonal, and systemic which includes institutional and structural barriers.[23] Individual and interpersonal factors mentioned in this study mirror those that different underserved demographics experience in other healthcare settings. Of note in this study was the discovery that pharmacy specific institutional factors play a major role in the reduced uptake of pharmacy services by underserved groups.

Pharmacy specific institutional factors include the lack of privacy in pharmacies, and perceptions associated with a retail environment being within a healthcare space. Particular concerns regarding privacy include the risk of misgendering, dead-nameing, outing, having a certain disease/condition publicised, and seeing people you know in the pharmacy. Racial profiling within retail spaces was mentioned by participants of this study to be a deterrent to some underserved groups from entering pharmacies. In the pharmacy setting, this could be seen as following or removing a person for suspicions (ex theft) based on stereotypes. Lack of privacy and racial profiling were mentioned by participants to elicit fear of judgement, mistreatment, and embarrassment. These concerns are amplified when a service sought is specifically related to an STI or being a member of a stigmatized group as the risk of stigmatisation and discrimination is increased. Systemic oppression which includes stigma and discrimination are known to impact healthcare of underserved groups, and the findings of this study enforce the need to address these issues in pharmacy practice.[24]

In addition to targeting systemic oppression and pharmacy specific institutional factors, uptake of a service relies heavily on recruitment and promotion strategies to educate the

public about what is available and how to access it. The success of recruitment/promotion was mentioned to depend on the type of recruitment strategy used, the service type and its perceived benefits/relevance, awareness of service options, and difficulty requesting a service. A service may not be accessed if it is not beneficial to a patient, if people don't understand the the service entails, or if they don't know how or feel unable to safely access a service.

To improve service uptake by underserved groups, stakeholders spoke on a number of strategies which may improve reach. Multi-pronged approaches to recruitment would involve promotion occurring in many places, many formats, and over a long time. Using multiple modes of advertising and involving additional healthcare providers who may be able to refer patients and promote a service may increase awareness of a service and how to access it. Accessible promotional material and recruitment strategies are greatly important to show underserved demographics that services are applicable and available to them. Reach may be increased with promotion strategies implemented in places diverse groups frequent (ex. libraries, sexual health centers, churches). Promotional materials should mirror the diversity in society and be inclusive to encourage underserved populations to access services as well as to dismantle the idea that pharmacies/healthcare spaces are not welcoming of diversity.[25]

Collaboration with community groups was mentioned by stakeholders of every represented demographic in the study. This could involve working alongside community group leaders, influencers, and community elders. These relationships should be long term partnerships with involvement of communities in planning and implementation, and then taking and acting on suggestions and feedback. This is a particularly important aspect as many services are not adequately tailored to certain groups, and many demographics carry trauma surrounding healthcare due to historical atrocities.[24,26] Collaboration is therefore an important part of appropriately addressing historical harm, improving trust in the healthcare system, and to restore medical autonomy to groups not afforded it in the past.

Potential biases are a limitation of this study. Recruitment of participants was a challenge and utilizing pre-existing connections between researchers and community stakeholders was the most productive strategy employed. Because of this, many participating community stakeholders tended to have a healthcare or research background, were highly educated with extensive health literacy, were between the 20-40 year age bracket, and were already passionate about the topic. These participants may not be representative of their communities and the study perhaps did not capture the opinions of all demographics such as those of a low socioeconomic status. The two investigators who conducted interviews in this study have a background in pharmacy, are members of minority groups, and have a background in health equity research. Biases may have occurred during the interview process because of this which could have influenced the participant answers, and subsequently the study results. In addition, because there was contact between investigators and participants during interviews, anonymity is not 100% therefore participants may have withheld some comments. Researcher bias may also have contributed to biases in data interpretation. All of these limiting factors should be considered throughout the process of reading this study.

CONCLUSION

Despite high interest in the PrEP-Rx study and PrEP prescribing by pharmacists, not all eligible demographics were represented in the study. In this follow-up qualitative evaluation study, interviews with pharmacists and stakeholders have highlighted some strategies to improve the reach of pharmacist provided STI services and recruit diverse participants to health research. Addressing systemic oppression and incorporating more inclusive and diverse recruitment strategies may promote the uptake of pharmacist provided STI services by unserved groups in future.

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CHAPTER 4: DISCUSSION

FINDINGS AND KNOWLEDGE DEFICITS

To summarize the findings of this thesis, there is no "one size fits all" strategy to improve equity of STI services. There is some evidence that location-based services can recruit target demographics, however we identified through this qualitative study that a multi-pronged approach is required to more successfully reach and recruit diverse patient populations for health research or services. A large aspect of this is the need to address underlying systemic factors such as historical harms and systemic oppression for effective tailoring of promotional strategies or service development.

The scoping review conducted as part of this thesis showed that STI management services provided by pharmacists which incorporate health equity in its implementation use two strategies. These are a location-based approach or a population-based approach. Although each has its strengths in targeting underserved demographics, using either approach in isolation is perhaps not comprehensive enough to successfully impact service uptake by those who have the most to gain. The limited number of studies identified in the scoping review suggest that equity focused pharmacist provided sexual healthcare is a new area of study which should be investigated further and highlights the need for additional implementation and evaluation studies.

Building on findings of the scoping review, a qualitative study was conducted to evaluate the recruitment strategies and reach of the PrEP-Rx study, and to provide insight from pharmacists and stakeholders of identified facilitators and barriers to STI service uptake in pharmacies. The suggestions for improving service provision in future supported those identified areas in the scoping review which require future focus. This included using multi-pronged promotional strategies to ensure promotion is neither too wide nor too narrow. A highly targeted approach may narrow the reach of service delivery and neglect populations not traditionally deemed to be at high risk however an approach that is not targeted enough may not successfully recruit diversity.

Additionally, both studies identified the need to address the underlying causes for reduced uptake in underserved groups. These involve actively dismantling systemic issues which perpetuate oppression of underserved groups. This would include addressing factors such as stigmatization, lack of inclusivity, discrimination, and lack of privacy, all of which occur in the pharmacy space. The best way to minimise the impacts of systemic oppression in the pharmacy space and how to effectively evaluate implemented changes is an area of future research which must be investigated.

MEETING RESPONSIBILITIES WITH ACTIONABLE CHANGE

As discussed in Chapter 1 of this thesis, healthcare organizations and professionals are under obligation in Canada to actively improve the health of communities.[1–3] This includes ensuring all patients can access health services and that equitable healthcare is promoted by any means possible. Despite the continued influence of systemic oppression, discrimination, and stigma on patients' health outcomes, additional research into the role of pharmacies in promoting equitable STI healthcare is required.

The studies conducted as part of this thesis have identified current strategies implemented in equity focused pharmacy based STI services (location or population-based strategies) as well as identifying facilitators and barriers of different recruitment methodology to health research participation and service uptake. Suggestions made by participants of the qualitative study to reduce barriers to care and improve uptake of services align with many of those put forth by federal and provincial healthcare governing bodies.[4,5] Additional strategies which haven't been identified in governmental documents or identified literature were discussed by interviewed participants. All strategies suggested by participants are summarized below in Table 5 and provide starting points for development of equity improving strategies implemented in pharmacies. A future area of research would be to develop ways to implement these strategies and evaluate their effectiveness.

Table 5. Suggested promotional and recruitment strategies categorized by theme

Overarching themes to improve reach	Specific strategies suggested by stakeholders and pharmacists
Multi-pronged promotional strategies	• Advertising that staff have received trainings associated with equity/diversity/inclusion • Strategies implemented over a prolonged time • QR codes • Word-of-mouth • Posters • Social media • Speaking events • Collaborating with communities • Diverse promotional material • Multiple service delivery option including walk-in and appointment-based options • Stepwise roll out of promotional campaign to underserved demographics first
Accessible promotional materials and recruitment strategies	• Inclusivity of imagery and language used in pharmacies • Promotion in collaboration with community groups in locations they frequent and feel safe in • Promotion in hospitals, sexual health clinics, public libraries, churches, historic communities • Appropriate compensation for participation in research
Collaboration with community groups	• Serve these community groups • Improve understanding of community groups different customs, beliefs, cultural norms, social systems, gender norms etc. • Engagement and collaboration with leaders, elders, influencers, ambassadors, representatives • Continued engagement and ongoing updates given to collaborators
Dismantle systemic oppression in pharmacies, promotional material, and healthcare.	• Policy changes for the improvement of health equity • Required education of HCPs to ensure consistency of competency • Cultural competency training • Sex/gender competency training • Safety training • Increased efforts for education of communities • Health literacy • Service literacy

	• Increased representation of diversity in healthcare settings • Diverse staff • Diversity in promotional material • Improved privacy in pharmacies • Alternative to having names or medications called out such as a numbering system • Making availability of conference rooms known • Partnership and collaboration to make sure pharmacies are seen as a safe and accessible environment by diverse communities • Reduce stigma surrounding STIs • Monitor success of these initiatives i.e. evaluate the success/implementation

EVALUATION OF REACH AND HEALTH EQUITY

Evaluating the success of implemented initiatives aimed at reducing health inequities is key to measure progression towards a fairer healthcare system. Although there is limited literature on equity focused pharmacist provided STI service uptake strategies to improve reach and health equity, there is some general knowledge available to us. Utilising what is available on the subject can be used to set a baseline expectation of the care pharmacies should be providing to everyone regardless of their demographic and background.

As stated previously, systemic oppression in all its forms must be addressed, which includes acknowledgement of historic and intergenerational trauma and violence. The Public Health Agency of Canada has provided examples and approaches to inform the implementation of trauma and violence informed care practices and policies. Systemic violence can include racism and discrimination which communities have experienced past and currently, and which impacts healthcare seeking behaviour. The ongoing impacts of historical trauma, intergenerational trauma, and violence perpetuates health disparities by influencing the social determinants of health, and therefore to achieve health equity these need to be addressed.[6] The Visions for distinctions-based indigenous health legislations: Executive summary which was released in 2023[7] and the engagement

guide provided by Indigenous services Canada[8] are further resources describing development of health legislation focused on equity and how to appropriately engage with indigenous communities respectively. The 2019 Chief Public Health Officer report on the State of Public Health in Canada discusses the design and implementation of an inclusive healthcare system.[9] Future interventions and implemented strategies put in place in pharmacies could use the protocols and procedures of these resources as a guide to ensure they are accessible and equitable by design. Another aspect of improving accessibility of STI services specifically will be to reduce stigma surrounding sexual health and sexually transmitted infections.[10] The Canadian Public Health Association and Public Health Agency have provided guidance and educational materials available to inform healthcare providers about stigma surrounding STBBIs.[11,12] This thesis has also shown that patient education and other initiatives are required to reduce stigma and quash stereotypes and misunderstandings about how STIs are caught, spread, who can catch them, and how/if they can be treated. All the aforementioned resources mention the requirement for additional research and collaboration in future to effectively reduce the negative impacts of systemic oppression on those most vulnerable in society. Pharmacy practice specific equity enhancing legislation, policy, procedures, and guidelines may be a future requirement to ensure pharmacy specific forms of systemic oppression are appropriately addressed.

To assess the success of recruitment strategies and of service implementation, accurate evaluation of reach must be a permanent component of future interventions.[13] Frameworks exist to aid researchers in improving community engagement,[14] and to evaluate the recruitment of diversity (i.e. reach) in health research.[15] How widely these aids are used however is not clear and common use was not evident in the scoping review conducted as part of this thesis. The 2023 scoping review by Gustafson et al. identifies theories, models, and frameworks used to monitor all phases of implementation of equity-focused strategies.[16] Only one purposefully developed evaluation framework for reach and equity was identified; RE-AIM. The RE-AIM framework requires further investigation to its usefulness in evaluating pharmacy services for their reach and

impacts, or development of evaluation frameworks specific to service provision by Canadian pharmacists may be required.

IMPLICATIONS, STRENGTHS, AND LIMITATIONS

Although this research is specific to pharmacist provided STI service delivery, this thesis has highlighted some especially important findings which can be applied more generally to health research and implementation sciences:

1. Evaluation is a valuable tool in highlighting areas for improvement of service implementation in pharmacies
2. Community stakeholders value and expect continued collaboration/engagement on equity focused initiatives
3. Pharmacists and stakeholders have a desire for improvement and want to contribute to the development and implementation of novel recruitment strategies and service delivery methods in pharmacies

Implications of these broad findings include the encouragement to proceed with development of new equity-focused services/promotion/recruitment, as well as implementation of already identified strategies. Some of these identified strategies include increased education of pharmacists and pharmacy staff, improved promotion of the availability and range of pharmacist provided services, and more visible diversity and inclusive language and imagery used in pharmacies and promotional material. Evaluation of equity should also be done more regularly as part of quality improvement of services provided by pharmacists. These specific strategies can be and should be implemented now.

The strengths of this study include the success of interviews in capturing a wide range of opinions and creating a space for participants to brainstorm and share their ideas in how to tackle equity associated challenges within the pharmacy space. Currently registered community pharmacists who participated in the PrEP-Rx study had gained experience

providing an STI service to underserved communities and were therefore able to speak confidently on the facilitators and barriers of recruitment to and provision of a service for a stigmatized STI. Community stakeholders also provided great insight due to their lived experience as community members as well as backgrounds in healthcare and health research. The majority of interviewed participants therefore had experience in patient recruitment either to participate in research studies or to utilize a service. This thesis was also able to extend knowledge in this area by first conducting a structured scoping review to determine gaps in knowledge. The qualitative study was designed based on these findings and allowed for a more targeted approach to answering the research questions. Also, it was a strength that the qualitative study could be conducted in the context of PrEP-Rx, as both pharmacists and community members had knowledge of this service and were mostly familiar with recruitment and promotional strategies.

There are limitations of this work that need to be addressed. First, although also deemed a strength, the data for the qualitative study was based on one example of STI service delivery (PrEP-Rx) and results are largely limited to that context. Promotion and recruitment strategies for other types of STI services (point of care testing, screening, etc.) may need to be tailored according to the service being provided. Second, although the scoping review was able to determine previous reports of using the principles of equity in STI service design and delivery, findings were limited with little evidence available for guidance. Although a limitation, this also served as an opportunity for this work to build on and extend knowledge in this area. Thirdly, the sample size of the qualitative study was limited with only 9 participants but this was largely due to the population available for inclusion. Although collectively all target demographics for interview were captured, this sample consisted of well-educated individuals, with self-acknowledged privileges, within the 30-40 year age bracket, who may not be wholly representative of all those within their community groups or are underserved. For example, while some participants work with diverse groups, they do not necessarily belong or have the lived experience of individuals in these groups. Also, one individual from a group will not represent the experiences and opinions of all individuals from the

group as a whole. Therefore, the results of this work should be carefully evaluated and refined as strategies are implemented into practice.

CONCLUSION

Utilizing all the available resources and actioning meaningful change is becoming possible as research and collaboration with underserved communities increases in occurrence. Although equity improvement in the context of the "health system" is constantly evolving, pharmacy practice should be pre-emptive in adopting change for the benefit of entire communities inclusive of those who are underserved. The results of the findings of this thesis will hopefully be meaningful by influencing change and sparking further discussion around new ways to improve service accessibility and uptake resulting in improved health equity.

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APPENDICES

Appendix 1. Embase Search Strategy

No.	Query	Results
#4	#1 AND #2 AND #3	1824
#3	'health equity'/exp OR 'health equity':ab,ti OR 'health disparity'/exp OR 'health disparit*':ab,ti OR 'health inequ*':ab,ti OR 'health status disparit*':ab,ti OR 'health status inequ*':ab,ti OR 'minority health'/exp OR 'minority health':ab,ti OR 'gender identity'/exp OR 'gender identity':ab,ti OR 'ethnic group'/exp OR 'ethnic group*':ab,ti OR 'discrimination against sexual and gender minorities'/exp OR 'discrimination against sexual and gender minorities':ab,ti OR 'sexual and gender minority'/exp OR 'gender minorit*':ab,ti OR 'sexual minorit*':ab,ti OR 'ethnic minori*':ab,ti OR 'lgbtq*':ab,ti OR 'access to health services':ab,ti OR 'access to care*':ab,ti OR 'accessibility of health services':ab,ti OR 'availability of health services':ab,ti OR 'health services availability':ab,ti OR 'health care access'/exp OR 'access to healthcare':ab,ti OR 'access to therap*':ab,ti OR 'access to treatment*':ab,ti OR 'health services geographic accessibility':ab,ti OR 'program accessibility':ab,ti OR 'access to medic*':ab,ti OR 'medication access':ab,ti OR 'healthcare disparit*':ab,ti OR 'vulnerable population'/exp OR 'minority group':ab,ti OR 'marginalized':ab,ti OR 'marginalised':ab,ti OR 'socioeconomic':ab,ti OR 'underserved':ab,ti OR 'medically underserved':ab,ti OR 'gender divers*':ab,ti OR 'sexually diverse':ab,ti OR 'sexual diversity':ab,ti OR '2slgbtq*':ab,ti OR 'ethnic and racial minorities':ab,ti OR 'sexuality':ab,ti OR 'sexuality'/exp OR 'sexual and gender minorities':ab,ti OR 'ethnic disparit*':ab,ti OR 'racial disparit*':ab,ti OR 'health disparity, minority and vulnerable populations':ab,ti OR 'drug user*':ab,ti OR 'socioeconomic factor*':ab,ti OR 'socioeconomic status':ab,ti OR 'poverty'/exp OR 'economic status':ab,ti OR 'medical indigency':ab,ti OR 'rural health services':ab,ti OR 'rural health':ab,ti OR 'incarcerated':ab,ti OR 'criminals':ab,ti OR 'prisoner'/exp OR 'prisoner*':ab,ti OR 'racial group*':ab,ti OR 'race':ab,ti OR 'indigenous people'/exp OR 'indigenous':ab,ti OR 'inuit':ab,ti OR 'first nations':ab,ti OR 'asian':ab,ti OR 'black':ab,ti OR 'african':ab,ti OR 'latin american':ab,ti OR 'middle eastern':ab,ti OR 'immigrant':ab,ti OR 'refugee':ab,ti OR 'disabled person'/exp OR 'disabled':ab,ti OR 'racialized':ab,ti OR 'american indian':ab,ti OR 'health behaviour':ab,ti OR 'racial groups':ab,ti OR 'native':ab,ti OR 'ethnicity':ab,ti OR 'cultural diversity':ab,ti OR 'metis':ab,ti OR 'bisexuality':ab,ti	2032088
#2	'sexually transmitted disease*':ab,ti OR 'sexually transmitted disease'/exp OR 'venereal disease*':ab,ti OR 'stds':ab,ti OR 'std':ab,ti OR 'sexually transmitted infection*':ab,ti OR 'stis':ab,ti OR 'sti':ab,ti OR 'chancroid':ab,ti OR 'chlamydia':ab,ti OR 'gonorrhea':ab,ti OR 'gonorrhoea':ab,ti OR 'granuloma inguinale':ab,ti OR 'syphilis':ab,ti OR 'condylomata acuminata':ab,ti OR 'herpes genitalis':ab,ti OR 'hiv':ab,ti OR 'human immunodeficiency virus':ab,ti OR 'bowenoid papulosis':ab,ti OR 'condyloma acuminatum':ab,ti OR 'genital herpes':ab,ti OR 'lymphogranuloma venereum':ab,ti OR 'secondary syphilis':ab,ti OR 'tabes dorsalis':ab,ti OR 'ulcus molle':ab,ti OR 'sexual health'/exp OR 'sexual health':ab,ti OR 'sexual health services':ab,ti OR 'buschke-lowenstein tumor':ab,ti OR 'genital wart*':ab,ti OR 'anogenital wart*':ab,ti OR 'human papillomavirus':ab,ti OR 'acquired immunodeficiency syndrome':ab,ti OR 'aids':ab,ti OR 'herpesvirus 2':ab,ti OR 'safe sex':ab,ti OR 'unsafe sex':ab,ti OR 'mycoplasma genitalium':ab,ti OR 'trichomoniasis':ab,ti OR 'trichomonas vaginalis':ab,ti	764612
#1	'pharmacy (shop)'/exp OR 'pharmacist'/exp OR 'pharmacist*':ab,ti OR 'pharmacy'/exp OR 'pharmacy':ab,ti OR 'pharmacies'/exp OR 'pharmacies':ab,ti	

Appendix 2. Interview Discussion Guides

Preamble:

The PrEP-Rx study was conducted in Halifax in 2023 and enrolled 50 patients to receive PrEP management by pharmacists.

The patient population recruited was solely men who have sex with men or transgender women, as well as largely white (>80%). No injection drug users, transgender people, or hetero people with an HIV+ sex partner (criteria). The purpose of the interview today is to seek your input and ideas on how we can better reach diverse groups of patients who may benefit from increased access to PrEP by pharmacists or other pharmacy-based services.

Questionnaire for pharmacists

1. What demographics do you see at your pharmacy (ex: race, sexuality, gender, socioeconomic status, disability)?
2. In your opinion, were the participants of the PREP Rx study from the demographics you expected?
3. What factors do you think encouraged these participants to enroll?
4. Are there any specific demographics you think were missed by the study? Why do you think that was? (e.g were there patients you knew would be eligible, but which decided not to enroll or did not seem to be aware of the study?)
5. Could you provide any thoughts on the recruitment strategy and advertisements used for the PrEP-Rx Study?
6. What about the recruitment of participants do you think could be improved for projects in the future?

Questionnaire for stakeholders

1. What demographic(s) do you identify with?
2. What kind of organization do you belong to and what functions does it serve? Is there a connection between your organization and health care services?
3. Is there a well-defined community of this demographic in Nova Scotia, and where? How close-knit? What about rural areas?
4. From your experience/what you've heard from others about pharmacy-based services, why do/don't you think this demographic seeks healthcare from pharmacies?
5. In your opinion, what barriers are there for this demographic to participate in health research? (pharmacies AND in research)
6. What are your thoughts on the recruitment process of the PREP Rx study? (Ex: Outline recruitment strategy)

7. What strategies do you think should be employed to encourage research participation of this demographic specifically?
8. What strategies could be employed to improve uptake of pharmacy-based sexual health services?