Toward eradication of Hepatitis C infection among immigrants to Canada

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“To immigrants and exiles everywhere, the uprooted, the re-rooted, the rootless,

And to the trees we left behind, rooted in our memories …”

— **Elif Shafak,** ***The Island of Missing Trees.***

Preface

All studies included in this thesis received ethics approval from the Ottawa Health Science Network Research Ethics Board (Protocol #: 20220418-01H). This thesis is the original work of the author. However, the project benefited from the support and contributions of a larger research team at various stages. The specific roles of collaborators and co-authors are detailed below, and a more granular breakdown of author contributions is provided in each individual manuscript.

The overall aim of this thesis was to explore challenges in hepatitis C virus (HCV) screening and treatment among immigrants in Canada, through three qualitative studies. The first and second studies examined the barriers and enablers to seeking HCV screening and treatment among Egyptian immigrants in Ottawa and Punjabi immigrants in Montreal, respectively. The third study explored healthcare providers' perspectives on delivering HCV care to immigrants in both Ottawa and Montreal.

The broad thesis design was developed by Dr. Jeremy Grimshaw and me. I led the development of detailed protocols and the study designs for all three studies. Dr. Grimshaw, Dr. Curtis Cooper, and Dr. Christina Greenaway supported the establishment of two Community Advisory Groups—one in Ottawa (Dr. Sarah Mansour, Father David Azer, Imam Mohammed Suliman) and one in Montreal (Dr. Jhanzeib Sherwani, Dr. Jasvir Kaur, Harshita Aurora). These groups provided input on interview materials, assisted with recruitment, and supported the interpretation of findings. I developed the interview guides and conducted recruitment in both cities, which included outreach through social media, as well as visits to churches, mosques, and healthcare centers. I conducted all the English-language interviews. Two community members, Harshita Arora and Amjad Alghamyan, who were familiar with the relevant languages and cultural contexts, were

trained by me to conduct interviews in Punjabi and Arabic. I attended these interviews and provided real-time support and supervision. I performed the data coding and analysis for all three studies. Interviews were double-coded, some by Dr. Andrea Patey and others by Isabella Thomas, to ensure rigour and consistency. I also took the lead in writing the manuscripts for all studies and handled journal submission processes. All members of the Thesis Advisory Committee reviewed and provided feedback on the manuscripts. A detailed list of authors' contributions for each manuscript is included within the respective chapters.

Note on language use: In the following chapters, I use "we" to acknowledge the collaborative nature of the research and the contributions of all individuals involved in the project. I use "I" when referring to my own perspectives, interpretations, and reflections as the primary researcher.

Abstract

Background: Canada has adopted the World Health Organization's targets to eliminate hepatitis C (HCV) as a public health threat by 2030. Despite the availability of effective screening and treatment, uptake in Canada remains suboptimal. Immigrants from HCV endemic countries account for 35% of cases in Canada, with an average 10-year delay in diagnosis, leading to poorer health outcomes and increased healthcare system costs. This research explored barriers and enablers to HCV screening and treatment among immigrants from the perspectives of both immigrants and healthcare providers.

Methods: I conducted three theory-informed qualitative descriptive studies using semi-structured interviews. The first two studies focused on Egyptian immigrants in Ottawa and Punjabi immigrants in Montreal. Two Community Advisory Groups familiar with the respective communities provided input throughout the research process. I applied the Common-Sense Self-Regulation Model and the Theoretical Domains Framework (TDF) to explore perceptions of HCV and the barriers and enablers to care. The third study applied the TDF to examine healthcare providers' perspectives on delivering HCV care to immigrants in both cities. All interviews were double-coded using the relevant frameworks, and key findings were identified.

Results: I conducted interviews with 34 immigrants (18 Egyptian and 16 Punjabi) and 12 healthcare providers. Punjabi immigrants demonstrated lower awareness of HCV and greater language-related barriers, often relying on family or community members. Egyptian participants had higher awareness and fewer language challenges. Despite these differences, both groups identified the asymptomatic nature of HCV, fear, and stigma as key barriers. Long wait times and

shortages of family physicians were reported by both immigrants and providers. Providers also highlighted additional barriers, including the absence of standardized immigrant-specific guidelines, limited training in HCV care, time constraints, and fragmented services. Nonetheless, immigrant participants expressed a strong willingness to engage in care if diagnosed.

Conclusion: This research identified individual, provider, and system-level barriers to HCV care among immigrants in Canada. While shared challenges exist, community-specific differences underscore the need for culturally tailored and multilevel strategies. Findings can inform theory-based implementation and policy efforts to improve timely and equitable HCV care access for immigrant populations.

Acknowledgements

I would like to thank my supervisor, Dr. Jeremy Grimshaw, and the members of my Thesis Advisory Committee, Dr. Christina Greenaway, Dr. Curtis Cooper, Dr. Justin Presseau, Dr. Andrea Patey, and Dr. Smita Pakhale, for all their guidance and support throughout my thesis project. Thank you for generously sharing your time and expertise with me every step of the way.

I would also like to thank the members of my Community Advisory Groups, Dr. Jhanzeib Sherwani, Dr. Jasvir Kaur, Harshita Arora, Dr. Sarah Mansour, Father David Azer, and Imam Muhammad Suliman, for taking time out of their busy schedules to support this project. Thank you for trusting me, sharing your wisdom and knowledge, and helping me understand your communities' cultures, values, and perspectives.

Jeremy, thank you for believing in me and helping me believe in myself. I can't thank you enough for all the support and encouragement, and for all the great things you've taught me, both in science and in life.

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Lilian, you were a daily reminder that there is joy, hope, and laughter. You kept me going in ways you don't even know.

Lastly, I would like to thank my sisters, Sara and Soroush, for their unwavering love and support as I navigated the PhD journey while adjusting to life as a new mom.

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Chapter 1: Introduction

Background

Hepatitis C virus (HCV) infection is one of the most burdensome infectious illnesses in Canada (1). In Canada, 7,535 cases (including acute, chronic, and unspecified) were reported in 2021 (2). HCV is a hepatotropic RNA virus which causes acute and chronic hepatitis with a high propensity for chronicity (3). Approximately 25% of individuals with acute hepatitis C will spontaneously clear the virus; the remaining 75% develop chronic infection, which may progress to cirrhosis, liver failure or hepatocellular carcinoma (4). In Canada, it is primarily transmitted through blood exposure, including injection drug use and sharing drug-related equipment. Less commonly, it is transferred through mother-to-child or blood-exposing sexual practices (5). Many remain asymptomatic or have mild symptoms, often unaware of their infection until significant liver damage occurs. While no vaccine exists, direct-acting antivirals (DAAs) can cure 95% of cases with eight to twelve weeks of treatment with minimal side effects, reducing mortality and improving quality of life (6,7). Early detection and treatment are essential to preventing severe liver damage, yet screening and treatment uptake remain suboptimal despite the high cure rates of DAAs since their introduction in 2011 (8,9).

Canada is committed to eliminating HCV as a public health threat by 2030, aligning with the World Health Organization (WHO) Global Health Sector Strategy (GHSS) on viral hepatitis. Achieving this goal requires diagnosing 90% of those infected and treating 80% of diagnosed cases with DAAs, alongside a significant reduction in new HCV infections (10). As a multicultural nation where immigrants account for roughly 23% of the population (11), Canada must consider the unique needs of these communities in its efforts. Immigrants from regions with high HCV prevalence, including East Asia and the Pacific, Latin America, the Caribbean, and sub-Saharan Africa, are

disproportionately represented, comprising about 35% of HCV cases in Canada (12). Importantly, these groups are diverse, encompassing those who have lived in Canada for many years, as well as more recent newcomers, including refugees, asylum seekers, temporary visa holders, and individuals without official immigration status.

Depending on how immigrants arrive in Canada, they may be required to undergo medical exams either before or after their arrival. Access to health insurance can also vary. However, systematic screening for HCV in immigrants is not part of the standard process in Canada. Many immigrants have acquired HCV in their home countries through unsafe medical or dental practices or transfusions with unscreened blood products (13). Because HCV screening in Canada largely focuses on injection drug use and similar risk factors, these immigrants are frequently overlooked. This oversight leads to an average delay of about ten years in diagnosing HCV in immigrant populations, resulting in worse health outcomes and placing a substantial burden on the healthcare system (14). Additionally, immigrants face a higher risk of hepatocellular carcinoma and liver-related mortality compared to Canadian-born individuals, a disparity that is partly driven by these late diagnoses (13,15).

Although barriers to HCV care have been studied in groups like people who inject drugs and those who have experienced incarceration (16,17), research on the challenges faced by immigrants in accessing care remains limited. When immigrants are included in these studies, they are typically treated as a single, homogenous group, overlooking the significant diversity in language, culture, and healthcare system experiences within these communities. This generalization can mask community-specific challenges. Some of reported barriers for immigrants include limited awareness of HCV, fear and stigma, language difficulties, and financial concerns (18–20).

To gain a comprehensive understanding of the issue, it is also critical to consider the challenges faced by healthcare providers in delivering HCV care to immigrants. Existing studies with providers have mostly focused on initiating HCV treatment and supporting adherence, with minimal exploration of the screening phase and little focus on immigrant-specific challenges. Reported obstacles for providers include difficulties keeping up with evolving HCV treatment guidelines, gaps in training to confidently prescribe DAAs, and inadequate resources or support for screening (21–24). In this thesis project, I aimed to capture the perspectives of both immigrants navigating HCV care and the healthcare providers offering that care, with a focus on two distinct immigrant communities in two different cities. This approach allowed me to explore whether similar or different challenges were identified across cultural and geographic contexts. These insights will serve as a crucial foundation for developing evidence-based, theory-driven interventions tailored to address these specific barriers.

Theoretical approaches

The use of theories provides a structured approach to understanding the factors that shape health behaviors (25). They can also clarify how the different parts of an intervention could work together to produce changes in those behaviors. Moreover, by using a common theoretical framework, stakeholders can develop a shared understanding of the intervention, making it easier to evaluate its outcomes and adapt it for use in other settings (26,27).

Common-Sense Self-Regulation Model

The Common-Sense Self-Regulation Model (CS-SRM) (28–30) provides a framework for understanding how individuals form perceptions and beliefs about a specific illness and how these perceptions shape their behavior towards managing it. According to this model (Fig. 1), when faced with an illness, individuals create both *cognitive* and *emotional* representations of the illness. *Cognitive representations* include factors like illness identity, its causes, timeline, consequences, controllability/curability, and coherence (Table 1). *Emotional representations* develop alongside these cognitive beliefs, reflecting people's emotional reactions to the illness (31). Guided by these illness representations, individuals adopt various coping strategies to address the illness. Their assessment of how well these coping strategies work, together with any new information they encounter from sources like healthcare providers, the media, family, and friends, leads to updated beliefs and new coping strategies to deal with the illness. This dynamic process helps explain why people might make different decisions or take different actions when dealing with the same illness (32).

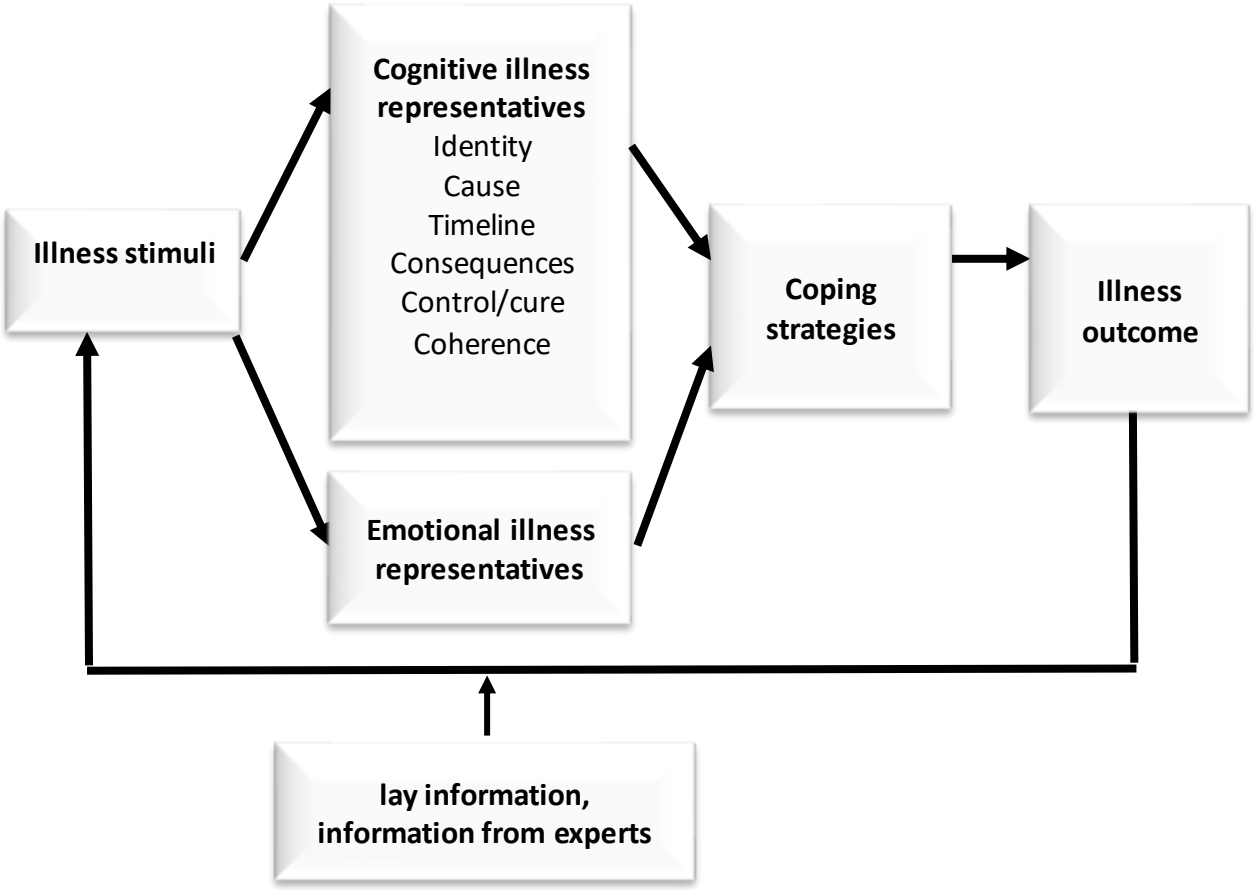

Figure 1- Schematic representation of Common-Sense Self-Regulation Model based on Leventhal et al (1992)'s illustration (29)

Theoretical Domains Framework

The Theoretical Domains Framework (TDF) (33,34), which draws on 33 behavioral theories, offers a framework for identifying the factors that influence health-related behaviors. This framework consists of 14 domains: *Knowledge*; *Skills; Social/professional role and identity*; *Beliefs about capabilities*; *Optimism*; *Beliefs about consequences*; *Reinforcement*; *Intentions*; *Goals*; *Memory, attention and decision processes*; *Environmental context and resources*; *Social influences*;

Emotions; and *Behavioral regulation* (Table 2). Each of these domains can act as either a barrier or an enabler for changing the target behavior. In this study, we used the TDF to explore the challenges and supports that shape how immigrants seek HCV care and how healthcare providers deliver it.

Table 1- Theoretical constructs of the Common-Sense Self-Regulation Model (28,29)

Constructs		Definitions
Cognitive illness representations	Identity	The symptoms and label given to the illness.
	Cause	Beliefs about the causes of the illness such as genetics, infection, diet, environmental pollution, or risky behaviors.
	Timeline	The expected duration and time course of the illness or symptoms.
	Consequences	Beliefs regarding the impact of the illness on everyday life such as physical and role functioning, work capacity, and personal relationships.
	Curability/ controllability	Beliefs about whether the illness can be effectively cured or controlled by personal actions such as seeking help or taking medication.
	Coherence	Perceived clarity in understanding the illness (whether the illness 'makes sense').
Emotional illness representations		Reflections on the emotional responses to the illness.
Coping strategies		Approaches used to deal with an illness.
Sources of information		Lay information stored in memory, insights from perceived significant others or authoritative sources, somatic or symptomatic information based on previous experiences with the illness.

Table 2- Theoretical domains of the Theoretical Domains Framework (33,34)

Domains	Definitions
Knowledge	An awareness of the existence of something
Skills	An ability or proficiency acquired through practice
Social/professional role and identity	A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting
Beliefs about capabilities	Acceptance of the truth, reality or validity about an ability, talent, or facility that a person can put to constructive use
Optimism	The confidence that things will happen for the best or that desired goals will be attained
Beliefs about consequences	Acceptance of the truth, reality, or validity about outcomes of a behaviour in a given situation
Reinforcement	Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus
Intentions	A conscious decision to perform a behaviour or a resolve to act in a certain way
Goals	Mental representations of outcomes or end states that an individual wants to achieve
Memory, attention, and decision processes	The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives
Environmental context and resources	Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behaviour
Social influences	Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviours
Emotions	A complex reaction pattern, involving experiential, behavioural, and physiological elements, by which the individual attempts to deal with a personally significant matter or event
Behavioral regulation	Anything aimed at managing or changing objectively observed or measured actions

Action, Actor, Context, Target, Time (AACTT) framework

A clear specification of the target behavior in terms of what immigrants and healthcare providers need to do differently provides a systematic and focused framework for identifying the evidence-

practice gaps, assessing the barriers and enablers influencing those gaps and ultimately designing behavior changing interventions to address those factors. The AACTT (Action, Actor, Context, Target, Time) framework was applied to define the target behavior for the TDF-based interviews (35).

Table 3-AACTT specification of the targeted behavioural change for immigrants and healthcare providers

	Immigrants	Healthcare providers
Action	Seeking HCV screening/treatment	Providing HCV screening/treatment to immigrants
Actor	Immigrants visiting healthcare providers	Healthcare providers
Context	Healthcare providers' offices/clinics	Healthcare providers' offices/clinics
Target	Immigrants visiting healthcare providers	Immigrants visiting healthcare providers
Time	At any time during a visit	At any time during a visit

Relevance

In 2016, the WHO urged all countries to develop national strategies to eliminate HCV as a public health threat by 2030, a goal that Canada has formally adopted. Immigrants from HCV-endemic countries make up a substantial portion of HCV cases in Canada and have been identified as a priority group by the Canadian Network on Hepatitis C (CanHepC) Blueprint. This study is the first in Canada to specifically examine the barriers that immigrants face when accessing HCV care. The findings will lay the groundwork for designing theory-driven interventions to enhance the HCV care cascade in this priority population.

Thesis objectives and work

The overall goal of my PhD thesis research was to develop the scientific basis to support implementation of high-quality HCV care for immigrants to Canada. The were three specific objectives:

1) To explore immigrants' perceptions about HCV infection and its management.
2) To identify barriers and enablers to seeking HCV screening and care from the perspectives of immigrants.
3) To identify barriers and enablers to providing HCV screening and care to immigrants from the perspectives of healthcare providers.

Following consultation with my thesis supervisor and Thesis Advisory Committee, I chose to work with two distinct immigrant communities in two different Canadian cities. Given the high rates of HCV infection in Egypt and the Punjab region of Pakistan/India, along with the substantial immigrant populations from these areas residing in Ottawa and Montreal respectively, these communities in the two cities were selected. This approach enabled me to explore whether perceptions and beliefs about the disease and barriers to care differ based on country of origin and/or settlement location in Canada. These insights are critical for informing the design of interventions, particularly in determining whether they should be tailored to specific communities and contexts.

As a first step, I established two Community Advisory Groups consisting of community representatives from Egyptian and Punjabi backgrounds in Ottawa and Montreal, respectively. These groups were actively involved throughout the project. Specifically, they helped refine the interview questions to ensure they were culturally and linguistically appropriate for the target

populations. They also promoted the study within their communities and supported participant recruitment. Finally, they played a key role in interpreting the findings to ensure the results accurately reflected community perspectives and resonated with their lived experiences.

To address objectives one and two, I conducted qualitative descriptive studies using semi-structured interviews. The CS-SRM guided the exploration of immigrants' perceptions and beliefs about HCV, while the TDF was used to identify barriers and enablers to screening and treatment. **Chapters Two** and **Three** present the findings from these studies, focusing on the Egyptian community in Ottawa and the Punjabi community in Montreal, respectively.

To address objective three, I conducted a qualitative descriptive study using semi-structured interviews with healthcare providers practicing in Ottawa and Montreal. Guided by the TDF, this study explored the barriers and enablers to providing HCV screening and treatment to immigrants. The findings are presented in **Chapter Four**.

Finally, in **Chapter Five**, I compared the findings from the two immigrant population studies and examined whether future interventions should be tailored to specific communities. I also discussed the value of exploring the issue from two perspectives (immigrants and healthcare providers) and how this dual-lens approach can help address the low uptake of HCV screening and treatment.

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Chapter 2: Immigrants from Egypt

Preface

Overview: In this study, I used a qualitative descriptive design to understand perceptions and beliefs about Hepatitis C (HCV) and the barriers to HCV screening and treatment among immigrants from Egypt in Ottawa. The Ottawa Health Science Network Research Ethics approved the study (20220418-01H). Informed consent was obtained from all study participants.

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Authors' contributions: All authors have contributed to the research and article preparation. SMH and JMG conceived the current study. SMH and AMP developed the interview guide. SMH, AA, CC and SM contributed to recruitment of participants. SMH and AA conducted the interviews. SMH and IMT conducted data analysis, with all the authors reviewing and commenting on the findings. All authors have been involved in development of the proposal, as well as drafting the manuscript and revising it. All authors have given final approval of the submitted article.

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Title

Perceptions about Hepatitis C and barriers and enablers to screening and treatment among Egyptian immigrants to Canada: A theory-informed Qualitative Study

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Abstract

Background: Despite availability of effective screening and treatment for Hepatitis C (HCV), the uptake remains suboptimal. Immigrants from HCV endemic countries comprise 35% of cases in Canada. There is an average 10-year diagnosis delay, causing poor health outcomes and high healthcare system costs. Therefore, we aimed to understand immigrants' perceptions and beliefs about HCV, as well as the barriers and enablers to HCV care among immigrants, with a focus on individuals from Egypt, given the country's high endemic rates of HCV infection and the large Egyptian community in Canada.

Methods: We established a Community Advisory Group to provide advice at all stages. We used a qualitative-descriptive design guided by the Common-Sense Self-Regulation Model and Theoretical Domains Framework to perform semi-structured interviews with adult immigrants from Egypt (with or without HCV) in Ottawa, Canada. Sampling continued until thematic saturation was achieved. The interviews were double-coded and key findings were identified.

Results: We conducted interviews with 18 individuals (eight females, ten males), including 12 who had undergone HCV screening. Among them, seven had tested positive, and all had received treatment. While all participants were aware of HCV, misconceptions and a lack of knowledge regarding its symptoms, modes of transmission, and treatment options were prevalent. Many stated that they would not seek screening in the absence of significant symptoms. Perceived stigma associated with HCV and experiences of ethnocultural discrimination discouraged some individuals from seeking care. Additionally, challenges such as limited access to family doctors and long wait times were frequently cited as barriers. However, those who had received HCV treatment reported positive experiences and remained engaged in follow-up care.

Conclusion: There is an urgent need to improve access to care for immigrants from endemic countries to eliminate HCV in Canada. We took a systematic, theory-informed approach to understand lived experiences and views among Egyptian immigrants in Canada. We identified key factors contributing to the low uptake of HCV screening and treatment. These findings will inform a theory-based intervention to optimize HCV care in immigrant communities.

Keywords: Hepatitis C, barriers, qualitative research, immigrants, implementation science, Theoretical Domains Framework, Common-Sense Self-Regulation Model

Background

In 2020, the World Health Organization (WHO) estimated that 58 million people worldwide had chronic Hepatitis C (HCV) infection (1). In Canada, 7,535 cases—acute, chronic, and unspecified—were reported in 2021 (2). Despite being preventable and curable, HCV remains a major infectious disease burden in Canada (3). It is primarily transmitted through blood exposure, including shared injection equipment, unscreened blood transfusions, improperly sterilized medical equipment and, through mother-to-child or blood-exposing sexual practices (4). Although spontaneous clearance of the virus can occur in some individuals, those who develop chronic infection may remain undiagnosed for years. Many remain asymptomatic or have mild symptoms, often unaware of their infection until significant liver damage occurs, increasing the risk of cirrhosis or liver cancer. While no vaccine exists, direct-acting antivirals (DAAs) can cure 95% of cases with eight to twelve weeks of treatment, reducing mortality and improving quality of life (5). Early detection and treatment are essential to preventing severe liver damage, yet screening and treatment uptake remain suboptimal despite the high cure rates of DAAs since their introduction in 2011 (6,7).

Canada has adopted the WHO Global Health Sector Strategy (GHSS) targets to eliminate HCV as a public health threat by 2030, underscoring its priority status (8,9). Immigrants from HCV-endemic countries account for 35% of cases in Canada and are one of the priority target groups (8,10). However, immigrants from countries with higher HCV rates (e.g., countries in East Asia and Pacific region, Latin America, and the Caribbean, and sub-Saharan Africa) are not routinely screened before or after arrival in Canada for HCV infection. Many of these immigrants have been exposed to HCV through transfusion of contaminated blood products or use of unsterilized

medical, dental, and surgical equipment in their countries of origin, and lack typical risk factors for HCV infection (e.g. injection drug use) (4). As most are asymptomatic, they often go undiagnosed, leading to an average 10-year delay, increased risk of hepatocellular carcinoma and liver-related death, and significant healthcare system costs (11–14).

While studies have examined HCV perceptions and barriers among priority groups such as people who inject drugs and those with incarceration histories (15–19) research with immigrants remains limited. Moreover, many existing studies with immigrants have combined individuals from diverse geographical, linguistic, and socio-cultural backgrounds, limiting the ability to draw community-specific insights. The most common barriers among immigrant populations have been reported as lack of awareness about the disease and modes of transmission, stigma, language and cultural barriers (20–23).

Objective

This study focused specifically on Egyptian immigrants, given Egypt's historically high prevalence of HCV (24) and the substantial Egyptian population in Canada. Our goal was to explore Egyptian immigrants' perceptions and beliefs regarding HCV and its management, and to identify the barriers and enablers influencing their engagement in screening and treatment.

Methods

We conducted a qualitative descriptive study using semi-structured interviews based on the Common-Sense Self-Regulation Model (CS-SRM) (25) and Theoretical Domains Framework (TDF)

(26,27). The Consolidated Criteria for Reporting Qualitative Research checklist was applied as a writing and reporting guideline (28).

Theoretical Approaches

Theoretical frameworks help systematically identify factors influencing behaviors (29) and explain how interventions are expected to affect behavior change. Additionally, they foster a shared understanding among interest holders, facilitating intervention evaluation and adaptation to other contexts (30). To guide this study, we applied two theoretical frameworks, CS-SRM and TDF, because they provide different lenses to explore the issue, and together they provide a more comprehensive understanding of the underlying problems. By using these frameworks, we explored both why individuals perceive and react to HCV in certain ways and which factors influence their engagement with healthcare system services for screening and treatment.

Common-Sense Self-Regulation Model (CS-SRM)

The CS-SRM proposes that when individuals are faced with illness, they develop beliefs and emotions about that illness (illness representations) which can be categorized into two major groups: *cognitive* or *emotional* illness representations (25,31,32) (Table 1). Cognitive illness representations include identity, cause, timeline, consequences, curability/controllability, and coherence. Emotional illness representations are developed in parallel to cognitive illness representations and reflect affective responses to illness (32). These illness representations shape individuals' behaviors (coping strategies) to manage the illness. Individuals' evaluation of their success in this process, along with the new obtained information (e.g., from media,

healthcare providers, friends, family) result in updated illness representations and subsequent new coping strategies. This makes the model dynamic and explains the variety in individuals' decisions and actions with regards to the same illness over time (33). In this study, we used the CS-SRM to explore Egyptian immigrants' perceptions of HCV, their management strategies, and the information sources shaping their beliefs.

Theoretical Domains Framework (TDF)

The TDF, derived from 33 behavioral theories, synthesizes known factors that enable and work against engaging in a given behavior, and can be used to identify the factors that affect health-related behaviors. It includes 14 domains: *Knowledge, Skills, Social/professional role and identity, Beliefs about capabilities, Optimism, Beliefs about consequences, Reinforcement, Intentions, Goals, Memory, attention and decision processes, Environmental context and resources, Social influences, Emotions, and Behavioral regulation* (26,27). Each domain may play a role as a barrier or enabler toward changing the target behavior. In this study, we used the TDF to identify and analyze barriers and enablers to HCV screening and treatment from the perspectives of immigrants.

Community Advisory Group

A Community Advisory Group (CAG) comprising three community leaders—a healthcare provider and two religious leaders—was established to ensure the study's cultural relevance and respect for community and cultural values. The CAG was engaged through a mix of in-person and virtual meetings, including regular check-ins at key stages and additional consultations as needed. They

provided input, suggestions, and advice on recruitment strategies, assisted with participant recruitment, and contributed to the development of interview guides and interpretation of findings to ensure it reflected the community's perspectives.

Context and setting

Immigrants include individuals who are or have been landed immigrants or permanent residents and includes newly arrived immigrants as well as those who have been in Canada for many years and have obtained Canadian citizenship (34). The study took place in Ottawa, the capital city of Canada. Canada has one of the highest rates of annual immigration per population in the world, and as of 2024, there were more than eight million immigrants living in Canada - about 23% of the total Canadian population (35). This is consistent with demographics in Ottawa which similarly has a large immigrant population (26%) with Egyptian immigrants making up approximately 2% of this group (36). Discussions with our CAG revealed that Egyptian immigrants in Ottawa are dispersed throughout the city rather than being concentrated in a specific neighborhood. Furthermore, Egyptian immigrants in Ottawa do not attend specific healthcare facilities but instead seek care from a diverse range of community primary care providers. While places of worship serve as common gathering spaces for the community, attendance varies, and not all individuals visit a particular place of worship or participate in religious gatherings.

Participants and recruitment

Adult (18+) immigrants from Egypt residing in Ottawa, Canada, regardless of citizenship status, were eligible. Recruitment involved distributing flyers at worship places and through community organizations' social media and email networks. CAG members promoted the study during

sermons and khutbahs at churches and mosques, and doctors in our research team and CAG shared flyers with patients. Interested individuals contacted the researcher via email or phone for study details, consent, and interview scheduling. We applied convenient and purposive sampling and aimed to recruit male and female participants with and without confirmed diagnosis of HCV infection, with different lengths of stay in Canada, since there may be differences in their perceptions and the challenges that they face. Recruitment continued until thematic saturation was reached, meaning no new perspectives and concepts emerged from the interviews (37).

Data collection

Semi-structured interviews were conducted virtually or at convenient locations for participants. The interview guide (see Additional file 1)[1], piloted with two individuals, included demographic questions and open-ended inquiries aligned with the CS-SRM and TDF. One of the TDF domains, *Skills*, was not included in the interview guide questions, as it was not applicable to the research question. The guide explored perceptions of HCV and its management (CS-SRM) and barriers and enables to HCV screening and treatment (TDF). The interviewers probed further when answers seemed unclear or short, and the participants were willing to talk more about the issue. The interviews were ended when both the interviewer and the interviewee felt comfortable that all the questions were discussed. Interviews were conducted in English or Arabic by SMH and AA respectively, per participants' preference. SMH (Female) is a foreign-borne Canadian, medically trained PhD candidate with expertise in TDF and CS-SRM. AA (Male) is a native Arabic speaker immigrant with training on the theoretical frameworks. The interviewers had no prior

[1]It is included as Appendix L in this thesis.

acquaintance with the interviewees before conducting the interviews. The interviews were audio-recorded, and participants received CAD$50 gift cards for their time and participation.

Data analysis

Interviews were transcribed verbatim, anonymized, and translated (if necessary) by a professional translator. All transcripts were subsequently verified for accuracy by the research team. Two coders (SMH, IT) independently reviewed the interview transcripts and deductively coded them in NVivo (38) using both the CS-SRM and TDF as our coding guides. They initially met after coding the first transcript to compare their coding and develop a uniform codebook based on the construct within CS-SRM and the Domains of the TDF. Any disagreements were discussed and resolved through consensus. For the CS-SRM component of the interview, coders coded data into the CS-SRM constructs. For the TDF parts of the interviews, the data was first coded into TDF domains, and then belief statements (specific statements that summarize key concepts) about barriers or enablers to seeking HCV screening and treatment were developed within each domain. Domains were considered relevant if they contained frequent, conflicting, or strongly held beliefs that influenced the target behavior (39). Additionally, domains that included only enablers were regarded as less relevant, as intervention design primarily focuses on addressing barriers rather than maintaining existing facilitators. All these factors were considered concurrently when establishing domain relevance.

Results

Sample characteristics

Between April 2023 and January 2024, we interviewed 18 individuals (eight females, ten males) whose age ranged from 19 to 79 (median: 35) years old and had been living in Canada for two to 48 years (median: 7). At the time of interview, most participants were permanent residents (four) or citizens (nine) except for a few who were on temporary visas (student or work permits) (five). The highest level of education achieved was high school for three individuals, college for six individuals and university for nine individuals. The interviews were done in English (15) or Arabic (3), in-person or virtually, and lasted between 19 and 50 minutes (mean: 36). While interviews ranged in length, all participants answered the full set of questions, and shorter interviews still provided rich detail. The variation in length reflected differences in participants' experiences and how much they chose to share. Most participants (13) in our sample had access to family doctors. Twelve individuals had been screened for HCV (with eight being screened for the first time in Canada), of whom seven had tested positive and all had received treatment. Two participants had received treatment both in Egypt and Canada.

Perceptions and beliefs about HCV infection (Common Sense-Self Regulation Model)

Cognitive illness representations regarding HCV infection

Identity: All participants labelled the disease as Hepatitis C. Almost all participants knew at least one symptom related to HCV infection. The most common symptoms mentioned by participants

were fever, yellow eyes and skin, nausea, fatigue, weight loss, loss of appetite, abdominal pain, bloody stool, dark urine. Some participants stated that there may be no symptoms before diagnosis.

Before their diagnosis, individuals with a history of HCV either did not experience any symptoms or did not realize their symptoms were related to HCV, often attributing them to other more minor illnesses or conditions.

"Yes, before it [diagnosis], I used to feel it, but of course, I didn't think that was a disease, I could consider it anything." (P10)

Timeline: Generally, participants believed that one may have the disease for years before showing up the symptoms or being diagnosed. Individuals with a history of HCV explained that, at first, their symptoms were infrequent, but over time, they became persistent.

"When it started newly, it was like coming and going. It comes and goes. But later when it became serious, it became something that shows itself every day." (P16)

Because the initial symptoms were often overlooked, participants were uncertain about how long they had been living with the disease before diagnosis. However, once they noticed the symptoms, it took them between six months and two years to seek medical care.

Cause: Participants identified non-sterilized medical procedures, such as unsafe injection practices for vaccination or treating Bilharzia (Schistosomiasis) in the past or surgical procedures in healthcare settings, as the most common cause of HCV infection. Other reported perceived modes included contaminated sharp objects (e.g., at barbershops), shared drug injections, and blood transfusions. Most participants with HCV were unsure how they had contracted it. There was also uncertainty and misconceptions about transmission, with questions about mother-to-

child transfer, sexual transmission, and spread through shared items, water, food, mosquitoes, kissing or touching others.

"And for me, at the end of my mom's life (positive for HCV), I didn't want to touch her. I didn't want my son to touch her. I'm scared to get the disease." (P14)

Consequences: Most participants stated that untreated HCV infection could lead to liver cancer and/or early death. Participants explained that the disease can impact one's life, work, and interpersonal relationships and one needs to be mindful not to transfer it to others. A few participants were concerned about not being able to donate blood or do certain religious rituals. Although some individuals without a history of HCV believed there was no stigma around the disease, those with a diagnosis of HCV had experienced stigma and discrimination, resulting in self-isolation and social distancing from others. One person explained that they face more stigma in Canada compared to Egypt.

"But there is no shame in getting sick I guess; it happens to the best of us." (P1)

"When I got tested and I discovered I was positive, I wanted to keep it for myself, but I thought that it wasn't wise. Maybe people who are around me should be aware, and I spoke with one or two of them and some of these people who were very close to me, they started isolating me. Like they started avoiding me." (P16)

Curability/controllability: While a few were unsure if HCV could be treated, the majority were aware that treatment is available. Some individuals without a history of HCV infection who were aware that treatment exists, believed the process of diagnosis and treatment would be lengthy and difficult.

"Based on what I saw, hepatitis C has a good treatment plan, like a solid, effective one. Plenty of physical illnesses don't have that. But for that, I think it would be fairly reliable to believe that it would be positive and end up helping out." (P9)

Coherence: Generally, all participants had some understanding about HCV; they had experienced the disease themselves, heard about it through national campaigns in Egypt, or had seen someone with the disease among their friends or family members.

There was confusion about recognizing HCV infection with regards to the symptoms. Some participants stated that the similarity between HCV symptoms and those of other illnesses, or the absence of symptoms altogether, made it difficult to determine when to seek medical care.

"Again, this is my understanding, the issue with hepatitis C is that the symptom is common, like I am tired. Do I need to adjust my sleeping time? I need to cut off my coffee, like I'm not able to do the same work as I used to before. Well maybe I'm getting a bug or something... So, there are a lot of common symptoms between the person with hepatitis C and other diseases. So, Hepatitis C will not be the first thing to come to mind." (P2)

A few participants compared HCV with other diseases (e.g. AIDS, diabetes) to make sense of the illness.

Emotional illness representations regarding HCV infection

Fear and worry about HCV were common among all participants. Those without a history of HCV feared contracting the disease due to limited knowledge about its modes of transmission. They were also concerned about the potential consequences if they became infected.

"From the Egyptian culture there is a fear factor around hepatitis C, and it is like AIDS. So, it is not something that we would like to talk about or like to advertise. It will be like a big secret." (P2)

Furthermore, those with a history of HCV recalled shock at their diagnosis and concern about its impact on their life and work, with some noting it affected their confidence and sense of self-worth.

Sources of information

The primary and main source of information for participants was the internet, followed by family, friends, the experiences of individuals with HCV, and national campaigns in Egypt. Healthcare providers were typically consulted for information during HCV screening and treatment.

Coping strategies

In general, individuals without HCV stated they would seek screening only if they experienced major symptoms or had family members with HCV.

"We [Egyptians] have a tendency to just tough it out or to just not want to see a doctor." (P9)

"I'm fine. I don't feel anything. Everything is good. So, it is a not a routine check, it is not something that I would go and have it on my to-do list." (P2)

However, they expressed a strong commitment to pursuing treatment immediately if they tested positive. They explained that they would be cautious around individuals with HCV to avoid contracting the disease.

Individuals with a history of HCV often ignored their initial symptoms or managed them with painkillers, dietary changes, or reduced activity. Even after diagnosis, some delayed treatment

due to a lack of severe symptoms, reluctance to undergo interferon therapy, or financial constraints. Others sought information to understand the disease better or turned to family and friends for social support.

Table 1- Common-Sense Self-Regulation Model and sample quotes

Barriers and enablers to HCV screening and treatment (Theoretical Domains Framework)

Our TDF analysis identified eight potentially relevant domains: *Knowledge, Social/professional role and identity, Social influences, Environmental context and resources, Memory and decision making, Reinforcement, Emotion, Beliefs about consequences*. Below, we discuss the main findings from these relevant domains (with related relevant domains highlighted in italics in brackets) (Table 1). Following this, we will briefly discuss the domains that were less likely to be relevant.

Most participants were familiar with HCV screening and knew how it can be done. More than half of the participants were aware that there is treatment for HCV infection, however most of them were not sure about its details (duration, process). There were mixed opinions about treatment, with some calling it horrible and expensive, and some describing it as easy and highly effective. A few participants stated that they were not certain whether HCV infection can be fully treated. (TDF domain: *Knowledge*). Participants emphasized the importance of raising awareness about HCV, screening, and treatment. They recommended leveraging social media platforms, public campaigns, and community leaders to disseminate information. Some participants cited national

campaigns in Egypt as successful examples of initiatives that enhanced public knowledge and reduced stigma surrounding the disease.

"Treatment for it, it depends on the luck of the individual. I heard that there is some kind of treatment but it's very, very expensive." (P2)

"I know from the Egypt advertising that there is a cure and that they're trying to cure people, but if it's true or not what kind of cure, I have no idea." (P4)

Most participants viewed HCV screening as beneficial, noting that a negative result provides peace of mind, while a positive result leads to access to treatment and improved health outcomes. However, some participants expressed concerns about the stress associated with a positive diagnosis, particularly during the period between diagnosis and the initiation of treatment, due to the uncertainty surrounding their condition (TDF domains: *Beliefs about consequences*, *Emotion*). All participants who had undergone HCV treatment described it as a positive experience, emphasizing that it provided them with peace of mind, along with a sense of regaining control over their lives and the opportunity to live longer.

"It [receiving HCV treatment] felt like I'm getting my life back." (P12)

Conversely, a few participants, particularly those who had not been diagnosed with HCV, expressed concerns about the potential severity of treatment side effects (TDF domains: *Beliefs about consequences*, *Emotion*).

Despite recognizing the benefits of screening and treatment, most participants indicated that they would not seek HCV screening in the absence of significant symptoms. Some further explained that it is not common among Egyptians to visit a doctor for routine check-ups or minor symptoms. A few participants stated that they would only undergo HCV screening if they believed

there was a high likelihood of being infected. Furthermore, some participants mentioned that they would go for HCV screening if they had been in contact with someone who had HCV infection (TDF domains: *Social/professional role and identity*, *Memory and decision making*).

"For example, right now I don't feel symptoms, so I don't see a need for testing." (P8)

"The one thing I know about my culture is that when you feel in pain, just tough it up, be a man. Be this, be that. A lot of people say it's probably nothing and probably that's why a lot of us end up sick anyways. Ah, it's just some pain. I ate something bad and they just tough it up." (P1)

Furthermore, when visiting healthcare providers, few participants found it difficult to just talk about one symptom per visit (TDF domain: *Environmental context and resources, Social/ professional role and identity*). Although there is no official policy, some doctors ask their patients to focus on only one health issue per visit to better manage time allocated for each patient. Participants discussed this unwritten rule makes them prioritize their major concerns, and screening for a disease for which, they don't have any symptoms, will not be on the top of their list. They explained how it was different in Egypt, as the doctors would examine their whole body as a single entity.

"I had the issue that when I go to a doctor, I expect the doctor to deal with me as a human, as a single entity. Not as one disease at a time. I don't feel it's right because I feel my body is one unit. It's all connected. If my liver is suffering, probably other organs are suffering. And the fact that I have to say one thing at a time is annoying and it does not make sense to me. I'm just not able to accept it." (P4)

One of the other barriers to HCV care was perceptions of stigma and discrimination which were linked to either being an immigrant, having HCV, or both (TDF domains: *Social/professional role*

and identity, *Beliefs about consequences, Reinforcement*). Participants were divided in their opinions about the presence of stigma in society regarding HCV and its screening. Notably, nearly all participants who believed there was no stigma had no history of HCV themselves.

"And in these days, with those multiple diseases that we have all around us, everyone has a different disease, so we all care about each other." (P7)

"From anybody who realizes that you have hepatitis C, they tend to cut you and are judgemental most of the time." (P15)

Some participants reported experiencing stigma and discrimination as immigrants within the healthcare system. One person explained feeling stigmatized for both having HCV and being an immigrant:

"People, some of them say that maybe you brought sicknesses from your own country to our country, and they feel we are trying to bring some problem here in this country. And I've had issues that people have had to discriminate me because I'm not from Canada." (P16)

Despite concerns about stigma and judgment, some of participants explained that opinions of others do not impact their care seeking behaviour. Participants also shared that their family members and close friends were/will be highly supportive and encouraging of their efforts to seek HCV screening and treatment. Additionally, a few participants mentioned financial support from their families during their HCV treatment (TDF domain: *Social influences*).

Regarding the impact of healthcare providers on individuals' health-seeking behavior, participants shared both positive and negative experiences. Most, especially those who had undergone HCV treatment, described positive interactions with healthcare providers, with some

noting that their doctors encouraged them to undergo screening or begin treatment. (TDF domain: *Social influences*, *Reinforcement*).

"I think the conversation, it was something like you're from Egypt right. Hepatitis C is very common over there, so we will do some tests. That's how it went." (P12)

However, a few explained that, despite years of regular visits, their family doctors had never recommended undergoing an HCV screening test (TDF domain: *Social influences*).

Additionally, many participants explained that long wait times—whether to get an appointment with a doctor or to be seen at healthcare centers—as a significant barrier to access care. Some participants also discussed the difficulties they faced in finding a family doctor (TDF domains: *Environmental context and resources*, *Reinforcement*). Participants discussed the need to increase the availability of family doctors and to provide them with training to encourage immigrants to undergo HCV screening. Lastly, some suggested implementing policies to facilitate early HCV screening for immigrants shortly after their arrival in the country.

"So, the negative experience, again, is the wait time, waiting for my family doctor. And then knowing inside of me that even with that, I need to go and do the blood work. And then after that, I have to go and see him again. And the day after that, I need to go and be scheduled for a specialist and the specialist will not be available for six to eight months." (P8)

Other factors mentioned by participants, such as language, screening/treatment costs, and transportation to healthcare facilities, were perceived as barriers by fewer individuals. Regarding transportation to healthcare centers, participants acknowledged that while it could occasionally be challenging, it would not deter them from seeking HCV care (TDF domains: *Environmental context and Resources*). Although some participants expressed gratitude for not having to pay for

HCV treatment, some participants noted that the cost of HCV screening and treatment had been, or could potentially be, a barrier to accessing care (TDF domains: *Environmental context and Resources*). Except for a few participants for whom the language was a barrier to care, most participants explained that they were quite comfortable communicating in English (TDF domains: *Social/professional role and identity*, *Environmental context and Resources*).

Table 2-Theoretical Domains Framework themes, relevant domains, belief statements and sample quotes

Domains less likely to be relevant

The domains of *Intention, Goals, Optimism, Beliefs about Capabilities,* and *Behavioural Regulation* were identified as being less relevant to changing the target behaviour. Participants expressed that they intended to undergo screening if they experienced symptoms and were committed to pursuing treatment and attending follow-up appointments if diagnosed with HCV infection (TDF domain: *Intention*). Participants consistently emphasized that their health and well-being were of utmost importance to them. They prioritized taking care of themselves and their families above all else (TDF domain: *Goals*). They were optimistic that, in the event of an HCV infection, visiting healthcare centers and adhering to effective treatment options would help them (TDF domain: *Optimism*). All individuals reported feeling comfortable consulting their healthcare providers and seeking HCV screening and treatment (TDF domain: *Beliefs about Capabilities*). The participants did not report using specific strategies to improve their access to HCV screening and treatment. However, they offered several suggestions and recommendations

for improvement which were incorporated into related TDF domains (TDF domain: *Behavioral Regulation*).

Discussion

Main findings and comparison with other studies

This theory-based qualitative study examined Egyptian immigrants' perceptions and beliefs regarding HCV and its management, as well as the factors influencing their decision to seek care. Our findings revealed four overarching themes as main barriers to HCV screening and treatment: knowledge about the disease and treatment options, lack of (major) symptoms, stigma and discrimination, and access to healthcare providers.

Overall, participants in our study were familiar with HCV infection, recognizing its association with liver disease and demonstrating some understanding of its symptoms, causes, and modes of transmission. Previous studies on other immigrant communities, have reported varying levels of knowledge about HCV, generally finding low awareness that varies by country of origin and educational background (20–22,40–46). Notably, a study on Egyptian immigrants in Australia similarly found that most participants were aware of the disease and its modes of transmission (47). In our study, the high level of education among participants may have contributed to their greater awareness of HCV. Additionally, national campaigns in Egypt have likely played a significant role in increasing public awareness over the years. Beginning in 2014 and reinforced in 2018, the nationwide "100 Million Healthy Lives" campaign aimed to eliminate HCV by providing free testing and treatment, accompanied by extensive media messaging (48). Although most participants were aware of some modes of HCV transmission, misconceptions and

uncertainties remained regarding mother-to-child transmission, sexual transmission, and spread through shared items, water, food, mosquitoes, kissing, or physical contact. Similar misconceptions have been reported in other studies on HCV transmission (42,44,47). Raising awareness about all possible transmission routes is essential, particularly because many Egyptians attribute HCV transmission primarily to past unsafe medical procedures related to treatment of Schistosomiasis and may be less aware that the virus can also be transmitted through other means. Most participants were aware of available HCV treatment and the process for screening and care. However, some remained unaware of newer treatments (DAAs) and associated treatment with severe side effects, influenced by past experiences of their friends or family members with interferon-based therapies. Hence, raising awareness about newer treatment options is essential, emphasizing their shorter duration and fewer side effects.

Although some participants were aware that HCV can be asymptomatic, most individuals indicated that they would not seek screening in the absence of symptoms. They also expressed uncertainty about when to seek care, as HCV may not present symptoms, or its symptoms may resemble those of other illnesses. Similar findings have been reported in other studies, where immigrants were often unaware that HCV can be asymptomatic and were unlikely to undergo screening without noticeable symptoms (14,20,22,44). This is a significant finding, as many individuals with HCV remain asymptomatic for extended periods, leading to delayed screening and treatment, which can result in poorer health outcomes. Raising awareness about the asymptomatic nature of the disease and the importance of early screening is essential.

There were varying perspectives on stigma and discrimination among participants in our study. Stigma was primarily associated with the disease itself, driven by fear of transmission, but in

some cases, it was also intertwined with discrimination related to being an immigrant. Findings from other studies align with our results, showing that perceptions of stigma differ significantly both between and within immigrant communities (20,22,41,44). For example, a study on recent African immigrants in the United States revealed that while some individuals were concerned about HCV-related stigma, others were uncertain whether it was a significant issue in their community (22). These mixed views suggest that while people with HCV may experience societal stigma, those without the disease may not perceive it or may reject it as morally unacceptable. Supporting this idea, a survey of Egyptian immigrants in Australia found that participants believed individuals with HCV deserve support rather than condemnation and should be treated with respect and fairness (47). To improve HCV screening and treatment uptake, it is essential to raise awareness about the disease and its modes of transmission.

Many participants in our study cited difficulty in finding family doctors and long wait times as significant barriers to accessing HCV care, a challenge that has also been documented in other studies (20,44,49). The shortage of healthcare providers and prolonged wait times are not unique to HCV care but reflect a broader issue affecting both immigrant and non-immigrant populations in Canada (50–52).

While some studies have identified language as a barrier to HCV care among other immigrant communities (21,22,41,43,44), most participants in our study were comfortable speaking English and did not perceive language as a significant obstacle. This difference may be attributed to the characteristics of our study sample, as the majority of participants were highly educated and had been living in Canada for several years at the time of the interview.

Participants recognized the benefits of screening and treatment and expressed a strong commitment to completing treatment and attending follow-up visits if diagnosed. Moreover, they emphasized that their health was their top priority, taking precedence over other responsibilities. Quantitative studies have also shown that immigrants have higher rates of treatment initiation and cure rates compared to non-immigrants (53,54). This is an encouraging finding, indicating that improving access to care and addressing knowledge gaps could significantly enhance the uptake of HCV screening and treatment.

Finally, using two theoretical frameworks enabled us to examine access to HCV screening and treatment from complementary perspectives. The CS-SRM provided an overall understanding of participants' perceptions of the disease itself, and their coping strategies, while the TDF systematically identified factors influencing a specific coping strategy—seeking screening and treatment. Although some overlap existed, with certain responses fitting both frameworks, distinguishing between beliefs about the disease and those about screening/treatment was sometimes challenging, (e.g. emotions). Despite these complexities, integrating both models provided deeper insights than either framework alone.

Implications for practice and research

Findings from this study highlight key areas for improving HCV screening and treatment among immigrants, with implications for both practice and policy. By applying theoretical frameworks to assess barriers, we identified specific challenges that can be directly mapped to targeted intervention components.

Misconceptions about the disease, lack of awareness about treatment options, and stigma can be partially addressed by community-based education initiatives—delivered through trusted channels such as religious leaders, cultural organizations, and social media. Other studies have also emphasized the importance of partnerships with community-based organizations and engagement with religious and community leaders to promote health education and screening. Furthermore, using these trusted channels for awareness efforts may help reduce stigma and shame associated with the disease within the community (20,22,55–57).

Additionally, as healthcare providers play an important role in encouraging individuals to seek screening/treatment, it is important to equip them with the knowledge and communication strategies needed to discuss HCV with their patients and encourage screening among immigrants from HCV-endemic regions (58,59). Our findings, along with evidence from other studies, suggest that immigrants highly value medical advice from their doctors and are more likely to pursue screening when recommended by a healthcare professional (40,44). It is shown that physician recommendations are a strong predictor of hepatitis screening uptake in immigrant communities, highlighting the critical role of healthcare providers in promoting early detection and treatment (60,61). Integrating clear clinical guidelines and culturally responsive communication strategies into primary care could further strengthen these efforts.

To address the barriers to access to healthcare system (shortage of doctors, wait long times), simplified HCV service delivery as recommended by the WHO's Guideline can be helpful. The guideline recommends decentralization of HCV screening and treatment to community-based facilities and primary care, integration of those services with existing care services, and task-sharing of HCV care by non-specialist doctors and nurses (62,63). Evidence suggests that these

approaches not only improve access to care and increase screening and treatment uptake but also achieve comparable high rates of HCV cure (64–66).

Given the heterogeneity of immigrant populations, further research is needed to determine whether perceptions of HCV and barriers to care are consistent across different immigrant communities. This understanding will help assess whether interventions should be tailored to specific communities and to what extent such customization is necessary. Additionally, considering the critical role of healthcare providers in the HCV care continuum, it is essential to explore their perspectives and the challenges they encounter in delivering care to immigrant populations. Gaining these insights will be instrumental in designing effective interventions to enhance HCV screening and treatment among immigrants.

Strengths and limitations

The use of theory offers a structured framework for researchers to interpret and analyze data beyond personal insights. It strengthens the rigor and relevance of the findings while guiding the development of well-designed interventions (67,68). Additionally, it facilitates comparisons between this study's findings and those from other HCV studies involving immigrant communities or other priority groups. The use of two distinct theoretical frameworks allowed for the exploration of the issue from multiple perspectives, resulting in a more comprehensive understanding. Additionally, the involvement of a Community Advisory Group and the utilization of diverse recruitment methods within the community facilitated engagement with a broad range of participants.

However, some limitations of this study should be acknowledged. Despite efforts to recruit participants with diverse characteristics, the sample included very few recent immigrants. Furthermore, participation was limited to individuals who actively reached out and expressed interest in the study, which may result in findings that are not fully representative of the views and perceptions of all Egyptian immigrants. In addition, while the frameworks and models employed in this study incorporate aspects of the social and structural determinants of health, we recognize that they may not fully encompass the broader systemic and contextual barriers that influence health behaviours and access to care.

Conclusion

Improving access to care for immigrants from endemic countries is critical to eliminating HCV in Canada. Using a systematic, implementation science-informed approach, we explored the lived experiences of Egyptian immigrants and identified key barriers to HCV screening and treatment. While participants generally understood the disease, screening, and treatment options, major barriers included asymptomatic infection, stigma, limited access to family doctors, and long wait times. These findings will inform a theory-based intervention to enhance HCV care in immigrant communities.

Abbreviations

CAG Community Advisory Group

CS-SRM Common Sense-Self Regulation Model

DAA Direct-Acting Antivirals

HCV Hepatitis C Virus

TDF Theoretical Domains Framework

WHO World Health Organization

Declarations

Ethics approval and consent to participate

The Ottawa Health Science Network Research Ethics approved the study (20220418-01H). Informed consent was obtained from all study participants.

Consent for publication

Not applicable.

Competing interests

CC has served as a speaker and advisor for Gilead and AbbVie and has received unrestricted program and research funding from both companies. Other authors declare no competing interests.

Availability of data and materials

Data that support the findings of this study are available upon reasonable request.

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Authors' contributions

All authors have contributed to the research and article preparation. SMH and JMG conceived the current study. SMH and AMP developed the interview guide. SMH, AA, CC and SM contributed to recruitment of participants. SMH and AA conducted the interviews. SMH and IMT conducted data analysis, with all the authors reviewing and commenting on the findings. All authors have been involved in development of the proposal, as well as drafting the manuscript and revising it. All authors have given final approval of the submitted article.

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Table 1-Common-Sense Self-Regulation Model and sample quotes

Constructs		Definitions	Sample quotes
Cognitive illness representations	Identity	The symptoms and label given to the illness.	*"I only knew by chance, when I went to donate blood, if I didn't go, I wouldn't have known." (P11)* *"About the symptoms, because for me it took some time to realize it, so I think also people should be enlightened about the symptoms for hepatitis C so they can distinguish." (P15)*
	Cause	Beliefs about the causes of the illness such as genetics, infection, diet, environmental pollution, or risky behaviors.	*"I really want to know if it gets passed to babies because I have one child and I'm planning on another. So, I need to understand if I can get pregnant or not. It will affect that decision for sure. I also need to understand how it transmits, how I need to deal with my toddler. Like how this will affect her and what are the things I need to do to make sure it doesn't get to her?" (P3)* *"I thought it was an STD and I'm stressing that because that's probably a common misconception and that would have surprised me if it were an STD because that's not really, I think something that would be as common with Egyptian culture. Yeah, the whole no sex before marriage thing is very, very strongly enforced." (P9)*
	Timeline	The expected duration and time course of the illness or symptoms.	*"It took some time to realize for me that I had hepatitis because sometimes the symptoms do not show up. It took a lot of time for the symptoms to show up, so something like after one year is when I realized that I had hepatitis." (P15)*
	Consequences	Beliefs regarding the impact of the illness on everyday life such as physical and role functioning, work capacity, and personal relationships.	*"It affected me a lot. I had lost so much weight. I was tired of even answering questions because any time I step out, I get a lot of questions: what is the matter with you? What is wrong with you? Why are you like this? It became too much for me. So that affected my activities, my social activities. I started staying more indoors and I wore bigger clothes to avoid a lot of questions." (P18)*

		"In Canada, I can say that people are not aware of hepatitis C and stuff ... So, I can say in Egypt, some of them may tend to associate with you and try to understand, but in Canada you can face some social stigma and even discrimination sometimes." (P15)
Curability/ controllability	Beliefs about whether the illness can be effectively cured or controlled by personal actions such as seeking help or taking medication.	*"There's no cure. I don't know. Of course, I don't wish to have something like that at all." (P14)* *"Back in 2010, there was a couple of injections, and those injections were once weekly and some of them had higher cure rates than the others. Those days, I know that they have more and more medicines that have higher cure rates." (P7)* *"That will be me and my luck. It depends on when it's going to be discovered, if it's going to be after a few weeks, or a few months, or a few years of me getting it. So how much damage it's caused me already. And then again, just to navigate through the slow process in the system." (P2)* *"And I know that the medication or the process they go through is quite horrible sometimes, and if they have to have a liver transplant it's even worse." (P4)*
Coherence	Perceived clarity in understanding the illness (whether the illness 'makes sense').	*"The problem with hepatitis C [is that] you don't get symptoms. So, that's a challenge. Is there any way to find symptoms that can alert the person to say I'm going to take the test?" (P12)* *"For most diseases like hypertension and diabetes there is no cure, you are controlling. But we're lucky that we have a medication that can cure, that can make you hepatitis C free. This is something exceptional with this specific disease." (P7)*

		"We always hear of fighting stigma against AIDS and such. HCV is milder. Like it's not as scary to people as AIDS for sure." (P6)
Emotional illness representations	Reflections on the emotional responses to the illness.	*"[When my mom tested positive] I was so scared, and it's not very well explained online and with the doctor. He said to use Clorox everywhere. So, we used it until our hands—it's like inflamed—cleaning the dishes, cleaning the food. We were scared and it wasn't a normal thing. It was very bad." (P14)* *"I wasn't feeling myself, so there was no way I was going to feel comfortable around people, because I wasn't even happy with myself, with what was going on around my body. So that means that I lacked the self-confidence." (P18)*
Coping strategies	Approaches used to deal with an illness.	*"Because my uncle, he had it, so I had to be sure if I'm safe. ...So, I had to do mine, too. So, I finally went for a test, I went to the doctor." (P17)* *"Actually, to be honest, before they told me that I had Hepatitis C, I wasn't paying attention, I may have had symptoms, but I didn't notice them a lot." (P10)* *"I didn't go directly [for treatment] because it actually shook me, so I had to take some time and process it and accept the situation…My friends and family members, they talked me through it. At first, I didn't see the doctor and get medical services. And at the end, I took their advice, and they helped me." (P15)* *"Until, one day, my doctor said, you know there is new medication for hepatitis C now, maybe you should try it. Because I didn't have any symptoms, I said I don't need that." (P12)*
Sources of information	Lay information stored in memory, insights from	*"There have been tons of campaigns. I think when I got my test, it was around 2018 or 2019, like it was mandatory and there were a lot*

perceived significant others or authoritative sources, somatic or symptomatic information based on previous experiences with the illness.	*of campaigns on hep C. So pretty much, I think the nation has more knowledge about the ways that they can get it." (P6)* *"I had friends [with HCV], I had 3, 4, a lot, even one of my cousins died because of it and it was widespread in Egypt at that time." (P11)* *"Most times, I go online to search information about people with hepatitis C, what kind of foods they need to eat and other stuff like that. So, all this information, I get them online." (P16)*

Table 2-Theoretical Domains Framework themes, relevant domains, belief statements and sample quotes

Relevant domains	Beliefs statements (Frequency)	Sample quotes
Knowledge	There is treatment for HCV. (10)	*"Based on what I saw, hepatitis C has a good treatment plan, like a solid, effective one." (P9)* *"I learned that the treatment was easy and the success percentage was almost over 90%, of course I went directly." (P10)*
	I know how to get screening/treatment for HCV. (7)	*"So, I went back to see my doctor and said okay, I need to test for hepatitis (P2)*
	I am not sure if HCV can be fully treated. (4)	*"But if, again, as far as I know, I might be wrong, but there is no complete something that says yes, you're going to take this needle one time, and you are done." (P2)* *"But I don't know, really how they cope, what they do. Can they get out of it? How long would it take? What types of cures are there? I don't know." (P4)* *"But full recovery, I have never heard of it. I know that there is no cure." (P14)*
	I don't know the process for HCV screening. (3)	*"Interviewer: So, if you want to be tested or if you had a symptom or if you were concerned, do you what the next steps will be? What would you do?* *Interviewee: To be honest, I don't know." (P6)*
Social/professional role and identity	Being an immigrant hasn't affected my access to healthcare system. (5)	*"I don't think hepatitis C is one of the factors that will decide as immigrants or as a refugee would be rejected or refused of getting." (P2)*

As an immigrant, sometimes I feel discriminated here. (5)	*"When people look at you, you're not from around here and they tend to deal with you differently than they do with other people." (P18)* *"So, I see that there are also some biases in the system. You shouldn't be asking a patient from where he comes from originally, when really the issue is that you need to cure him because he is a resident after all." (P4)*
It is not common for us (Egyptians) to visit doctors for check ups or in absence of major symptoms. (4)	*"The one thing I know about my culture is that when you feel in pain, just tough it up, be a man. Be this, be that. A lot of people say it's probably nothing and probably that's why a lot of us end up sick anyways. Ah, it's just some pain. I ate something bad and they just tough it up." (P1)*
Language hasn't been a barrier to care for me. (11)	*"I think I do not have a problem with speaking English, but it might not be as fluent as other people. But English is not really a problem." (P18)* *"Most of the Egyptian community who came to Canada, they have a good grasp on the English language, unless like somebody sponsored his grandfather, grandmother. So, this is where the gaps will be. And in this case, the kids will help them. I don't think language will be a big barrier." (P2)* *"For me, it hasn't been an issue because I'm talking English. I can do that, so it hasn't affected me." (P15)*
Language can be a barrier to care. (3)	*"Yes, the language could be a barrier. I have seen this with my husband who doesn't have the same proficiency in English, trying to explain his symptoms and what he has been through to the doctor. The doctor was getting stressed and nervous, and he didn't understand and there was lack of*

		communication and it stressed my husband and stressed the doctor." (P4)
Social influences	My family members are/were very encouraging/supportive with regards to screening/treatment for HCV. (10)	*"The family, of course they encouraged me they wanted me to finish [the treatment]." (P10)* *"My family has totally been a very great support. At least I have support from my family, so it doesn't really matter what other people think about it." (P18)*
	My family members supported me financially during screening/treatment. (3)	*"I paid for the drugs, the medications but not like everything. You know, I had support through my family." (P18)*
	My friend encouraged me to get screening/treatment. (6)	*"Yes, my friends. I spoke with them. and they listened to me, and they were interested in my health. So, they also advised me to go for a treatment." (P16)*
	Other people's reactions/opinions do not/did not affect me in seeking HCV care. (9)	*"I'm one of the people who are educated enough to make my own decision and sometimes maybe it doesn't align with the community, but at the end of the day it's my decision." (P3)*
	Healthcare providers encouraged me to do HCV screening/treatment/finish the treatment. (4)	*"I think the conversation, it was something like you're from Egypt right. Hepatitis C is very common over there, so we will do some tests. That's how it went." (P12)*
	My family doctor did not suggest I do a test for HCV. (4)	*"He [family doctor] never suggested doing the virus test." (P2)* *"I haven't been tested for it, but I do have an enlarged liver, and I know it, but I was never cared for since I arrived, even though I stayed with the family doctor for several years, nobody even told me you know there is something to do or what the consequences are if I have a liver issue." (P4)*

Environmental context and resources	Long wait times (to get an appointment, to be seen by a doctor) is a barrier to care. (9)	*"And then again, just to navigate through the slow process in the system. Again, it took me six months just to see my specialist for my fatty liver." (P2)* *"I know family doctors, generally the topic is very challenging for a lot of people here but it's very challenging to get an appointment if basically you're not dying. Like if you don't say it's urgent and again, for me it's like it's urgent it means you need the ER. But it's very hard to get an appointment if it's not urgent." (P3)*
	It is difficult to get a family doctor. (7)	*"But now it has been three years, I haven't had the chance to have a family doctor. I am still on a waiting list; an endless wait list and I cannot even do just general follow ups with blood tests and stuff like that." (P4)* *"I know people who have been here for ages, and they are still struggling to find a family doctor. Makes me think are my chances higher than those people who have been looking for a year, two, three years, just to get a spot. It discourages you from even attempting to...I'll just save up enough money in case you get sick and go to a private clinic. If that doesn't work, then go to an ER. That's how I think about it." (P1)*
	I can just talk about one symptom during my visit to my family doctor. (4)	*"When I go to clinic… for me just one question, one illness should be discussed, but I have so many. Because when I go to hospital or doctor, I really try treatment before myself. If I don't have any solution I go to the doctor. That's when I go to the doctor, I need him to hear me because I have some issues to come to you." (P5)*
	Transport can be a problem, but I will go anywhere if it's needed. (7)	*"I am very committed, to be honest, so the _ is far from us, but for me, in my nature, it doesn't make a difference for me." (P10)*

		"You know, sometimes the transportation might be the problem, but somehow you know if it is something that is important to you, you would always find yourself there." (P18)
	Paying for the medications, doctors' visits and tests can be a barrier to care. (9)	*"Like financially I was unstable, so I was wondering when I'd get enough money for mediation and stuff." (P15)* *"And even though I was covered by insurance, I said I don't need it. So he [doctor] said what do you mean I don't need it, I said I don't need it, because even with the co-pay, I don't want to pay it, he understood my financial situation, and he said let me see if we can get that as part of a clinical trial, which he did and was very nice of them." (P12)*
	It's good that I don't have to pay for HCV screening/treatment. (3)	*"I was very happy, really, I was very, very happy especially because I know about this because my son, one of my sons, he was, he is a pharmacist, and he was working in the blood company which was, was doing you know, so, so and it was so expensive at that time to, to get this." (P10)*
Memory and decision making	I will not seek HCV care in the absence of symptoms. (13)	*"I wouldn't just go to do the test out of the blue because again, with my insurance and I don't have a family doctor. There would have to be a reason where I have to do it under the insurance." (P6)*
	If I have been in contact with someone who had HCV. I would do HCV screening. (3)	*"The trigger [for HCV screening] would be to get close to someone who is infected." (P7)* *"Even if I don't have the symptoms, but somebody around me, or a friend, or meeting somebody in a public transport, or sick somebody at work, or meeting new people, if I observe or think that they have the symptoms, I will check myself. It will push me to really go to be tested." (P17)*

	I will seek HCV care only if I believe there is a possibility that I have HCV. (3)	*"I would not navigate the system 'til I know that there is a potential I have." (P2)* *"So, unless there was like significant reason to think that [I have HCV], maybe I'd bring it up. With my doctor, I have enough things to worry about." (P9)*
Beliefs about consequences	A negative HCV test can bring you peace of mind/relief. (5)	*"I had the test, and it was negative, and it was a big relief." (P14)* *"Peace of mind, knowing what it is, what it isn't because even if it comes back negative, are you going to cross that off your list? I honestly think that's the main thing because if you know what it is, that's also a big relief." (P9)*
	By doing HCV screening, I can get treated if I turn positive. (4)	*"The positive consequence is to get access to the treatment and get cured." (P7)*
	It doesn't hurt to do HCV screening. (3)	*"Because knowing what the disease is, at least will tell me if there is a cure, if there isn't a cure, how to deal with it, like how to maybe manage it if there isn't a cure. So, I don't see a negative thing in knowing." (P8)*
	There is/was no negative consequences associated with receiving HCV treatment. (4)	*"I think rather, rather than that you have to commit your of course time to go to, you know, to have your treatment, you know, other than for me, nothing rather than this yeah, yeah." (P10)*
	By taking HCV treatment, you can take your life back and live longer. (3)	*"Yes, I feel like I am this close to getting back my life. I feel like after all, I have gotten back on my feet. You know, even though that it is going to take another week, but then I'll have completed the treatment so there is hope." (P18)*
	Taking HCV treatment brought me peace of mind/relief. (4)	*"I was so worried that when I didn't go for it, I was worried that maybe something else may arise that may be more severe, and it might be more dangerous if I had not gone to*

		the hospital to get tested and know what was wrong with me. So, I was really worried until when I got tested and I started my medication, and I started getting better that I knew that I was safe." (P16)
	HCV treatment can cause side effects. (3)	*"I know that the medication or the process they go through is quite horrible sometimes, and if they have to have a liver transplant it's even worse." (P4)* *"From what I heard from one of my friends, there is some kind of a cure through injection for it but again, it did not work for him. So, the side effects were extremely severe for him that the doctor asked him to stop." (P2)*
	There is no stigma about HCV screening. (8)	*"But the community is usually—most of them or the people I know—very helpful, not very judgmental, which is great." (P6)* *"When it comes to your physical health, especially a lot of people probably know of someone who died because of hepatitis C, no one would judge you for that." (P1)*
	There is stigma about HCV. (6)	*"There will be stigmatization; I think that would actually happen. A lot of people would want to stay away from you in order not to get infected. So, I think people will treat me differently if they know about it." (P18)* *"But I don't think anybody with hepatitis C will go and say hey guys, I have hepatitis C…So of course, there's going to be some kind of a stigma and some kind of fear from most people around all of it." (P2)*
Reinforcement	My negative experience is waiting long hours/time to receive care. (7)	*"So, the negative experience, again, is the wait time, waiting for my family doctor. And then knowing inside of me that even with that, I need to go and do the blood work. And then after that, I have to go and see him again. And the day after that, I*

		need to go and be scheduled for a specialist and the specialist will not be available for six to eight months." (P8)
	I had very good experiences with my healthcare providers. (10)	*"Dr _ was very helpful. Whenever we visited it was so understanding, and so assuring. With Dr. _ we were in safe hands." (P13)* *"I was comfortable, Dr. _ is a very good doctor and people in the hospital are helpful, I took the treatment thank God and things were good." (P11)*
	Canada has a good medical system. (4)	*"I think the extensiveness when you get the care. So. when you get the care, I like how—this is actually a very big difference between health care and health care in Egypt." (P6)*
Emotion	I was happy to receive treatment. (5)	*"I was waiting and mindful and happy that I am going to this visit because I know that this will get the treatment chance closer." (P10)*
	If my test turns positive, I will be stressed about unknowns while I wait for care. (5)	*"If it turns out to be positive, I will be worried, and I would have to adjust my life and so on. And that might not be easy to live through." (P4)* *"And again, the unknown, what is going to happen. It is the anxiety of if the test is positive or I have something that I need to work on. What should I do now? So, the wait time, of course, will add stress to the individual and of course, getting back his life and back to his family also." (P2)*

Chapter 3: Immigrants from Punjab

[1]It is included as Appendix L in this thesis.

Preface

Overview: In this study, I used a qualitative descriptive design to understand perceptions and beliefs about Hepatitis C (HCV) and the barriers to HCV screening and treatment among immigrants from Punjab in Montreal. The Ottawa Health Science Network Research Ethics approved the study (20220418-01H). Informed consent was obtained from all study participants.

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Authors' contributions: All authors have contributed to the research and article preparation. SMH, JMG, CG, and JP conceived the current study, all authors approved the study protocol. SMH and AMP developed the interview guide. SMH, HA, JK, CG, and JS contributed to recruitment of participants. SMH and HA conducted the interviews. SMH and AMP conducted data analysis, with all the authors reviewing and commenting on the findings. All authors have been involved in development of the proposal, as well as drafting the manuscript and revising it. All authors have given final approval of the submitted article.

Journal submission: The manuscript for this study has been submitted to the Canadian Journal of Public Health.

[1]It is included as Appendix L in this thesis.

Title

Perceptions about Hepatitis C and barriers and enablers to screening and treatment among Punjabi immigrants to Canada: A theory-informed qualitative study

Authors

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Declarations

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Conflict of interest

CC has served as a speaker and advisor for Gilead and AbbVie and has received unrestricted program and research funding from both companies. Other authors declare no competing interests.

Ethics approval

The Ottawa Health Science Network Research Ethics approved the study (20220418-01H).

Consent to participate

Informed consent was obtained from all study participants.

Consent for publication

Not applicable.

Availability of data and material

Data that support the findings of this study are available upon reasonable request.

[1]It is included as Appendix L in this thesis.

Code availability

Not applicable.

Authors' contributions

All authors have contributed to the research and article preparation. SMH, JMG, CG, and JP conceived the current study, all authors approved the study protocol. SMH and AMP developed the interview guide. SMH, HA, JK, CG, and JS contributed to recruitment of participants. SMH and HA conducted the interviews. SMH and AMP conducted data analysis, with all the authors reviewing and commenting on the findings. All authors have been involved in development of the proposal, as well as drafting the manuscript and revising it. All authors have given final approval of the submitted article.

[1]It is included as Appendix L in this thesis.

Abstract

Background: Canada aims to eliminate hepatitis C virus (HCV) by 2030, yet screening and treatment uptake remains low. Immigrants from high-prevalence countries account for approximately 35% of cases, with delayed diagnosis—averaging ten years—leading to poor health outcomes and increased healthcare system costs. Given the high prevalence of HCV in the Punjab region and the large Punjabi immigrant population in Canada, this study explored their beliefs and experiences related to HCV care.

Methods: A Project Advisory Group was engaged to inform all phases of the research. We used a qualitative- descriptive design informed by the Common-Sense Self-Regulation Model and the Theoretical Domains Framework. Semi-structured interviews were conducted with Punjabi immigrants (with and without HCV) in Montreal. Data collection continued until thematic saturation was reached. Transcripts were independently coded by two researchers, and key themes were identified.

Results: Sixteen participants (eight men, eight women) were interviewed, including eight who had been screened for HCV; four tested positive, and three received treatment. Most participants had limited knowledge of HCV symptoms, transmission, and treatment. The absence of symptoms delayed seeking care. Stigma and fear contributed to silence around the disease. Language barriers and challenges accessing primary care were additional obstacles. Family support and trust in healthcare providers facilitated engagement with care.

Conclusion: Improving HCV care among immigrants is essential for meeting Canada's elimination goals. We took a systematic, theory-informed approach to understand key barriers to uptake of

[1]It is included as Appendix L in this thesis.

HCV screening and treatment which will inform a theory-based intervention to optimize HCV care among immigrants.

Keywords: Hepatitis C, barriers, qualitative research, immigrants, Theoretical Domains Framework, Common-Sense Self-Regulation Model

[1]It is included as Appendix L in this thesis.

Background

Hepatitis C Virus (HCV) infection continues to pose a significant public health challenge both globally and within Canada (Global Hepatitis Report 2024, 2024). In 2021, a total of 7,535 HCV cases, including acute, chronic, and unspecified, were reported in Canada (Public Health Agency of Canada, 2021). Immigrants from HCV-endemic regions account for approximately 35% of reported HCV cases in Canada (The Canadian Network on Hepatitis C, 2019). Globally, transmission primarily occurs through exposure to infected blood, most commonly through shared drug injection equipment, unscreened blood transfusions, and inadequately sterilized medical tools. Additional routes include perinatal transmission and certain high-risk sexual practices (Lanini et al., 2016).

The advent of direct-acting antivirals (DAAs) has transformed the management of HCV, with cure rates exceeding 95% following 8–12 weeks of treatment (Ioannou et al., 2018). However, despite these advancements, uptake of screening and treatment remains inconsistent across many populations (Chhatwal et al., 2019). In response, Canada has adopted the World Health Organization's Global Health Sector Strategy to eliminate viral hepatitis as a public health threat by 2030, identifying immigrants from HCV-endemic regions as one of the priority populations (The Canadian Network on Hepatitis C, 2019; World Health Organization, 2016). Immigrants are not routinely screened for HCV either before or after migration. Many do not present with traditional risk factors such as injection drug use, and therefore, maybe missed within the healthcare system. And since HCV infection is often asymptomatic, many remain undiagnosed for on average ten years, increasing the likelihood of advanced liver disease and contributing to elevated healthcare system costs (Greenaway et al., 2017; Kamstra et al., 2016).

[1]It is included as Appendix L in this thesis.

Barriers to HCV care among immigrants have been explored in some studies and include low awareness of HCV transmission and treatment, language difficulties, stigma, and culturally specific beliefs about illness (Eborall et al., 2020; Moonen et al., 2023). However, immigrants in these studies are often treated as a single group, despite considerable heterogeneity in their linguistic, socio-cultural, and healthcare system experiences. As a result, findings often fail to address the unique barriers faced by specific communities. Understanding socio cultural factors influencing beliefs and behaviours of different immigrant communities with regards to HCV may help target culturally appropriate interventions.

Objective

Our goal was to explore perceptions and beliefs of immigrants from Punjab regarding HCV and its management, and to identify the barriers and enablers influencing their engagement in screening and treatment.

Methods

We performed a qualitative descriptive study by using semi-structured interviews informed by the Common-Sense Self-Regulation Model (CS-SRM) (Leventhal et al., 1992) and the Theoretical Domains Framework (TDF) (Cane et al., 2012; Michie et al., 2005). The Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist was employed to guide the reporting of study methods and finding.

[1]It is included as Appendix L in this thesis.

Theoretical Approaches

Theoretical frameworks enable systematic identification of factors that influence outcomes, clarify mechanisms of change, and support the development, evaluation, and adaptation of interventions across different settings (Skivington et al., 2021). In this study, we integrated two distinct but complementary frameworks—CS-SRM and the TDF—to inform data collection and analysis. The CS-SRM was used to understand how individuals conceptualize and emotionally respond to hepatitis C, while the TDF allowed us to identify specific cognitive, social, and environmental factors affecting health-related behaviors.

Common-Sense Self-Regulation Model (CS-SRM)

The Common-Sense Self-Regulation Model (CS-SRM) describes how individuals construct cognitive and emotional representations of illness when faced with a health threat, which in turn guide their behaviours toward that illness (coping strategies) (Table 1). The cognitive illness representations include *identity, cause, timeline, consequences, curability/controllability, and coherence*. Emotional representations, which emerge alongside cognitive ones, capture the affective reactions to the illness experience (Leventhal et al., 1992). The model is dynamic in nature, as individuals revise their illness representations based on outcomes of their coping strategies and new information obtained from external sources such as healthcare professionals, media, and social networks. In this study, the CS-SRM was applied to investigate how Punjabi immigrants conceptualize hepatitis C, the strategies they use to manage it, and the informational influences that shape these understandings.

[1]It is included as Appendix L in this thesis.

Theoretical Domains Framework (TDF)

The Theoretical Domains Framework (TDF) integrates constructs from 33 behavior change theories to provide a comprehensive structure for understanding the factors that influence behavior (Cane et al., 2012; Michie et al., 2005). It comprises 14 domains can act as either facilitators or barriers to behavioral change — *Knowledge; Skills, Social/professional role and identity; Beliefs about capabilities; Optimism; Beliefs about consequence; Reinforcement; Intentions; Goals; Memory, attention and decision processes; Environmental context and resources; Social influence; Emotions; and Behavioral regulation*. In this study, the TDF was employed to systematically examine the determinants of hepatitis C screening and treatment behaviors.

Project Advisory Group

We established a Project Advisory Group to ensure community engagement and cultural relevance throughout the study. The group included two family physicians practicing in the Parc-Extension neighborhood (JK, JS), one lay community member (HA) (all of Indian or Pakistani background) and one specialist (CG) with expertise in HCV and immigrants' health. Their involvement spanned the entire research process. Specifically, they provided feedback on the interview guide to ensure cultural and contextual appropriateness, supported recruitment by promoting the study within the community, contributed to interpreting the findings, and ensured that the results reflected the community's perspectives and priorities.

[1]It is included as Appendix L in this thesis.

Context and setting

Canada has a large immigrant population, including many from HCV endemic countries. Immigrants include those who are newly arrived or have been living in Canada for many years. There are also permanent residents (those with permission to remain permanently in Canada) or those who are temporarily living in Canada such as students, those on work visa etc. There are also asylum seekers who have made a claim that they meet the criteria to be a refugee but their claim has not yet been adjudicated upon and they are considered temporary residents (Statistics Canada, 2021).

Current study was conducted in Montreal, Canada's second-largest city. Canada has one of the highest immigration rates globally, and as of 2024, immigrants represented over eight million individuals, approximately 23% of the national population (Statistics Canada, 2021). Montreal reflects this broader demographic trend, with immigrants comprising 34% of its population. Among this group, individuals originating from India and Pakistan account for approximately 3.4% (Statistics Canada, 2021). Our study focused on immigrants from the Punjab region of both India and Pakistan, as well as the state of Haryana in India. Pakistan, which bears the second-highest global burden of HCV, reports particularly high infection rates in Punjab province (approximately 7%) (Al Kanaani et al., 2018). Similarly, India's Punjab and Haryana states report prevalence rates as high as 5.6% (Sood et al., 2012). Together, these regions form what has been described as the "hepatitis C belt," reflecting common sociocultural norms, healthcare practices, and risk exposures that contribute to the spread of infection (Dhiman et al., 2016). Unsterile syringes, frequent and unnecessary therapeutic injection use, unscreened blood transfusions, and traditional practices such as barber shaving and body piercing are common transmission routes

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(Mahajan et al., 2018). After consultation with our Project Advisory Group, we selected participants from these regions based on both disease burden and shared ethnocultural characteristics. For clarity, we refer to participants from these areas collectively as Punjabi immigrants.

Participants and recruitment

Adult (18+) immigrants (regardless of their citizenship status) from Punjab (India or Pakistan), or Haryana (India) living in the Montreal area were eligible to participate in this study. We initially focused on recruitment from two primary care clinics in Parc-Extension neighborhood. Recruitment flyers/posters with study descriptions and contact information of the research team were prepared in three languages (Urdu, Punjabi and English) and distributed at these clinics. Also, doctors from the Project Advisory Group assisted in identifying potentially eligible individuals, whom they provided with the study information. In addition, snowball sampling was employed, whereby enrolled participants were encouraged to share flyers or posters with other members of their community. Interested individuals contacted the research team by phone or email to obtain further study details, provide informed consent, and schedule interviews. Recruitment continued until thematic saturation was reached, meaning no new perspectives and concepts emerged from the interviews (Francis et al., 2010).

Data collection

Semi-structured interviews were conducted in person in a private room within one of the participating clinics. The interview guide (Online Resource 1)[1] was developed based on the CS-

[1]It is included as Appendix L in this thesis.

SRM and the TDF and piloted with two individuals to ensure clarity and cultural relevance. It included demographic questions and open-ended items exploring participants' perceptions of hepatitis C and its management (CS-SRM), as well as perceived barriers and enablers to HCV screening and treatment (TDF). The TDF domain "Skills" was excluded from the guide, as it was not relevant to the research objectives. Interviews were conducted in either Punjabi or English, depending on participant preference, by SMH and HA. SMH (female) is a medically trained, foreign-born Canadian PhD candidate with expertise in both the CS-SRM and TDF. HA (female) is a native Punjabi/Urdu-speaking immigrant with training in the theoretical frameworks used in this study. Neither interviewer had any prior relationship with the participants. All interviews were audio-recorded with participant consent, and each participant received a CAD $50 gift card in appreciation of their time and contributions.

Data analysis

Interview recordings were transcribed verbatim and anonymized. When required, professional translators provided English translations, and all transcripts were reviewed by SMH to ensure accuracy and consistency. Two researchers (SMH and AMP) independently analyzed the transcripts using NVivo. AMP (female) is an implementation scientist, PhD-trained in health psychology with expertise in behavioural theories. After coding the initial transcript, they met to compare interpretations and collaboratively developed a standardized codebook. Discrepancies in coding were resolved through discussion and consensus.

For the CS-SRM portion of the data, transcripts were coded according to the predefined constructs. For the TDF-related content, data were first organized into relevant TDF domains,

after which belief statements were generated to capture core ideas about the barriers and enablers influencing participants' decisions regarding HCV screening and treatment. Domains were deemed relevant if they featured beliefs that were frequently mentioned, showed variation across participants, or were strongly expressed in relation to the target behavior (Atkins et al., 2017). Domains containing only enablers were considered less central for informing intervention development, as such efforts typically prioritize addressing barriers rather than reinforcing existing enablers. These considerations were taken together to determine the overall relevance of each domain.

Results

Sample characteristics

Between May 2024 and November 2024, we interviewed 16 individuals (eight females, eight males) whose age ranged from 24 to 67 (median: 44) years old and had been living in Canada for one month to seven years (median: 5 years). All the participants were from India (11 from Punjab, 5 from Haryana). At the time of interview, most participants were asylum seekers (ten) with a few permanent residents (five) and one who was on temporary visa (work permit). The highest level of education achieved was high school or under for 11 individuals, undergraduate degree for three individuals and graduate degree for two individuals. All interviews were conducted in Punjabi and in-person and lasted between 9 and 37 minutes (mean: 21). Half of participants in our sample had access to family doctors. Eight reported having been screened for HCV, four in India, two in Canada, and two in both countries. Four had not been screened, while another four were unsure of their screening status. Among those screened, four were diagnosed with hepatitis

C: one received treatment in India, one in both Canada and India, and one in Canada only. One individual reported self-recovery in India.

Perceptions and beliefs about HCV infection (Common Sense-Self Regulation Model) (Table 1)

Cognitive illness representations regarding HCV infection

Identity: Hepatitis C was commonly referred to as "Kaala Peeliya" or "black jaundice" by participants. Approximately half of those without a history of HCV were unaware of its possible symptoms, whereas most individuals with a history of the infection reported experiencing symptoms prior to diagnosis. The most commonly reported symptoms included weakness, nausea and vomiting, loss of appetite, fever, discoloration of the skin (black or yellow), and yellowing of the eyes. Additionally, some identified skin marks and low blood levels as symptoms of HCV.

Timeline: Those with a history of HCV had symptoms for about two months to two years before seeking medical help, with symptoms fluctuating at first and becoming more severe and permanent over time.

Cause: The majority of participants believed that HCV is not contagious and attributed its cause to factors such as diet, pollution, heat, or fate. Only a few were aware of its contagious nature and identified blood transfusions, contaminated sharp objects, syringes, and sexual contact as potential modes of transmission. Additionally, some believed that HCV could result from low blood levels, drinking alcohol, a history of Dengue fever, or medications taken for Dengue treatment.

Consequences: Some participants stated that untreated HCV infection could progress and result in premature death. Several participants described a sense of fear within the community and explained that people do not even want to talk about it. This subsequently contributes to stigma and social distancing toward individuals with a history of the disease. However, others believed there is no stigma associated with HCV, primarily because it is not perceived as a contagious illness and individuals with HCV are not treated differently. A few individuals also shared their concerns about the impact of the disease on their families.

Curability/controllability: Among participants without a history of HCV, most believed that there is treatment for HCV, while a few were either uncertain about its treatability or believed no treatment exists. Some believed that the illness could improve through dietary changes, prayer, or the use of traditional medicine.

Coherence: Generally, there was limited knowledge about the disease, symptoms, cause and treatment options among most participants. Only a few were aware of its association with the liver. While the majority perceived HCV as a serious disease, some considered it to be relatively minor. Participants also believed there are different types of jaundice, with varying degrees of severity. Additionally, some confusion was noted between testing for hepatitis C and Dengue fever.

Emotional illness representations regarding HCV infection

Participants expressed that a positive HCV test result will lead to fear and worries, including concerns about the cause, potential outcomes, and whether recovery is possible. They also discussed the fear surrounding HCV within their communities.

Sources of information

Healthcare providers were the main source of information for participants, with one individual noting they also occasionally consulted providers in their country of origin. Additionally, half of the participants reported using the internet to obtain information. One participant learned about hepatitis C during a blood donation.

Coping strategies

In general, participants reported visiting healthcare providers and seeking treatment as their primary strategy for managing illness. However, they indicated they would not seek medical care in the absence of significant symptoms. Additional coping strategies mentioned by a few included dietary modifications, cessation of alcohol or smoking, and the use of exorcism practices.

Barriers and enablers to HCV screening and treatment (Theoretical Domains Framework)

Our analysis identified seven potentially relevant domains: *Knowledge; Social/professional role and identity; Social influences; Environmental context and resources; Memory, attention, and decision processes; Goals; and Behavioral regulation* (Table 2). The main findings are presented below, organized by the most relevant TDF domains, with related domains noted in italics. Subsequently, we briefly outline the domains that appeared to be less relevant.

Some participants were aware that HCV can be detected through a blood test but were uncertain about how to access screening in Canada. A few individuals were confused and unsure whether

they had previously been screened. While most knew that treatment for HCV exists (often referring to injections), they were unclear about its availability in Canada and the specifics of the treatment process (TDF domain: *Knowledge*).

Participants held differing views on whether being an immigrant affected their access to healthcare services. While some believed it had no impact, others felt that if they had been born in Canada, accessing care would have been easier (TDF domain: *Social/professional role and identity)*

Additionally, more than half of the participants identified language as a barrier to accessing care (TDF domain: *Social/professional role and identity)*. They commonly addressed this challenge by bringing an English-speaking family member or community member to accompany them to appointments (TDF domain: *Behavioral regulation).* Some noted that this strategy was not always effective, as both they and their support persons often had limited English proficiency in a city where the official language is French.

Family members also played a key role in influencing participants' decisions to seek medical care. More than half reported consulting their partners or children before doing so. A few with a history of HCV shared that their families were supportive and encouraging about pursuing HCV screening and treatment (TDF domain: *Social influences*).

Healthcare providers were also a significant influence on participants' health-seeking behaviors. More than half of the participants emphasized that doctors' opinions were very important to them, and they would follow their advice. Some individuals also explained that timely doctors' visits and following their advice are key to improving access to care, screening, and treatment (TDF domain: *Behavioral regulation*). A few shared specific examples of how their doctors had

encouraged them to pursue screening or treatment (TDF domain: *Social influences*). Despite this trust and influence, some reported gaps in communication, explaining that their doctors did not clearly convey the results of their screening tests or outline the next steps in care (TDF domain: *Social influences*).

Aside from family members and healthcare providers, participants generally reported that the opinions of others did not influence their health-seeking behaviors (TDF domain: *Social influences*). They emphasized that health is their top priority and that they would seek medical attention if they felt unwell (TDF domain: *Goals*). However, they also consistently noted that they would only do so if they experienced symptoms or if their condition worsened to the point where it could no longer be managed on their own (TDF domain*: Memory, attention, and decision processes*). Additionally, a few shared that witnessing others affected by HCV motivated them to pursue screening or treatment themselves (TDF domain: *Social influences*).

Furthermore, a few participants noted that, in practice, other responsibilities (such as work) often take precedence, making HCV screening a lower priority (TDF domain*: Goals*).

Some participants identified additional barriers to accessing care, including long wait times for appointments and limited availability of healthcare providers or healthcare centers. A few also mentioned financial challenges, such as the cost of medications, tests, and doctor visits, as well as time constraints (e.g., taking time off from work) that made it difficult to attend medical appointments (TDF domain: *Environmental context and resources*).

Domains less likely to be relevant

The domains of *Beliefs about Capabilities, Beliefs about Consequences, Emotion, Optimism, Intention, and Reinforcement* were identified as being less relevant to changing the target behaviour. In general, almost all participants reported feeling comfortable visiting doctors for HCV screening or treatment (TDF domain: *Beliefs about capabilities*). However, this comfort was often dependent on the presence of English-speaking family or community members who could accompany them, suggesting that their confidence in navigating the healthcare system was closely tied to having language support. There was broad agreement that screening and treatment for HCV are beneficial—not only for detecting the disease but also for providing peace of mind and enabling timely treatment if needed (TDF domains: *Beliefs about consequences*, *Emotion*). All participants expressed a strong belief that every illness has a treatment and that visiting a doctor would help them access appropriate care (TDF domain: *Optimism, Beliefs about consequences*). Participants also conveyed high intentions to seek HCV screening and treatment (TDF domain: *Intention*), although, as mentioned earlier, this intention was typically activated only when they experienced noticeable symptoms. Despite these limitations, most described their experiences with healthcare providers positively, which may further reinforce their willingness to seek care (TDF domain: *Reinforcement*).

Discussion

Main findings and comparison with other studies

This theory-informed qualitative study explored Punjabi immigrants' perceptions and beliefs about HCV and its management, as well as the factors that influence their healthcare-seeking

decisions. Our analysis identified five overarching barriers to HCV screening and treatment: limited knowledge about the disease, its transmission, and available treatments; absence of major symptoms; fear and stigma; language barriers; and challenges accessing healthcare providers.

Overall, most participants demonstrated limited knowledge about the symptoms, causes, and modes of transmission of HCV. This finding aligns with previous research on various immigrant communities, which has generally reported low and variable levels of HCV awareness depending on country of origin and educational background (Eborall et al., 2020; Moonen et al., 2023). Low levels of HCV knowledge have also been documented among the general populations of Pakistan and India, as well as among individuals diagnosed with HCV (Prasad et al., 2024; Rai et al., 2024). Across these contexts, common gaps included poor recognition of symptoms and widespread myths and misconceptions about the disease and its transmission. Furthermore, while most were aware that HCV can be diagnosed through blood screening, it was concerning that some were unfamiliar with how to access screening services in Canada. Although many knew that treatment for HCV exists, there was uncertainty about its availability in Canada, and several believed that treatment still involved injections, reflecting outdated information.

Building on these knowledge gaps, the absence of major symptoms also significantly influenced participants' health-seeking behaviors. Although nearly all participants emphasized that their health was a priority and that they would seek medical help if they were sick, most indicated they would do so only in the presence of major symptoms. Consistent with this, most with HCV in our study had experienced symptoms before receiving a diagnosis. Not only were participants generally unaware that HCV can be asymptomatic, but about half were also unfamiliar with the

possible symptoms of the disease. Similar findings have been reported in previous studies, where immigrants often lacked awareness that HCV can remain asymptomatic and were unlikely to pursue screening in the absence of noticeable symptoms (Mohamed et al., 2020; Sweeney et al., 2015). This is an important gap, as delayed diagnosis due to lack of symptoms can lead to worse health outcomes. Thus, these findings underscore the need for public health efforts to raise awareness about the asymptomatic nature of HCV and the importance of early screening, even in the absence of symptoms.

In addition to knowledge and symptom-related barriers, perceptions of stigma also shaped participants' experiences. They expressed varying opinions about the stigma surrounding HCV within their community. Many discussed a pervasive fear associated with the disease, which often led to silence and reluctance to talk openly about it. This fear was largely driven by uncertainty about the potential consequences of a diagnosis and concerns about the future, including the risk of contamination if someone else was infected. Such fears contributed to the social isolation of individuals with HCV. Conversely, some participants perceived no stigma associated with the disease, viewing it as an internal condition that is not contagious and, therefore, not a cause for concern. These differing perspectives on stigma align with findings from other studies, which have demonstrated significant variability in perceptions of stigma both within and between immigrant communities (Moonen et al., 2023; Sweeney et al., 2015).

Language barriers further compounded these challenges by impeding participants' access to healthcare services. Many reported relying on English-speaking family members or community contacts to accompany them to medical appointments and noted the need to schedule visits around their family members' availability. The fact that the official language in Montreal is French

added another layer of complexity, as participants—already navigating care with limited English proficiency—may have encountered healthcare providers or staff who primarily spoke French. Previous studies have similarly identified language as a key barrier to accessing HCV care among immigrant populations (Eborall et al., 2020; Mohamed et al., 2020). For example, Sweeney et al. found that Pakistani patients preferred general practitioners who spoke their native language (Sweeney et al., 2015). However, while family members can provide comfort and familiarity, the use of untrained interpreters introduces risks, including linguistic inaccuracies due to unfamiliarity with medical terminology and the emotional burden of interpreting. Ethical concerns also arise, such as breaches of confidentiality, difficulty discussing sensitive topics, and altered family dynamics that may undermine patient autonomy. Collectively, these challenges illustrate how language barriers can compromise both access to care and the quality of communication, with important implications for patient outcomes (Gray et al., 2011; Seidelman & Bachner, 2010)

Beyond language, participants also described systemic barriers to accessing healthcare providers. Difficulty finding a family physician and experiencing long wait times for appointments were commonly reported. Although similar barriers have been noted in other studies (Moonen et al., 2023; Taha et al., 2023), the shortage of healthcare providers and prolonged wait times identified by our participants reflect broader systemic issues within the Canadian healthcare system that affect both immigrant and non-immigrant populations alike (Flood et al., 2023). Moreover, participants expressed divided opinions regarding the role of immigration status in their access to care: while some believed that being an immigrant had no impact; others felt that they might have faced fewer challenges had they not been immigrants.

Furthermore, family members and healthcare providers emerged as critical influences on participants' health-seeking behaviors. Family support and trust in physicians often facilitated engagement with HCV screening and treatment. However, previous research suggests that when family and friends lack understanding of HCV, they may discourage care-seeking (Sweeney et al., 2015). In addition, physician recommendation has been consistently shown to strongly predict screening uptake among immigrants (Taylor et al., 2012). In light of participants' reliance on healthcare providers for information and their faith and trust on them, it is essential that providers use clinical encounters as opportunities to clearly explain HCV testing and results. Some participants reported confusion about whether they had been screened or what their results meant, emphasizing the need for clearer, more patient-centered communication during healthcare system interactions.

Finally, the use of two theoretical frameworks enriched our analysis by allowing us to explore participants' experiences from distinct yet complementary angles. Through the CS-SRM, we captured how participants conceptualized HCV and managed their emotional and cognitive responses to the illness. In parallel, the TDF helped identify specific factors that influenced their decisions to seek screening and treatment. While some areas of convergence between the frameworks emerged, the integration of both models ultimately yielded a more layered and comprehensive understanding of the barriers and enablers to care.

Strengths and limitations

Applying theoretical frameworks provided a structured approach to data interpretation, ensuring that the analysis extended beyond personal insights. This not only strengthened the rigor and

relevance of our findings but also enabled meaningful comparisons with other studies on HCV conducted among immigrant populations and other priority groups. Furthermore, the involvement of a Project Advisory Group, comprised of individuals familiar with the community's ethnocultural and linguistic characteristics, and trusted by its members, facilitated participant engagement and enhanced the authenticity of the study by ensuring it accurately reflected community perspectives.

This study also has some limitations. Although our intention was to recruit Punjabi immigrants from both India and Pakistan, all participants were of Indian origin, as we were unable to recruit individuals from Pakistan. While a few Pakistani women initially expressed interest in participating, they later declined after consulting with their partners. Additionally, recruitment was primarily conducted through primary healthcare centres in Parc-Extension, and relied on individuals who expressed interest. As a result, the perspectives of those who do not regularly access these clinics or were unwilling to participate may not be represented. Moreover, since different immigrant communities have distinct sociocultural norms and beliefs, our findings may not fully apply to all immigrant groups. Further exploration and cross-comparison with other communities' perspectives can identify common and unique barriers and perceptions. All interviews were conducted in Punjabi by a trained, Punjabi-speaking interviewer and subsequently translated into English for coding and analysis. Although the interview guide was piloted and an expert in the theoretical frameworks was present during data collection, this individual did not speak or understand Punjabi. As a result, real-time validation of participants' responses was not possible, and communication between interviewers was limited to periodic check-ins. Consequently, some concepts or nuances may have been lost in translation.

Furthermore, it is possible that some participants provided socially desirable responses in an effort to please the interviewer, which may have influenced the authenticity of the data collected. In addition, while the frameworks guiding our study address elements of social and structural influences, they offer only a partial lens through which to view the broader, systemic forces and contextual dynamics that shape healthcare system access and behavioral responses.

Conclusion

Efforts to eliminate hepatitis C in Canada must prioritize equitable access to care for immigrant populations from endemic regions. Through a systematic, theory-informed approach, this study examined the lived experiences of Punjabi immigrants and identified several key barriers to HCV screening and treatment. These included limited awareness and understanding of HCV and its transmission, the asymptomatic nature of the infection, fear and stigma, language barriers, difficulties accessing healthcare providers, and long wait times. The findings provide a foundation for developing a targeted, theory-based intervention to improve HCV care engagement in immigrant communities.

Contributions to knowledge

What does this study add to existing knowledge?

- This study identified key barriers to HCV screening and treatment among Punjabi immigrants in Canada.

- Participants demonstrated limited knowledge about HCV, including its causes, transmission, and available treatment options.
- Other barriers to HCV care included the asymptomatic nature of the infection, fear and stigma within the community, language difficulties, and limited access to healthcare providers.
- Many Punjabi immigrants rely on family members for support during medical appointments and in making healthcare decisions.
- Healthcare providers are a major source of information, yet some participants reported confusion about whether they had been screened for HCV or understood their test results.

What are the key implications for public health interventions, practice, or policy?

- By applying theoretical frameworks, we identified specific barriers HCV screening and treatment that can be mapped to targeted intervention components.
- Education on HCV's asymptomatic nature and transmission routes is essential; trusted community platforms can support accurate messaging and reduce stigma.
- Given the value placed on medical advice, healthcare providers should be equipped with trainings to discuss HCV and recommend screening to patients from endemic regions.
- As language issues are a major barrier to care, it is essential to incorporate trained interpreters within healthcare settings who are linguistically and culturally informed, ensuring effective and respectful communication with immigrant patients.

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Table 1-Common-Sense Self-Regulation Model and sample quotes

Constructs		Definitions	Sample quotes
Cognitive illness representations	Identity	The symptoms and label given to the illness.	*"Like sometimes, its color changes a bit, and sometimes due to less blood, a person becomes yellow. In this, the skin turns yellow." (P5)* *"Blood levels drop, you don't feel hungry, there's restlessness, pain in the legs, and you feel a lot of weakness." (P14)* *"Within a day or two, you realize that you've lost your appetite, you start feeling dizzy, and the fever becomes intense." (P15)*
	Cause	Beliefs about the causes of the illness such as genetics, infection, diet, environmental pollution, or risky behaviors.	*"This is not a contagious disease. Like they say if someone has a skin problem, by sitting with them, or touching them, or doing something, it's not like that. This is an internal problem for us." (P5)* *"But I think that it happened to them since it was predestined in their fate, so it is not essential that it will happen to me." (P1)* *"There is a lot of pollution in Punjab. There, in food and drinks, a lot of fake stuff is also found, it's not proper. Food and drink are not good in India. That causes it." (P8)* *"This is a contagious... a contagious disease, I think, from one person to another. Otherwise, I think if someone uses the same injection or something like a syringe, it can also spread." (P9)* *"So, a person who drinks alcohol heavily also gets black jaundice. When someone has an illness at an older age, like dengue, they also get black jaundice." (P8)*

Timeline	The expected duration and time course of the illness or symptoms.	*"Sometimes I feel that I'm fine. Sometimes I feel a lot of weakness." (P14)* *"When I went, it had taken at least a year and a half, those symptoms continued regularly for a year and a half." (P16)*
Consequences	Beliefs regarding the impact of the illness on everyday life such as physical and role functioning, work capacity, and personal relationships.	*"People do that, they say that this person has hepatitis C, that we won't go close to him, the community does this a lot in India." (P3)* *"They [people] will consider it as a kind of contagious disease, right? Then people will keep their distance from the person [with HCV]." (P9)* *"Interviewer: Do you think people behave differently if somebody has this problem?* *Interviewee: No not really because this is not an infectious disease." (P2)* *"Like, if something happens to her [my wife with HCV], what will happen to me? Who will take care of the kids?" (P11)*
Curability/ controllability	Beliefs about whether the illness can be effectively cured or controlled by personal actions such as seeking help or taking medication.	*"I have heard, I know that it is a disease that has no cure." (P1)* *"I think... there's an injection. I heard that it has to be administered every time." (P4)* *"Treatment is just that there is no proper medicine for it till today, no one has it." (P6)* *"I don't know if there is any treatment for it or not. The doctors would know, madam." (P3)*

			"It gets cured if you find a doctor, and if treatment is done on time, it can be cured." (P14)
	Coherence	Perceived clarity in understanding the illness (whether the illness 'makes sense').	*"I don't know anything [about Hepatitis C]. I've never seen anyone with it. Nothing like that in the family." (P12)* *"I don't know anything about that [Hepatitis C], the doctor will tell me." (P2)* *"I think it [HCV]'s not a serious thing, in my opinion." (P10)* *"Because there are two types, when we don't take care at all, it increases a lot, then they call it hepatitis C." (P5)* *"People generally know in Punjab, like if someone gets dengue, then the doctor checks if there is any other disease...So, then it is known whether it is black jaundice [HCV] or not." (P8)*
Emotional illness representations		Reflections on the emotional responses to the illness.	*"There will be anxiety... not knowing whether I will get better or not. A hundred questions will come to mind." (P9)* *"One feels very scared when the report comes, when the doctor says you have black jaundice, then there's fear and anxiety." (P8)* *"[If I test positive for HCV] Inside, a thought does come to mind, like what is this, what kind of thing is this, is it serious, what will happen." (P11)* *"They don't even mention the name because they think it's a very bad disease, like cancer…So, they say, "Forget it, don't even mention its name."…Yes, there's fear, fear that this is a very dangerous disease." (P12)*
Coping strategies		Approaches used to deal with an illness.	*"If a disease enters your body, don't panic, go to your doctor. Even if he says that it is incurable, take it positively, think it over, go for*

		walks, breathe more oxygen for your lungs, do exercise. Don't think negatively. Howsoever long you are predestined to live, you will live, happily or unhappily." (P1) *"I would go to the doctor and ask them what this thing is and how it can be treated." (P10)* *"If I have a fever, if my body is warm, has heat, then only I will go to the doctor for something that I don't understand." (P6)* *"Because these people, there are many in India, they first go for superstitions saying this happened... People believe in these things, even now they believe in and practice these things over there" (P5)* *"When the illness happens, there is fear, of course. So, some people, I mean, start doing exorcisms and such." (P7)*
Sources of information	Lay information stored in memory, insights from perceived significant others or authoritative sources, somatic or symptomatic information based on previous experiences with the illness.	*"I do everything after asking the doctor." (P15)* *"I go to the doctor. We get such information from the doctor and not from friends." (P2)* *"For this I will take advice from my family doctor. They will give me instructions on where to get proper treatment for this." (P6)*

Table 2-Theoretical Domains Framework themes, relevant domains, belief statements and sample quotes

Relevant domains	Beliefs statements (Frequency)	Sample quotes
Knowledge	There is treatment for HCV. (10)	*"There is a big treatment for it, there is a guaranteed treatment." (P8)* *"There was a person in our village who was suffering from black jaundice and even after getting the treatment he died very early." (P2)* *"There's an injection. I heard that it has to be administered every time." (P4)*
	HCV can be detected by blood tests. (6)	*"Without the tests, this disease cannot be detected." (P7)*
	I don't know the process for HCV screening. (6)	*"Interviewer: if you need to test it somewhere, or get care for it, what can you do?* *Interviewee: I don't really know much about it right now." (P15)*
	I don't know if there is treatment available in Canada. (6)	*"I don't know if there is any treatment for it or not." (P3)*
	I don't know if I have been tested for HCV. (3)	*"Interviewer: Have you ever been tested for hepatitis C?* *Interviewee: I don't even know. I had asked you earlier, what is this?" (P12)*
Social/professional role and identity	Being an immigrant hasn't affected my access to healthcare system. (8)	*"Look, the doctor treats everyone the same, whether we are from here or from there, a doctor is a doctor. All our care is done by the doctor here. They tell us to do tests on time, get*

		blood checks, everything the doctor tells us to do on time. It's our fault if we don't get it done." (P5)
	If I was not an immigrant, access to healthcare would have been easier for me. (5)	*"Going to healthcare would have been a bit easier. That's what I can say, we would have had a health card, a medical card. We would have had everything; everything would have been easy for us." (P12)*
	Language can be a barrier to care. (9)	*"Language is definitely a factor, as I mentioned before. French is more prevalent here, and that's a big issue. Now, my English isn't proper, and the other person is speaking in French, how will we communicate?" (P11)* *"You see, sometimes you find a translator, sometimes you don't, and then it becomes a big issue about how to explain your problem." (P10)*
	Language is not a big problem. (5)	*No, no, the language isn't a problem, there are many Punjabi… uh, Indian people there. (P6)* *No, nothing like that. I feel that if there is any problem, there are translators available everywhere. (P1)*
Social influences	Other people's reactions/opinions do not/did not affect me in seeking HCV care.(16)	*what about the people? I have to get my treatment done. (P2)* *If someone gives advice, if it seems right, I'll take it; if not, then I'll listen from one ear and let it out the other. That's how it is with advice. (P11)* *Whatever people's thoughts or perspectives are regarding hepatitis C, no matter what society says... it doesn't matter. (P14)*
	My family's opinion is very important to me. (8)	*My husband also said to get it checked, and he also went with me to get it checked. (P7)*

		"Family opinions matter a lot, especially my husband's." (P12) *"A family member, my husband, said that I should go [for HCV screening] now." (P14)*
	My family members and friends are/were very encouraging/supportive with regards to screening/treatment for HCV. (3)	*Close friends, yes. All the relatives, whoever they are, say to show it to the doctor, whatever the problem is. (P14)*
	Doctors' opinions are very important to me and I follow their advice. (8)	*"The doctor is like God. If you see a doctor, half of the illness gets better just by seeing them." (P6)* *"I would just follow what the doctor says, basically." (P13)*
	The doctor did not communicate the results/further procedures with me. (3)	*"Interviewee: The doctor did my checkup, but I don't know about anything.* *Interviewer: You did not ask him that is it regarding black jaundice?* *Interviewee: No, I did not. They said everything is fine. Everything is clear." (P2)*
Environmental context and resources	Long wait times (to get an appointment, to be seen by a doctor) is a barrier to care. (7)	*"Then the doctor said, "I will send you there [for HCV check-up]". That, "You will get a call from the doctor," but after not receiving it, about 15-20 days later, I thought maybe it could get worse, so I went to the emergency." (P16)* *"10 hours, 12 hours, 14 hours, it's the waiting that's the problem. Other than that, their treatment is fine, it's good, nothing bad, we say. It's mainly the waiting that's the issue." (P11)*

	Paying for the medications, doctors' visits, tests can be a barrier to care. (6)	*Because they want to go to the doctor, but many times they can't go financially. (P5)* *"And those who are a bit financially weak, they think, I'll only go when something actually happens to me." (P11)*
	There should be more healthcare providers/clinics. (4)	*"If I want to [get checked for HCV], yes, I need to get tested, but there aren't any doctors for that." (P13)* *I feel weak. Just like when I got tested before, I used to feel weakness, I still feel it now. But I am not able to find a doctor. (P14)*
	Time constraint (e.g. taking time off from work) can be a barrier. (3)	*"I don't get time from work. But sometimes I have to take leave from work, and I do take it." (P15)*
Memory, attention, and decision processes	I would only seek care if I have (major) symptoms. (14)	*"I think that I should wait because I have no problems now, there is nothing for checkup at the moment." (P1)* *"If I see any symptoms, then I'll go; otherwise, I won't." (P10)* *"If everything seems fine, then I won't think about getting the test done first." (P12)* *"I don't feel like I have any symptoms of hepatitis, I don't have any problem, and I don't have time either, then I won't go." (P9)* *"And if I have any minor problem, I don't go at all." (P11)*
	If my symptoms get worse and I can't manage them, I will seek medical help. (3)	*"I had tried all the medicines by taking them, but I didn't get any relief. Then I thought I would need to take the doctor's advice to figure out what's going on." (P15)*
Goals	My health is my priority and If I'm ill, it's my priority to go	*"Health comes first, even if there is important work, I will go to the doctor." (P2)*

	to doctor and get treatment. (15)	*"This disease, black jaundice, is a serious disease. It has to be done first; other things come later." (P8)* *"If any problem arises, I'll prioritize my health first; I'll get checked first." (P11)*
	I am committed to taking treatment. (4)	*"That I have to go, the first priority was treatment. No matter what kind of appointment they gave me, I kept going on the scheduled date and time accordingly."*
	Work can take priority over seeking care. (5)	*"If I have any problem, I will prioritize it. Otherwise, there are many other things that, according to my health, I give priority to." (P9)* *"Like in my emergency, when I found out that I have it [HEPATITIS C], then I would say, okay, if I work for a day, then I can go the next day, no problem." (P6)*
Behavioral regulation	I manage language barriers by bringing an English-speaking family member to appointments. (8)	*"We manage [the language barrier] by taking someone's help, ...then if they don't have time, we have to take an appointment according to their availability." (P5)* *"We explain to our son, this is our problem, tell the doctor, and he tells the doctor." (P8)*
	Timely doctor visits and following their advice are key to improving access to care, screening, and treatment. (6)	*"Whenever there is any problem, go to the doctor quickly. Every illness has a solution." (P14)*
	We should increase awareness about HCV by talking to people and engaging them. (5)	*"Like we can create awareness, like I brought two people who will further inform others. We should make everyone aware about that." (P4)*

	“They don't have much knowledge. By sitting them down, like in a meeting, with a screen. A doctor explains, and then it is translated into Hindi, explaining what the diseases are.” (P6)

Chapter 4: Healthcare Providers

[1]It is included as Appendix M in this thesis.

Preface

Overview: In this study, I used a qualitative descriptive design to barriers to providing HCV screening and treatment to immigrants from the perspectives of healthcare providers in Ottawa and Montreal. The Ottawa Health Science Network Research Ethics approved the study (20220418-01H). Informed consent was obtained from all study participants.

Authors: Sameh Mortazhejri, Christina Greenaway, Curtis Cooper, Smita Pakhale, Justin Presseau, Jeremy M. Grimshaw, Andrea M. Patey

Authors' contributions: All authors have contributed to the research and article preparation. SMH and JMG conceived the current study. SMH and AMP developed the interview guide. SMH, CC and CG contributed to recruitment of participants. SMH conducted the interviews. SMH and AMP conducted data analysis, with all the authors reviewing and commenting on the findings. All authors have been involved in development of the proposal, as well as drafting the manuscript and revising it. All authors have given final approval of the submitted article.

Journal submission: We plan to submit this to the BMC Health Services Research journal. The paper has been formatted for this journal.

[1]It is included as Appendix M in this thesis.

Title

Healthcare providers' perspectives on barriers and enablers to providing Hepatitis C screening and treatment for immigrants in Canada: A theory-informed qualitative study

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[1]It is included as Appendix M in this thesis.

Abstract

Background: Canada has committed to eliminating hepatitis C virus (HCV) as a public health threat by 2030. Despite the availability of highly effective treatment, screening and treatment, uptake remains suboptimal. Immigrants from HCV-endemic countries account for 35% of HCV cases and face distinct barriers to care. This study explored healthcare providers' perspectives on barriers and facilitators to providing HCV screening and treatment among immigrant populations in Canada.

Methods: We conducted a qualitative descriptive study guided by the Theoretical Domains Framework (TDF). Semi-structured interviews were performed with healthcare providers in two Canadian cities. Transcripts were independently coded by two researchers, and key themes were identified.

Results: Twelve healthcare providers (seven females, five males) were interviewed including eight family doctors, two infectious disease specialists, one nurse, and one social worker. Participants identified multiple barriers to delivering HCV care to immigrants, including limited familiarity with immigrants' specific clinical guidelines, low confidence in managing HCV, and difficulty addressing culturally sensitive issues. Healthcare providers perceived patient-related barriers such as stigma, limited awareness, and competing life priorities as factors that may hinder engagement with HCV care. Language and communication challenges frequently interfered with care. System-level issues including fragmented services, long wait times, and shortages of family physicians further constrained access.

Conclusion: This study underscores the complex barriers healthcare providers face in delivering HCV care to immigrant populations in Canada. While some challenges reflect broader healthcare

[1]It is included as Appendix M in this thesis.

system gaps, they are compounded for immigrants by linguistic and cultural differences. Advancing HCV elimination will require strengthening provider capacity, improving system coordination, and ensuring care is culturally and linguistically appropriate.

Keywords: Hepatitis C, barriers, qualitative research, immigrants, implementation science, Theoretical Domains Framework, healthcare providers

[1]It is included as Appendix M in this thesis.

Background

Canada has adopted the World Health Organization (WHO) Global Health Sector Strategy (GHSS) targets on eliminating Hepatitis C (HCV) as a public health threat by 2030 (1,2). In Canada, HCV remains a major infectious disease burden in Canada with 7,535 cases (acute, chronic, and unspecified) reported in 2021 (3,4). While no vaccine exists, direct-acting antivirals (DAAs) can cure 95% of cases with eight to twelve weeks of treatment, reducing mortality and improving quality of life (5). Yet despite the high cure rates of DAAs since their introduction in 2011, screening and treatment uptake remain suboptimal (6,7).

Immigrants from HCV-endemic countries account for 35% of cases in Canada and are one of the priority target groups (1,8). Many of these immigrants have been exposed to HCV through transfusion of contaminated blood products or use of unsterilized medical, dental, and surgical equipment in their countries of origin (9). Despite this risk, routine HCV screening is not conducted before or after arrival in Canada. Awareness and understanding of HCV vary across immigrant groups, often shaped by experiences in their country of origin. For instance, immigrants from Egypt in Canada have greater knowledge due to national campaigns, whereas Punjabi immigrants tend to have lower awareness (10,11). Limited knowledge, combined with the often asymptomatic nature of the disease and absence of typical HCV risk factors (e.g., injection drug use), contributes to under-diagnosis in these populations. As a result, diagnosis is often delayed by an average of 10 years, leading to increased risk of hepatocellular carcinoma, liver-related mortality, and significant healthcare system costs (12–15).

Early detection of HCV infection and linkage to treatment are essential in eliminating HCV. Several studies have reported the challenges that healthcare providers (HCPs) face when providing HCV

[1]It is included as Appendix M in this thesis.

care, however they mostly focus on initiation of treatment and adherence to it (16). Moreover, there is a notable gap in the literature regarding the provision of HCV care to immigrant populations. To our knowledge, only two studies (both conducted in the United States) have specifically explored the challenges associated with delivering care for viral hepatitis and hepatocellular carcinoma among immigrants (17,18). The most commonly reported barriers to HCV care identified by HCPs (not specific to immigrants) include limited up-to-date knowledge of new treatment options and a lack of experience with DAAs, as well as the perception that HCV care falls outside their scope of practice and is overshadowed by other clinic priorities (19–22). Additional challenges included fragmented healthcare systems, inadequate resources for patient follow-up, reimbursement difficulties, and challenges accessing laboratory tests (23,24). HCPs also perceived that patients with HCV are difficult to manage due to multiple intersecting factors such as limited readiness for treatment and stigma (21,25). While HCV screening and treatment follow the same general principles across different target populations (such as people who inject drugs, individuals with a history of incarceration, and immigrants from HCV-endemic countries), HCPs may encounter unique challenges with each group. This study aimed to understand the specific barriers and enablers to providing HCV screening and treatment to immigrants from the perspectives of HCPs.

Methods

We conducted a qualitative descriptive study using semi-structured interviews based on the Theoretical Domains Framework (TDF) (26,27). The Consolidated Criteria for Reporting Qualitative Research checklist was applied as a writing and reporting guideline (28).

[1]It is included as Appendix M in this thesis.

Theoretical approaches

The integration of theories and frameworks in research is critical for ensuring rigor, coherence, and clarity in study design and interpretation. This is especially important when considering the implementation of healthcare practices, where complex individual, organizational, and system-level factors influence outcomes. The deliberate application of theoretical frameworks helps ensure a comprehensive understanding of these factors. Moreover, theoretical frameworks foster a shared language among different interest holders, support systematic evaluation, and improve the transferability of findings across settings (29–32).

A clear specification of the target behavior in terms of who need to do what differently provides a systematic framework for identifying evidence-practice gaps, evaluating the barriers and enablers influencing these gaps, and informing the design of targeted behavior change interventions. In this study, the AACTT (Action, Actor, Context, Target, Time) framework was employed to delineate the target behavior (33). To explore the factors that affect the target behavior, we used the TDF (26,27) which is derived from 33 behavioral theories includes 14 domains: *Knowledge*; *Skills*; *Social/professional role and identity*; *Beliefs about capabilities*; *Optimism*; *Beliefs about consequences*; *Reinforcement*; *Intentions*; *Goals*; *Memory, attention and decision processes*; *Environmental context and resources*; *Social influences*; *Emotions*; and *Behavioral regulation* (Table 1). Each domain may play a role as a barrier or enabler toward changing the target behavior. Thus, in this study, the TDF allowed us to explore the barriers and enablers in providing HCV screening and treatment to immigrants from the perspectives of HCPs.

[1]It is included as Appendix M in this thesis.

Context and setting

Canada has a large and diverse immigrant population, including permanent residents, temporary residents (e.g., international students, workers), refugees, and asylum seekers. Overall, immigrants represent approximately 23% of the Canadian population (34). In 2023 alone, Canada welcomed over 1.2 million newcomers, including both permanent and temporary residents (35). Immigrants may settle in geographically dispersed areas or cluster in neighborhoods based on shared cultural or country-of-origin ties. Their engagement with the healthcare system can also vary; some may choose to seek care from providers who share their background or speak their language, while others may not. Despite the high prevalence of HCV in this population, there is no routine or mandatory HCV screening program for this population before or after arrival in Canada and screening is at the discretion of their HCP(s).

In Canada, healthcare is publicly funded and administered at the provincial and territorial levels, resulting in 13 distinct systems with varying policies and service delivery models. Primary care delivery models also vary across provinces and territories, reflecting differences in health policy, funding structures, and provider organization. These structural differences can influence how preventive care and treatment are delivered. The HCV care cascade typically involves antibody testing, confirmatory RNA testing, genotyping (if needed), treatment initiation, and follow-up to achieve sustained virologic response. A broad range of HCPs may be involved throughout this process, including family physicians, specialists (such as hepatologists, gastroenterologists, and infectious disease physicians), nurses, and social workers. While the exact composition of care teams may vary by province and healthcare setting, family physicians and nurses often serve as the first point of contact with patients and help patients navigate healthcare system including

[1]It is included as Appendix M in this thesis.

HCV care. Although primary care providers have traditionally focused on screening and referral to specialists for treatment and follow up, both family doctors and nurse practitioners in Canada are authorized to prescribe HCV treatment.

Access to healthcare system also varies depending on immigration status. Permanent residents become eligible for provincial health coverage after a short waiting period. Refugees and asylum seekers receive temporary coverage through the Interim Federal Health Program (IFHP), which includes basic medical services and diagnostics. Refugees may arrive through government-assisted, privately sponsored, or blended programs. While all receive IFHP coverage, privately sponsored refugees do not receive government-funded support for navigating health or settlement services and instead rely on their sponsors for this assistance.

Participants and recruitment

All HCPs (family doctors, nurses, specialists, social workers) involved in providing HCV care to immigrants in Ottawa and Montreal were eligible to participate in this study. We did not focus on a specific immigrant group, as many HCPs care for patients from a range of cultural and geographic backgrounds. Participants were recruited in Ottawa and Montreal through purposive and snowball sampling techniques. This allowed detection of key informants with knowledge on the topic who subsequently suggested other individuals that provided a diversity of perspectives on the study topic. Key informants were suggested by the physicians in the research team, and they were contacted through emails with study information to see if they were interested to participate in the study. Study information was also shared on some of the local Physician Facebook groups and on Twitter, inviting interested HCPs to contact the research team. Sampling

[1]It is included as Appendix M in this thesis.

continued until data saturation was achieved, meaning when new perspectives and concepts were no longer emerging from the interviews (36).

Data collection

The interview guide[1] was based on the TDF domains to explore the barriers and enablers to providing HCV care (*Action*) to immigrants (*Target*) faced by HCPs (*Actor*) at any time during visit (*Time*) at HCPS' clinics/offices (*Context*). It included demographic questions about participants' gender, age, specialty (nurse, family doctor, specialist, social worker), length of practice and type of practice setting (Hospital, community clinic). The interview guide was piloted with two individuals to ensure that it covered all major items that need to be discussed and all questions were clear for participants. The interviews were performed via telephone or virtually by SMH. SMH (Female) is a medically trained PhD candidate with expertise in TDF. The interviews were audio-recorded, and participants were compensated by a CAD$50 gift card for their time and participation.

Data analysis

Interviews were transcribed verbatim by a professional transcriber and anonymized. Two coders (SM and AMP) independently reviewed the transcripts and coded them according to the TDF domains, using NVivo (37). AMP (female) is an implementation scientist, PhD-trained in health psychology with expertise in behavioural theories. The coders initially met after coding the first transcript to compare their coding and develop a uniform codebook. Any disagreements were discussed and resolved through consensus.

[1]It is included as Appendix M in this thesis.

For the analysis, the data was first coded into TDF domains, and then belief statements (specific statements that summarize key concepts) about barriers or enablers to providing HCV screening and treatment were developed within each domain. Domains were considered relevant if they contained frequent, conflicting, or strongly held beliefs that influenced the target behavior (38). All these factors were considered concurrently when establishing domain relevance.

Results

Sample characteristics

Between September 2022 and December 2024, we interviewed 12 individuals (seven females, five males) including eight family doctors, two infectious disease specialists, one nurse, and one social worker. While a few participants exclusively provided care to asylum seekers and refugees, most served mixed patient populations, with the proportion of immigrant patients ranging from 5% to 100% (median: 70%). All but two participants, who worked in hospital settings, were based in community practices. Their years of practice ranged from one to 30 years (median: 10.5). All the interviews were conducted virtually in English and lasted between 24 and 56 minutes (mean: 40). While interview lengths varied, all participants responded to the full set of questions, and even shorter interviews yielded rich data. The variation primarily reflected differences in participants' experiences and the level of detail they chose to provide.

Barriers and enablers to providing HCV screening and treatment

Domains more likely to be relevant

We identified eight potentially relevant domains: *Knowledge; Skills; Beliefs about capabilities; Beliefs about consequences; Social/professional role and identity; Social influences; Goals; Environmental context and resources*. Below, we discuss the main findings from these relevant domains (with related relevant domains highlighted in italics in brackets) (Table 1). Following this, we will briefly discuss the domains that were less likely to be relevant.

There was considerable variation in participants' use of guidelines for HCV screening and treatment. While some reported using immigrant-specific guidelines (e.g., Pottie et al. (39)), others relied on more general, non–immigrant-specific guidance, noting the absence of tailored protocols. Additionally, while several participants demonstrated clear awareness of guideline content, one expressed the need for more evidence to justify prioritizing HCV screening within primary care (TDF domain: *Knowledge*).

"There's the Canadian Collaboration for Immigrant and Refugee Health (40)*, the guidelines were published in the Canadian Medical Association Journal however many years ago. And it tends to be so most of the refugees are from countries of higher incidence because they're refugees. So we just have generally a blanket policy of just testing everyone." (P6)*

"I believe the CDC and Australian guidelines also the Minnesota Department of Health guidelines for refugees, they all kind of recommend hepatitis B and C screening as well." (P7)

In terms of care delivery, participants described variation in which HCPs were involved in the HCV care cascade, depending on the practice setting. The most commonly reported model involved family physicians and nurses conducting HCV screening, interpreting results, and referring

patients who tested positive to specialists for further treatment and follow-up. However, there were instances where family physicians and nurses were also engaged in treatment. Participants also identified opportunities to expand the roles of nurses and social workers throughout the HCV care cascade, suggesting that broader involvement of these providers could enhance care accessibility and coordination (TDF domain: *Social/professional role and identity*). Consistently, participants agreed that family doctors and nurses have the necessary skills to conduct HCV screening and regarded it as a straightforward task (TDF domains: *Skills; Beliefs about Capabilities*). However, some noted that while nurses are often involved in the screening process, in some settings they are not authorized to sign requisitions, which still require physicians' signatures (TDF domain: *Social/professional role and identity*). Regarding treatment, although a few participants believed that family doctors could manage HCV treatment, the physicians themselves reported that they currently refer patients to specialists and would require additional training to feel adequately prepared to take on treatment responsibilities. (TDF domains: *Skills; Social/professional role and identity; Beliefs about capabilities)*.

"I think you need extra training just to be familiar with the molecules in question and the process regimen to be able to do it right… I know that some generalists do this but I think it's the minority. I think most people are a bit uncomfortable with the hepatitis C treatment." (P7)

Further, some participants emphasized that delivering care to immigrant populations requires experience and familiarity with the demographics and characteristics of the population they serve. They noted that training on how to tailor care to immigrants or address sensitive topics would be beneficial (TDF domain: *Skills*).

"When we are producing doctors that are going to be most of the time working within Montreal, a melting pot…So, I think having it as at least a part of our standard medical training or… offering formal medical training for the delivery of immigrant care, is something t hat I would be very interested in." (P12)

Participants also expressed strong consensus regarding the benefits of HCV screening and treatment. They believed screening enables early identification and treatment, preventing complications and reducing healthcare system costs. Treatment was described as easy and convenient, and a few emphasized that not screening or treating HCV is unethical. It was further described as essential for halting HCV transmission and contributing to population-level elimination goals (TDF domain: *Beliefs about consequences*).

"Hepatitis C is a human-to-human transmission. It means it's a disease that we actually have the capacity to eradicate from the planet if we diagnosis and treat everybody with the disease. It is costly, yes, it's costly, but everything is costly." (P1)

Beyond clinical outcomes, participants noted that screening can promote health literacy by facilitating discussion and encouraging family testing, and may support newcomers' integration into the healthcare system (TDF Domain: *Beliefs about consequences)*. However, views on the impact of screening on the patient-provider relationship were mixed. A few participants believed it strengthened relationships by demonstrating care and concern, while one expressed concern that it might harm rapport by imposing the provider's agenda.

"The positive consequences [of screening] are so much more and not only in terms of case finding and then being able to treat cases, but I think also in terms of serving as part of building health literacy and having patients understand what their risk factors are for certain diseases, … and so

and let's say you tested negative that's great and here is how you can prevent your test from ever being positive." (P12)

Moreover, most participants acknowledged that screening and treatment could provoke anxiety or stigma for some immigrants, though a few believed stigma was not a concern in their practice (TDF domain: *Beliefs about consequences*).

"The one thing that I can think of is a fear of being stigmatized further, a fear of being considered a burden to the new society and … those of us who are not newcomers to Canada all carry with us often times ideas and beliefs about drug use … So the association of hepatitis C with drug use can be a barrier." (P4)

Additional concerns, raised by one or two participants, included potential side effects of HCV treatment, fears about the impact on asylum claims, and the belief that screening, treatment, and follow-up may be time-consuming and disruptive to patients' daily lives. Others noted that administrative burdens, including paperwork related to screening and reimbursement, added to providers' workload (TDF domain: *Beliefs about consequences*; *Environmental context and resources*).

"So in terms of screening…so there is so many forms that have to be filled out. So why can't it be just one form. It doesn't have to be additional tick boxes that have to be filled. What's his risk factor? What's his ethnicity?" (P5)

"Of course, over time, it means that you have to follow more labs. You have to contact people and tell that it was normal in most cases, but occasionally you detect cases and you tell them well actually, now we have to do further testing or you might need to be referred. So it creates more work." (P9)

Participants were divided on the prioritization of HCV screening within clinical encounters. Some emphasized that prevention is a core focus of primary care and considered HCV screening a priority in their practice (TDF domain: *Goals*). Others reported that HCV screening may be deprioritized when clinic workload is high, as discussing it with patients can be time consuming, particularly among immigrant populations, where screening is not always culturally recognized as a routine part of healthcare system (TDF domain: *Goals*, *Environmental context and resources; Social influences*). They also explained that screening may be further deprioritized when patients present with more urgent or symptomatic concerns, as patients often prefer to focus on immediate health issues, which can limit openness to discussing HCV (TDF domains: *Goals; Social influences*).

"If there's a lot of work to do, I don't think of hepatitis C as a specific other thing to do." (P11)

"Not only is it [HCV screening] time consuming, it is somewhat challenging to sort of dispel the tendency of patients to be dismissive of screening practices in general because I feel like in my experience a lot of the time the immigrant population, what they are used to is more coming in on an as needed basis for isolated health issues and not really for this idea of chronic disease prevention for example." (P12)

Despite these challenges, participants generally reported that patients were open to HCV screening and appreciated when their condition was detected and addressed (TDF domain: *Social influences*).

"I can imagine that some of the newcomers that I was engaged with would have imagined that this is a wonderful thing to have access to hepatitis C care and treatment. That perhaps that kind

of healthcare was not available in the original country of origin or the second and third country prior to coming here." (P4)

"I think good experience with this patient population is that they are very motivated and kind of usually very happy to get any kind of care." (P6)

At the same time, some participants noted that immigrants may be overwhelmed with competing life priorities, making HCV care a lower priority and resulting in missed appointments or refusal of screening (TDF domain: *Social influences, Beliefs about consequences*).

"So that's part of the screening process and not everyone is ready for hep C treatment, and I've had many patients that will talk about it and say let's shelve this until I've stabilized just a little bit." (P3)

"This is an impression I get—it's certainly not something that I've necessarily documented, but asylum seekers have so much on their plate. So much is going on in their lives that has nothing to do with their health that getting the news that you have an illness but that it is treatable and curable goes over very well." (P10)

Furthermore, some participants also highlighted that immigrants may require additional support to navigate the healthcare system, including scheduling appointments and attending laboratory visits (TDF domain: *Social influences*).

Language and cultural barriers were consistently identified as major impediments to HCV care. Participants reported frequent communication difficulties with non-English-speaking patients and reliance on family members or community translators, which raised concerns about privacy and patient comfort (TDF domains: *Beliefs about capabilities; Social influences; Environmental context and resources*). Only a few had access to professional interpretation services (TDF

domain: *Environmental context and resources*). Even when translation support was available, participants noted that important information could be lost or misinterpreted (TDF domains: *Social influences; Environmental context and resources*).

"Some of the translators that we have come in, are from the community. Depending on the community where people come, they are afraid sometimes to say certain things…There is no particular reason why the patient has to feel comfortable with that." (P1)

The language barrier, it's sort of like this transversal impediment to care of any sort, not just labs, but medical care…Theoretically, all publicly funded health institutions in Quebec have money for interpretation. But very few of them in the City of Montreal, where 15 to 18% of all Montrealers don't speak English or French, don't have a formal interpretation system. You go to any of the hospitals, you'll still hear them asking for a Punjabi staff member that could come down to emerge." (P10)

I'm not sure I know how to talk about sexual relationships. My parents didn't teach me how to say that. And so I actually remember there was this one particular question and I actually left the room and I texted my mother "How would I say this in Bengali?" (P11)

Several participants emphasized that sharing a common cultural background or language enhanced their ability to build rapport and deliver effective care (TDF domain: *Social/professional role and identity*). They also observed that patients tended to prefer providers who spoke their first language. To support communication and improve care quality, participants recommended the availability of HCV educational materials in multiple languages (TDF domain: *Environmental context and resources*).

"But generally speaking the doctors who can be speaking in their [patients'] same language do have a certain insight into their own cultural perspectives and a lot of the information that is being conveyed to them can be framed in a way that can be better understood or be better related by the patients." (P12)

In addition to interpersonal challenges, systemic barriers to HCV screening were described. Participants highlighted that HCV screening is not mandatory for newcomers or asylum seekers, which may contribute to many immigrants particularly those who have resided in Canada for extended periods never having been tested. They also noted considerable variation across healthcare settings in the populations they served and in the services they offered; resulting in inconsistent availability of screening and treatment. Limited access to specialized refugee clinics was identified as a further barrier, particularly for non-government-assisted refugees who may miss opportunities for screening (TDF domain: *Environmental context and resources*).

"So where I think there could be a lot of improvement is the community health center (CHC) models…They have these little niches of expertise. So if you are going to the CHC that doesn't do hep C stuff, and you don't have a provider who is talking to you about hep C, you might not even realize you can get screened for it or get treatment for it." (P4)

System-level constraints further limited access to care. These included a shortage of family physicians and long wait times for specialist appointments. Moreover, they explained that immigrants and newcomers without access to a regular family physician often rely on walk-in clinics, where HCV screening is typically not conducted (TDF domain: *Environmental context and resources*).

"I think still, the rate limiting step [to access HCV screening] is getting a foot in [the healthcare system]. I forgot, the most important thing is getting seen by a doctor is like wow." (P8)

"Once we reach a saturation point of how many people we can follow, we simply close our doors to any more screening of newly arrived people. And so those newly arrived people who do not have a family doctor, they will not be exposed to any screening." (P9)

Some participants also identified diagnostic and infrastructure-related barriers. Some laboratories were reported to refuse HCV blood work entirely or to reject tests for patients covered by the Interim Federal Health Program (IFHP). Others described the two-step testing process requiring an initial visit for antibody testing and a subsequent visit for RNA testing if the result is positive as burdensome for both patients and providers. Reflex RNA testing, whereby an HCV viral load test is automatically performed on the same blood sample following a positive antibody result, along with automatic referral to specialists, were proposed as strategies to streamline the care pathway and mitigate patient anxiety. A few participants also noted the lack of integrated electronic medical records as a barrier to accessing previous test results and coordinating care (TDF domain: *Environmental context and resources*).

Infrastructure limitations were also cited, including a shortage of exam rooms and restricted access to diagnostic imaging or transportation for outreach programs. Community-based HCV care was viewed as a potentially more accessible alternative to hospital-based services. Financial issues and transportation challenges were also described as additional barriers to care by a few participants (TDF domain: *Environmental context and resources*).

Finally, a few participants raised concerns about fragmented communication between providers, including inconsistent feedback from specialists to primary care providers. One provider also

explained that pharmacists occasionally questioned prescriptions due to high medication costs. Some specialists also expressed that if family doctors conducted more initial screening or viral load testing before referral, it would facilitate treatment initiation (TDF domain: *Social influences*).

Domains less likely to be relevant

The domains of *Emotion*, *Intention, Optimism, Reinforcement, Memory, attention and decision processes,* and *Behavioural Regulation* were identified as being less relevant to changing the target behaviour. Participants explained that they intend to offer HCV screening in their practice, particularly for newly arrived immigrants, refugees, asylum seekers, and individuals who have not previously been tested (TDF domains: *Intention; Memory, attention and decision processes)*. They described providing HCV care as a positive and meaningful experience, noting that diagnosing and treating patients has been rewarding (TDF domains: *Emotion*; *Reinforcement*). Most shared that they had not encountered negative experiences, and patients were generally receptive to their diagnosis and appreciative of the care provided (TDF domains: *Reinforcement*). Participants were optimistic that HCV care for immigrants can be provided successfully within their practice (TDF domains: *Optimism*). Although they did not report using specific strategies to enhance HCV screening and treatment, they offered several suggestions and recommendations for improvement, which are discussed under the relevant TDF domains (TDF domain: *Behavioral regulation*).

Discussion

Main findings and comparison with other studies

This theory-informed qualitative study explored HCPs' perspectives on barriers to delivering HCV care to immigrant populations in two Canadian provinces. Six overarching themes were identified: (1) lack of familiarity with immigrants' specific clinical guidelines and treatment; (2) lack of role clarity; (3) time and workload pressures; (4) patient-level challenges; (5) language and communication barriers; and (6) limited access to healthcare services. While some of these challenges are specific to the unique needs of immigrant populations and add an additional layer of complexity, many also reflect broader systemic issues that affect the delivery of care to other priority populations and the general public within Canada. These findings highlight structural gaps and infrastructure limitations within the Canadian healthcare systems more broadly.

There was limited familiarity with clinical HCV guidelines specific to immigrant populations. Several providers noted discomfort navigating culturally sensitive conversations about HCV with immigrant patients. Many family doctors also expressed a general lack of confidence in treating HCV and a few had misconceptions about side effects of HCV treatments. While family physicians in Canada are authorized to prescribe DAAs, most participants confined their role to screening and referral. This was attributed to limited knowledge of current treatment protocols, insufficient training, and minimal hands-on experience with HCV care. These findings are consistent with previous research documenting low confidence and knowledge gaps among primary care providers in the DAA era (14–17,20). Addressing this issue may require the development and dissemination of immigrant-specific guidelines, along with targeted training in both clinical management and culturally responsive care.

Furthermore, there appeared to be a lack of role clarity in the delivery of HCV care. As discussed, family physicians often deferred treatment responsibilities to specialists, perceiving HCV treatment as outside their professional scope. Although nurses played important roles in screening, some participants perceived that they were not permitted to sign laboratory requisitions in certain settings, requiring physician authorization and contributing to procedural delays. Participants also noted opportunities to engage social workers in the HCV care cascade, particularly to support immigrants in navigating the healthcare system. These findings are consistent with previous studies in which providers viewed HCV treatment as primarily the responsibility of specialists (22,25,41). Clarifying the roles of different healthcare team members and expanding scopes of practice where appropriate may help streamline the HCV care pathway and enhance access for immigrant populations.

Patient-level barriers significantly influenced HCV care delivery. Providers observed that patients often prioritized more immediate or symptomatic health concerns during clinical encounters, limiting opportunities to discuss or initiate HCV screening. HCPs perceived that, for many immigrants managing multiple life demands, HCV care was not viewed as urgent or relevant, contributing to missed appointments or refusal of testing. They also believed that anxiety, stigma, or discomfort deterred some patients from engaging in HCV testing and follow-up. Recent immigrants were seen by providers as particularly vulnerable to these challenges and thought to require additional support to navigate the healthcare system and complete the care cascade. These observations are consistent with findings from previous studies. The asymptomatic nature of HCV has been widely reported to reduce patients' sense of urgency to seek care, especially when the infection lacks immediate or visible health consequences (21,42). Physicians have also

noted that patients facing unstable or complex social circumstances often deprioritize chronic conditions like HCV in favor of more pressing concerns, which may lead to lower rates of treatment initiation and completion (43). Stigma, limited awareness, and discomfort discussing HCV further contribute to disengagement, particularly among asymptomatic individuals (25). In addition, structural and logistical barriers (e.g., long work hours, family caregiving responsibilities, and difficulty navigating unfamiliar medical systems) have been shown to further limit follow-up care, especially among immigrant populations (17). Collectively, these findings emphasize the importance of flexible appointment scheduling, family-inclusive care approaches, and community outreach initiatives to support timely diagnosis and treatment.

Language and cultural barriers were consistently identified as significant challenges to delivering effective HCV care. These barriers have also been widely documented in the literature. Han and Gonzales reported that patients may avoid seeking care outside their communities due to concerns about linguistic discordance and often prefer providers who speak their first language, a preference associated with increased comfort, openness, and continuity of care (17,25). Beyond the context of hepatitis C, research has shown that cultural and linguistic mismatches between patients and providers hinder communication, whereas greater alignment improves satisfaction and health outcomes (44,45). Participants in our study noted limited access to professional interpretation services, which led to frequent reliance on informal interpreters such as family or community members. This practice raised concerns about miscommunication, breaches of confidentiality, and patient discomfort, particularly when discussing sensitive topics. Previous studies have similarly found that family members may unintentionally misrepresent medical information and that their involvement can undermine patient autonomy and emotional

well-being (46,47). The absence of professional interpreters has also been associated with poorer comprehension, reduced satisfaction with care, and missed follow-up appointments (48–50). These findings underscore the importance of culturally and linguistically appropriate care to support patient engagement and improve healthcare system outcomes. Expanding access to trained medical interpreters and providing language-concordant care where possible should be prioritized in clinics serving immigrant communities.

Time constraints and clinical workload were commonly described by participants as key barriers to HCV care. Providers noted that discussing HCV screening with immigrant patients often required additional time, especially when screening was not seen as routine or immediately relevant. As a result, HCV care was frequently deprioritized during busy clinic schedules. The administrative burden associated with screening and reimbursement particularly the volume of paperwork was viewed as excessive. These findings align with previous research identifying time and workload pressures as major obstacles to integrating HCV care into primary care settings. Competing clinical demands often lead providers to focus on more urgent concerns, reducing opportunities to address HCV (25,51). The lack of time and limited support structures also contributed to a preference for referring patients to specialists, where HCV-specific resources are more readily available (41). These challenges are further exacerbated when caring for immigrant populations, whose demanding work schedules and complex life situations may constrain their ability to engage in HCV care (17). Incorporating culturally and linguistically tailored patient education materials and hiring trained navigators may reduce time burden on providers while improving engagement and care continuity.

Structural and system-level challenges were consistently identified as significant barriers to HCV care. These included inconsistent laboratory practices, such as some labs not accepting IFHP coverage, and the burden of the standard two-step screening process. Limited access to imaging services and outreach diagnostics, combined with fragmented electronic medical records, further complicated follow-up and continuity of care. Similar barriers have been reported in earlier studies, where providers described insufficient diagnostic infrastructure and administrative support and difficulties accessing and tracking laboratory results as limiting their ability to manage HCV effectively (21,25,52). Reflex HCV RNA testing improves diagnosis and follow-up and could especially benefit immigrants facing logistical, language, or continuity-of-care barriers (53,54). Consistent lab protocols and better access to diagnostics in community and immigrant-serving settings would help ensure timely and equitable care.

Finally, shortages of family physicians and prolonged wait times for specialists compounded these barriers. Participants noted that the absence of mandatory HCV screening for newcomers and asylum seekers contributed to large numbers of immigrants remaining unscreened, especially those without access to refugee clinics or regular primary care. While these issues were raised in the context of HCV care, participants recognized them as reflective of broader systemic limitations in the Canadian healthcare system. As of 2023, 27% of individuals in Quebec and 26% in Ontario lacked access to a regular family doctor (55,56). Similar access challenges such as difficulties finding a family physician or obtaining timely appointments have been reported in both immigrant and general populations in Canada, as well as other countries (57–60). Implementing routine or opt-out HCV screening programs for newly arrived immigrants and

asylum seekers, integrated into settlement health assessments or refugee intake processes, may help reduce delays in diagnosis and improve timely access to HCV care.

Strengths and limitations

Applying theoretical frameworks provided a structured lens for analyzing and interpreting the data, moving beyond individual interpretation. This approach enhanced the study's methodological rigor and ensured that findings are relevant and applicable for informing intervention design (29,30). It also supports comparison with results from other studies on hepatitis C among immigrant populations and other priority groups.

That said, several limitations should be considered. Although we aimed to recruit participants across a range of roles and levels of involvement in HCV care, those who chose to participate may have been more aware of or engaged in HCV care, immigrant health, or implementation issues. This self-selection may have led to an overrepresentation of positive attitudes or higher levels of engagement. To mitigate this, we deliberately sought to include providers with lower levels of involvement to capture a broader range of perspectives. Additionally, the findings are based on data from two urban regions in Canada and may not fully reflect experiences in rural, remote, or other healthcare settings, where resources, infrastructure, and immigrant populations may differ. Finally, while the theoretical frameworks employed in this study account for social and structural determinants of health, they may not fully capture the broader systemic and contextual barriers that influence HCP behaviour and access to care among immigrant communities.

Conclusion

This study highlights key perceived barriers that HCPs may encounter in delivering HCV care to immigrant populations in Canada, including limited familiarity with clinical guidelines and treatment, clinical confidence, time constraints, language challenges, and fragmented systems. HCV care for immigrants remains poorly coordinated, and while these challenges reflect broader strains within Canada's healthcare system, they are intensified for immigrants navigating the system with linguistic and cultural differences. To advance HCV elimination goals, future efforts must strengthen provider capacity, improve infrastructure, and implement culturally and linguistically appropriate approaches that are responsive to the needs of diverse populations.

List of abbreviations

DAA	Direct-Acting Antivirals
HCP	Healthcare Provider
HCV	Hepatitis C Virus
IFHP	Interim Federal Health Program
TDF	Theoretical Domains Framework
WHO	World Health Organization

Declarations

Ethics approval and consent to participate

The Ottawa Health Science Network Research Ethics approved the study (20220418-01H). Informed consent was obtained from all study participants.

Consent for publication

Not applicable.

Competing interests

CC has served as a speaker and advisor for Gilead and AbbVie and has received unrestricted program and research funding from both companies. Other authors declare no competing interests.

Availability of data and materials

Data that support the findings of this study are available upon reasonable request.

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Authors' contributions

All authors have contributed to the research and article preparation. SMH and JMG conceived the current study. SMH and AMP developed the interview guide. SMH, CC and CG contributed to recruitment of participants. SMH conducted the interviews. SMH and AMP conducted data analysis, with all the authors reviewing and commenting on the findings. All authors have been

involved in development of the proposal, as well as drafting the manuscript and revising it. All authors have given final approval of the submitted article.

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Table 1-Theoretical Domains Framework themes, relevant domains, belief statements and sample quotes

Relevant domains	Themes	Beliefs statements (Frequency)		Sample quotes
Knowledge	Guidelines and evidence	Enabler	I follow the guidelines for migrants and refugees by Pottie et al for HCV screening/management. (5)	*So the screening tests that we do is based on guidelines that were published around 2011 by Kevin Pottie and his group on screening tests for refugees. (P7)*
			I use some sort of guidelines for HCV screening/treatment (non-immigrants specific). (5)	*I'm following just the general, CCSP guidelines about the adult health maintenance suggestions in terms of routine screenings. (P12)* *I can't recall anything [guidelines] specific, but I do remember using resources through CATIE and I do remember attending educational conferences for teams that were engaging people living with hepatitis C from a harm reduction perspective. (P4)*
		Barrier	I don't follow any specific immigrant guidelines for HCV screening/management. (5)	*I use the hep C guidelines for American Association for the Study of Liver Diseases (AASLD) in terms of management. (P5)* *So, in that context, I'm not following any specific immigrant guidelines. (P12)*
			I need data to show me why I need to prioritize HCV screening in my practice. (1)	*I mean, for me it would be data… maybe as an average family doctor it's like until I know why this should be a priority, I'm not really going to do it. (P11)*
			There are no guidelines/protocols from Ministry of Health with regards to HCV screening for immigrants. (2)	*T my knowledge there has never been a recommendation issued by the Ministry of Health Quebec to screen new immigrants for hepatitis C. (P10)*

	Knowledge	Enabler	I know what the guidelines say with regards to HCV screening/management. (4)	*But in terms of screening, I think the guidelines still hold that we should be offering screening to all immigrants regardless of their migration status, especially from certain regions of the world. (P9)*
Skills	Required skills	Enabler	A family doctor or a nurse have the necessary skills to do HCV screening. (6)	*It's actually one of the more straightforward diagnoses, I think, of all the things that we diagnose and treat with the population. It's a lot more straightforward than diabetes or some of the other things that we diagnose. (P6)* *For the screening test, any family physician can do this type of test. It doesn't really require much of an expertise. (P7)*
			Even non specialists have the skills to provide HCV treatment. (2)	*I've been saying for about 10 years now that when you get down to a single pill a day for eight weeks, I don't think you need to be a specialist to treat most of those people. (P1)*
		Barrier	One needs to know the demographics and characteristics of the population in where they practice. (3)	*I think especially dependent on what part of the city you're living…it's important for you to know what the local population is like? What are some of the issues that they're facing? (P9)*
			Providing care to immigrants usually requires some experience. (3)	*The task of ordering hepatitis C, anyone can do. Working with immigrants usually involves gaining some experience. (P2)*
	Additional training	Barrier	I would need extra training to treat HCV. (4)	*It would be great to have like a half day treat hep C session…having something formalized, particularly for practitioners who work in areas where they don't necessarily have someone who could mentor them, would be very useful. (P3)*
			Some training on providing care to immigrants or related to	*So, I think having it as at least a part of our standard medical training or to be having the FMOQ or the medical organizations, offering formal medical training for the delivery*

			sensitive topics would be helpful. (3)	*of immigrant care, is something that I would be very interested in. (P12)*
Beliefs about capabilities	HCV screening and treatment	Enabler	Treating HCV is easy. (2)	*I would love to encourage all primary care practitioners to consider treating it because it is so easy, compared to what it used to be. (P3)*
			HCV screening is easy. (8)	*It [HCV screening]'s like any other, to be honest. Sometimes it's a bit easier than sitting with a depression patient or kind of handling with your diabetes patients.* *It [HCV screening]'s just a very simple, you tick off in the blood test, screen for this. (P9)*
		Barrier	I am not comfortable treating HCV. (3)	*I think it's again, relatively straightforward and because we have access to the specialists, I would certainly not feel confident treating. I have never treated for hepatitis C. (P6)*
	Communication and engagement	Barrier	It is challenging to communicate with patients who are non-English speaking or accompanied by family members. (5)	*It's hard to know how to negotiate. It's very difficult to tell the spouse, the husband to leave, ain't going to happen. (P1)* *So I think we do good by our patients by doing this test, however, obviously, screening test that's positive leads to anxiety and it is sometimes hard to explain these types of results through an interpreter. (P7)*
Beliefs about consequences	Impact on patients (clinical)	Enabler	By HCV screening you can identify and treat those who have it. (6)	*That you are able to cure something which in medicine it's very hard to do, to be able to cure something. (P5)* *I think the positive consequences are, again because it is treatable, it's picking up an infection that they might have had for a very long time and be able to treat hopefully before they have any ill effects from it. (P6)*
			Not screening for HCV can lead to complications for	*In terms of for the patient there is a lot of advantages to being treated to kind of maintain a healthy liver and liver function and prevent complications of liver disease. (P5)*

		patients and costs to healthcare system. (6)	*I think it's always good to identify a chronic infection that can lead to cirrhosis or cancer. So I think we do good by our patients by doing this test. (P7)*
	Barrier	HCV treatment can cause significant side effects. (1)	*I've just read that the symptoms or the side effects of the treatments can be significant and people have to then go and see a specialist. (P9)*
Impacts on patients (non-clinical)	Enabler	HCV screening can enrich the patient-doctor's relationship by showing you care for them. (2)	*A positive consequence if you're able to kind of show people that you care and that you're bringing them into the circle of care, I think it obviously can kind of enrich the relationship, make them trust you more. (P11)*
		HCV screening and treatment can help newcomers with settling in the new context and feeling part of the community. (1)	*Then for some it [HCV screening/treatment] might be a really important part of resettling in a new context, to have a positive experience with the healthcare team here and it would become part of the process of settling and feeling stable and part of community. (P4)*
		A positive outcome of screening is building health literacy, discussing the disease with patients and encouraging other family members to get tested. (4)	*We are there and sometimes we diagnosis them and they say, well, no one has ever checked my husband out. We say, your husband is here, let's get blood work, let's find out. (P1)*
	Barrier	HCV screening and treatment can cause anxiety or feelings of stigma for some patients. (8)	*The one negative is maybe anxiety to the patients. Especially from time to diagnosis until they see the professional and things like that. (P5)* *So, in terms of consequences I think the big one that I can speak on more, is just the stigma, I think a lot of my patients who have the resistance of having the screening done, there*

			has been a fear that has been expressed to me about what happens if they have a diagnosis. (P12)
		Patients are worried HCV screening affect their asylum claim. (1)	*[Patients are worried] any of the screening tests would have a negative impact on their asylum claim. That's a legitimate fear and we're quite quick to explain to them that their health situation can in no way impact the decision of the commissioners. (P10)*
		HCV screening can negatively affect doctor-patient's relationship. (1)	*I honestly think it [HCV screening]'s like not feasible and it actually has an impact on the patient-physician relationship, because you end up sort of imposing an agenda on your patient when they really want to kind of talk to you about what's going on for them. (P11)*
		HCV screening and further follow ups can be time consuming and disrupt patients' daily lives. (2)	*So yeah, it can create a lot of disruption at a moment for asylum seekers, especially where they're still in the process of adapting to a new city, signing up the kids to school, trying to get a work permit, in some cases having to learn how to speak French, and then the doctor says "And by the way, you have this disease". (P9)*
Impact on healthcare providers	Barrier	HCV screening and reimbursement can be time consuming. (4)	*It's because of the reimbursement issues and because that takes time, most primary practitioners don't want to spend that time trying to figure it out. (P1)*
General impact	Enabler	HCV treatment is easy and convenient. (6)	*At one time, I knew that I was going to make a 100% of my patients sick with therapy, and 50% would get cured. Now I make almost zero percent sick and almost 100% cured. (P1)* *And now it's so well-tolerated and very few significant drug interactions. (P3)*
		It is unethical not to screen and treat HCV. (2)	*Drug therapy is just so effective; it would be absolutely a shame to have someone progress in a disease that we can cure. (P1)*

			It is worthwhile to do HCV screening/treatment. (7)	*If you want to look at cost, it's a matter of the treatment is an investment. (P1)* *As health care providers, that in the long run, the benefits of treatment will outweigh the risks of letting things go their natural process. (P9)*
			We can eradicate HCV and stop its spread if we diagnose and treat everybody with the disease. (2)	*Hepatitis C is a human-to-human transmission. It means it's a disease that we actually have the capacity to eradicate from the planet if we diagnosis and treat everybody with the disease. (P1)*
			There is not much stigma/fear about HCV. (3)	*You know, they sort of are told about it and there doesn't seem to be a huge amount of stigma or anything. (P6)*
		Barrier	Treating HCV is expensive. (1)	*I do recognize the cost of the medication so reserving it for those who can follow through with it. (P3)*
Social/professional role and identity	Roles and responsibilities	Enabler	Family doctors and nurse practitioners perform HCV screening and interpretation of the results. (7)	*So nurse practitioners see some patients and then the doctors see some patients. If it's a patient that a nurse practitioner is seeing, they'll see them, order the tests, and then follow-up the tests, so we each follow-up our own tests. (P6)* *If I'm a nurse practitioner, the results will come back to me. If I'm a doctor, the results will come back to me and we review these results in the follow-up visit. (P7)*
			HCV screening is part of my job. (6)	*So specifically for hepatitis B and hepatitis C, that's part of our screening. So after the initial medical assessment, all refugees get lab requisitioning given to them that includes screening for hepatitis B and C. (P7)* *I definitely do see it [HCV screening] as a part of the care of my immigrant population. (P12)*

			Sharing patients' cultural background or language—either personally or through lived immigrant experience—enhances my ability to provide care for immigrants. (3)	*So, I think more than the language itself, I think it has been an asset being from the South Asian population myself, given my interest itself in working with the South Asian population. (P12)* *In my personal history as a first generation Canadian, my parents are immigrants, has a lot to do with how I feel about being either in a social work role or in a primary care provider role with any newcomer or immigrant. (P4)*
		Barrier	Nurses cannot order HCV screening, as it requires doctors' signature. (3)	*There is a standardized screening that is proposed. The doctors sign off on it because we don't have a collective order yet for the nurses to do it autonomously. (P10)*
			HCV screening is not a typical part of my job. (1) I do not provide HCV treatment. I screen and refer. (8)	*If there's a lot of work to do, I don't think of hepatitis C as a specific other thing to do. (P11)* *I mean because I don't actually do the treatment, we just have to do the pre-bloodwork and send them off. (P2)* *We do not offer any kind of treatment. My approach is screen, identify and refer. (P9)*
	Involving other healthcare providers	Enabler	There are opportunities to involve other healthcare providers from different disciplines (e.g. nurses, social workers) in providing HCV care. (5)	*In an ideal world, I'd love to have a nurse who can educate them[patients] and then screen the whole family and just let me know. (P8)* *So, definitely a nurse practitioner would be very helpful for us to be making sure that we are keeping patients healthcare and their screening up to date. (P12)*
			In my clinic, different healthcare providers are involved in the HCV cascade of care. (3)	*We have three nurses in the program and three social workers. So for the New Canadian Clinic, it's two social workers specifically and one nurse most of the time. (P3)*
Social influences	Influence of patients	Enabler	Generally, patients appreciate that their	*I find that most immigrants are happy to get treated for the infection that is potentially transmissible and most of them are*

		disease was found out and like to be treated. (6)	*concerned about the transmissible fact and unfortunately some of the stigma around having hep C. So they do want to get treated. (P5)* *I think good experience with this patient population is very motivated and kind of usually very happy to get any kind of care. (P6)*
		Patients are generally open to HCV screening. (6)	*The majority [of patients] follow through and do the testing that we ask, but it is not mandatory. (P7)* *And I mean patient acceptance of screening is 100%, I would say. I mean I could ask the nurses, but we've never had any great hesitancy for any screening. (P10)*
	Barrier	Patients often prefer to focus on their immediate and symptomatic health concerns, which can limit openness to discussing HCV. (5)	*Mostly it's just like they don't want to know. They don't have time. They were just here for their diabetes. Just keep it at the diabetes or the blood pressure. (P8)* *So many people will come and consult a family doctor for low back pain or a cold, but they won't come and consult us because they're concerned about their risk of having an asymptomatic infection. (P9)*
		Sometimes, patients refuse HCV screening or miss follow-up appointments. (8)	*I think probably the biggest gap is when somebody is booked for an appointment where we're going to discuss it and they don't follow up. (P3)* *So this is a surprise to almost all of the asylum seekers I see. At first they were a bit suspicious: why should I go for more tests? I already had the blood test. (P9)*

		Having these conversations about screening etc., can be challenging and there are some patients that are resistant to it. (P12)
	Immigrants are overwhelmed with other priorities and HCV care may not be their top priority. (5)	*So I think for some patients, if there's a lot going on especially, then they sometimes haven't gone for the blood tests. Usually it's just because they haven't had time or they're not sure where to go. (P6)* *Asylum seekers have so much on their plate. So much is going on in their lives that has nothing to do with their health that getting the news that you have an illness but that it is treatable and curable goes over very well. (P10)*
	Sometimes, immigrants need more support to navigate the lab and healthcare system. (3)	*If you do that [give a lab requisition] with an asylum seeker, there's a 90% chance that that person is not going to do the labs, because if you don't say how to do it, or if you don't help them do it, they won't know how to do it. (P10)*
	Relying on family members or translators to translate can create communication challenges. (5)	*There are some things you don't want to say in front of your twelve-year-old daughter. (P1)* *So I always find that [having translators from the community] a little bit awkward, like how do you do that properly. Making sure the patient is comfortable because maybe they known them from their community. (P5)*
	Sometimes patients do not provide accurate history which can affect discussions around HCV risk and screening. (2)	*I've seen the patients who have said I've been checked before and I'm negative. These patients may not necessarily realize how they were checked. So it's not, not believing your patients, but I like to see the proof. (P5)*
	I am worried my female immigrant patients have no free wills with regards	*Well, a complicated situation is a woman who does not speak English or French, the partner is doing the translation, coming from a culture where it's a very male dominating type*

		to their health decisions. (1)	*environment and I can't tell if the woman has free will to make decisions for her health. (P1)*
Influence of other healthcare providers	Enabler	My colleagues and I follow the same practices with regards to HCV screening and treatment. (8)	*At our clinic, we tend to all follow the same guidelines and we talk amongst ourselves. (P7)* *I mean we're a very small clinic, so it's very easy with a team. We have three nurses, five physicians, so it's very easy to convince people. Everybody's on board. (P10)*
		Sometimes, I consult with other healthcare providers with regards to HCV care for patients. (7)	*I usually rely on the advice given to me through the e-consult and follow that route, as far as what to treat. (P3)* *So I will either consult some online resources or there's also an e-consult, online Ontario based portal where you can ask a question to a specialist and within two or three days you'll have an answer by mail. (P7)*
	Barrier	Sometimes, we don't get a report back from specialist about the patient. (1)	*We don't necessarily get a report from the specialist… well that gentleman [patient] that said that his hepatitis C was cured, I would have liked to have seen a report where a hepatologist told me this patient had hepatitis C and is cured. (P9)*
		Sometimes, pharmacists question a prescription we sent for HCV because of its cost. (1)	*Another challenge that I have encountered are community pharmacists questioning a prescription because of the cost of the medication. (P3)*
		If family doctors could do more HCV screening or check the viral load before referral, I could easily provide HCV treatment. (1)	*I think that the main thing is diagnosing them. So if it can be diagnosed by their primary care physician with just a positive antibody then we are able to see them very easily. (P5)*

Goals	Priority setting	Enabler	HCV screening is a priority in my practice. (4)	*So it [HCV screening] is a priority, 100%. I would say it takes priority over latent TB. It takes priority over a lot of different things that people are coming in for. (P3)*
		Barrier	Screening for HCV may not be prioritized when patients have other health concerns. (5)	*Yeah, so I think depending on the reason for consultation is. If they are there to see me for a diabetic foot, and I'm not planning to do a lot of bloodwork, I probably won't test them for HIV and hep C. (P5)* *Screening will always suffer the risk of being forgotten, just because you're dealing with the acute illness and the illness that concerns the patient, which is symptomatic. So I mentioned low back pain, having a cold. (P9)*
			Depending on the work volume, I may not prioritize HCV screening/treatment. (2)	*until I know why this should be a priority, I'm not really going to do it. And so given how much of stuff I'm embodied with on a daily basis of like you have to do this, you have to that, you have to do that. (P11)*
	Goals	Enabler	My goal is to be a great healthcare provider. (3)	*But there is no incentive, it's just personal incentive. Being an excellent health care provider regardless of whether you're a doctor, a nurse, a nurse practitioner. (P11)*
			My goal is to help people. (2)	*I went into medical school because I wanted to help people. (P1)*
			Prevention (including HCV screening) is a core focus of primary care. (4)	*It's something that we should think of because primary care is all about prevention. (P9)*
Environmental context and resources	Language and cultural differences	Enabler	We have translators to help with language barriers. (2)	*So with the language barrier, we always have a translator, either in-person or on the phone. So there's always a translator, unless somebody speaks English in the family. (P6)*

	Barrier	Language and cultural differences, including reliance on translators or family members, can create significant communication challenges in HCV care. (9)	*So sometimes I also find that maybe a family who is able to translate is usually better. But then certain dynamics can also be a little bit difficult where it's like the elderly parent and so the family member sometimes is like oh I'll tell them later, and you are like no, no, no, I want you to tell them right now. (P5)* *I find there's never enough time to discuss, especially mostly because of the translation. So everything takes twice as long or more, and people who don't understand the system and who aren't aware of how the Canadian health care system is set up and the language issues. (P6)* *Most of the physicians that I have that are doing asylum seeker care one day a week, they work in private clinics and there's no budget envelope for interpretation, so they can't offer it. I mean, that's not just a barrier for screening hep C, it's for just any type of a decent consultation. (P10)*
		Having educational materials about HCV for patients in different languages can be helpful. (2)	*I do think also, there are certainly community organizations who are working on having translated educational materials, but what is unfortunate is that it's kind of all of these, it's like we have individual silos…but it would be lovely if all of this was centralized somewhere. (P12)*
		Patients prefer the doctors who speak their first language. (2)	*But I know that it does give patients a big comfort to know that I'm able to speak in their first language. (P5)*
Diagnostic and electronic resources	Barrier	Some labs won't do HCV blood work or refuse it for patients with (Interim Federal Health program) IFHP cards. (3)	*So I would say that's one of the biggest difficulties is the community labs processing the blood work properly. Even when we give them—I don't know if you've ever seen the Public Health requisition actually has a face page that explains how to process the blood work and we often will send that with the requisition and it still gets messed up. (P3)*

		Lack of resources such as exam rooms can be a barrier to care. (2)	*So finding space to meet with people downtown in a place that's maybe private enough to have a talk about hep C. (P4)*
		Implementing reflex RNA testing following a positive antibody result and specialist referral result could r educe patient anxiety, and improve efficiency in care cascade. (3)	*The other place where I fear that there may be loss of follow-up is given this is a multi-step process. You have to come to the clinic. You have to do the blood tests. You have to go back for the follow-up, if there's a hepatitis C RNA test. It's another test to a lab, another follow-up. So there are multiple visits and multiple steps. And at every step of the way, you might lose a small percentage of people. (P7)*
		Access to imaging diagnostics in clinics or transporting them to community for outreach programs can be a barrier to HCV care. (3)	*Sometimes getting access to diagnostic testing, such as radiology tests, ultrasounds, MRI's can sometimes be a barrier in terms of looking for more advanced disease. (P1)*
		Lack of integration across electronic medical record systems makes it difficult to access patients' past test results, creating barriers to effective HCV screening and follow-up. (2)	*It's also I had to log into three different places to try and get the results for the patient. So if that can be improved that would be again huge. Even finding old results to see have they been screened before or were they previously known positive before. Having access to previous results would be huge. (P5)*
Access to care/delivery of care	Barrier	Shortage of family doctors and long wait time to see specialists are major barriers to HCV screening and treatment. (10)	*So, there is not primary care available right now. Because we see a lot of new Canadians… But most people who are new to Ottawa, no matter who they are, can only access walk in clinics, so they are only getting episodic care. (P2)*

	I know that right now one of the biggest struggles in Ontario is lack of family physicians. So who is reaching all those patients? How are these patients getting testing and screened for hep C? So is there other ways? Can public health be more involved? (P5) *The whole medical system has suffered with the pandemic and after, so access to care is difficult and we have a lot of backlog of patients and long delays to see refugees who have arrived here. Typically, we were able to see them within two to four weeks of their arrival. Now we're seeing six months to nine months after their arrival, sometimes more. (P7)*
Many immigrants and asylum seekers (e.g. Non-government assisted refugee) may miss screening opportunities due to limited access to refugee clinics or lack of screening in walk-in clinics. (6)	*So, there is not primary care available right now. But most people who are new to Ottawa, no matter who they are, can only access walk in clinics, so they are only getting episodic care. (P2)* *For walk in clinics it's the same thing. We are going to get this result, I'm not this patient's family doctor, why would I do it? If they are seen in a walk in clinic for ear trouble and they think this patient may have hep C, well I'm not going to test them because he's not my patient. (P5)* *What I'm more worried about, because there are 80 to 100,000 asylum seekers in Montreal and there are a lot of privately sponsored refugees that we don't see, who does see them. (P10)*
Offering transportation support (to healthcare services) could improve access to care. (2)	*I think maybe that's something we can use more of in our clinic is bus tickets or taxi, most of them may not have cars. So to come to appointments and things like that. (P5)*

Financial problems can a barrier to HCV care for patients. (3)	*in terms of barriers I would say on the patient side, again the fact that most of these patients have some extent of financial instability, so it's usually a big thing for them to take the time to come see the doctor, let alone then to schedule a blood test and go to the blood test center and follow up on the results, etc. (P12)*
Different community health centers or clinic have different clienteles and approaches to care, and HCV screening/treatment may not be offered in some of them. (4)	*So I know at my other clinic that has less immigrants and less asylum seekers, it [HV screening] doesn't really come to their forefront of their minds. (P8)*
Having community based HCV care (versus hospital based care) can improve access to HCV care. (3)	*It would be nice to have it [HCV screening/treatment] done in a community centre because really, do you need to go to the Jewish General Hospital, which is one of the tertiary centres and use up their clinic space when it could be done in our room, right? You don't need the high pressure rooms, if it's not like TB or any of those diseases. (P8)*
HCV screening isn't mandatory for newcomers or asylum seekers, and immigrants living in Canada for long times may never have been tested. (7)	*I think for the ones who have been here a long time, it's inconsistent in terms of what kind of screening they can get. It will basically be dependent on when they go and see their physician, if they have a family doctor, and it's usually based on what they perceive as important. (P9)* *So there are tens of thousands of asylum seekers in Montreal that go through their whole process of asylum claim without ever being screened, …They get their medical card and then they're inserted into the system and we don't know if they'll*

			get screening eventually. That's where I think there is work to be done. (P10)
		Some individuals access HCV treatment through virtual doctors in other cities, but follow-up monitoring such as blood work and FibroScan is often lacking. (1)	*I don't know if it's infectious disease specialists—anyways, somebody who does the prescribing, but I've not found one person who had any follow up blood work after they've completed treatment, nor fibre scans.(P3)*
Time constraints	Barrier	Discussing HCV screening with patients is time consuming and can be a barrier to screening. (6)	*And I think maybe you can teach people to do that, but the thing about doing that is that it takes time...Yeah, it takes experience and then you also need time in the room as well. You can't do that in five minutes. There's no way you can actually kind of read someone's emotional state in that period of time. (P11)* *I would say that having these discussions about screening specifically among my immigrant patients it does take up more time certainly compared to having these sort of conversations with non immigrant patients. (p12)*
		HCV screening and reimbursement (too much paperwork) can be time consuming. (4)	*So in terms of screening, I think the ease, so there is so many forms that have to be filled out. So why can't it be just one form. It doesn't have to be additional tick boxes that have to be filled. What's his risk factor? What's his ethnicity? (P5)*

Chapter 5: Discussion

Overview

Canada is committed to the eliminating of Hepatitis C Virus (HCV) by 2030. Immigrants from countries with high rates of HCV infection account for 35% of all HCV cases in Canada. Despite the availability of effective treatment options, uptake of screening and treatment remains suboptimal. There is an average 10-year delay in diagnosis, resulting in poor health outcomes and high healthcare system costs. To address this gap, I conducted theory-informed qualitative descriptive studies to explore barriers and enablers to HCV screening and treatment among immigrants in Canada. I focused on two immigrant communities (Egyptian immigrants living in Ottawa, Ontario and Punjabi immigrants living in Montreal in Quebec). Chapters 2 and 3 presented findings from semi-structured interviews guided by the Theoretical Domains Framework (TDF) and the Common-Sense Self-Regulation Model (CS-SRM), which examined factors influencing HCV care-seeking among these communities. Chapter 4 presented findings from semi-structured interviews guided by the TDF, which explored challenges to delivering HCV care to immigrant populations among healthcare providers in both Ottawa and Montreal.

In this chapter, I synthesize and compare the findings from the three studies presented in this thesis, highlighting both shared and divergent themes related to HCV screening and treatment among immigrant populations. I then situate these findings within the broader literature by comparing them to results from other relevant studies. This is followed by a discussion of the implications for future research and healthcare practice and policy. Finally, I reflect on the overall strengths and limitations of the thesis.

Discussion

Summary of key findings across studies

Insights from studies with immigrants to Canada

We explored barriers and enablers to HCV screening and treatment among immigrants by focusing on two distinct immigrant populations residing in two different Canadian provinces. This comparative approach allowed us to examine whether the challenges faced by immigrants vary based on their country of origin and/or their settlement context in Canada.

It is important to consider that some of the observed differences between the two immigrant studies may, in part, reflect variations in data collection methods and participant characteristics. Our recruitment strategies were informed by the guidance of Community Advisory Groups and tailored to each setting. In Ottawa, Egyptian immigrants were recruited city-wide through social media, churches, mosques, and referrals from healthcare providers affiliated with the research team. In contrast, recruitment in Montreal focused primarily on two primary care centers located in a neighborhood with a large Punjabi immigrant population. Additionally, participants in the Ottawa study (Egyptian immigrants) generally reported longer durations of residence in Canada, greater comfort communicating in English, more stable immigration status (e.g., permanent residency or citizenship), higher educational attainment, and better access to primary care compared to participants in the Montreal study (Punjabi immigrants). These differences may partly reflect recruitment strategies, but they also align with broader immigration trends and provincial differences in patterns of immigration. Egyptian immigration to Canada increased during the 1970s, largely driven by economic hardship and political instability, with subsequent

waves including professionals and investors under skilled worker and business immigration pathways (1–3). In contrast, Punjabi immigrants, from India and Pakistan, both of which ranked among the top ten source countries for new permanent residents in recent years have arrived through diverse immigration streams, including economic, family reunification, temporary foreign worker programs, and asylum claims (3,4). Many Punjabi immigrants are more recent arrivals and may face additional settlement challenges, including limited English proficiency and barriers to accessing healthcare system (4–6). These demographic and migration-related differences likely shaped participants' healthcare system experiences and influenced their access to HCV care. A key contribution of this thesis lies in its comparative approach, which highlights both shared and community-specific barriers to HCV screening and treatment. This approach allowed me to consider whether HCV screening and treatment programs should be tailored to the unique contexts of particular immigrant groups, taking into account cultural, linguistic, and migration histories, or whether more general strategies could effectively address challenges common across immigrant populations. By identifying where challenges overlap and where they differ, this research provides a basis for determining when targeted approaches are needed and when broader, population-level interventions may be sufficient.

Egyptian participants were generally familiar with HCV prior to migration, often through national awareness campaigns or the experiences of family and friends. While most had a good understanding of common transmission routes, some held misconceptions (e.g., regarding transmission via food or physical contact). They were typically aware of screening and treatment availability in Canada, although knowledge of newer therapies like oral Direct Acting Antivirals (DAAs) was limited, with some referencing outdated interferon-based regimens. In contrast,

Punjabi participants demonstrated lower awareness of HCV across key domains explored, including understanding the disease, its causes, modes of transmission, symptoms (including asymptomatic nature), screening, and treatment. Many Punjabi participants lacked basic knowledge about HCV, including its modes of transmission, and some were unaware that the disease could be transmitted from person to person. There was also confusion regarding how to access screening or whether they had ever been tested. Although some participants knew treatment was available, many expressed outdated beliefs, including assumptions that were likely based on previous interferon based regimens that therapy involved injections and was not readily accessible in Canada.

Another key difference between the two communities related to language. Egyptian participants generally reported greater comfort communicating in English, and language was not commonly identified as a barrier. Whereas, among Punjabi participants, limited proficiency in English or French posed a significant barrier to accessing care. Many relied on informal interpreters, such as family members or community contacts, raising concerns about confidentiality, accuracy, and autonomy. This dependence also restricted appointment scheduling, as it was contingent on the informal interpreter availability. These differences likely reflect variations in educational background and duration of residence in Canada.

Despite notable differences, the two communities also shared some important barriers**,** though a closer examination revealed nuanced differences in how these barriers were experienced by different communities or affected them**.** A key commonality was the influence of asymptomatic infection on healthcare-seeking behavior. Although participants emphasized that health was a priority, they generally reported that they would only seek medical care if they felt unwell or if

symptoms became severe or persistent. Egyptian participants appeared more aware that HCV can be asymptomatic and demonstrated greater familiarity with its potential symptoms. Notably, most Egyptian participants diagnosed with HCV reported experiencing no or only minor symptoms prior to diagnosis, whereas most Punjabi participants with HCV described experiencing symptoms before seeking care. This contrast suggests lower awareness and familiarity with the disease, and contributes to greater delays in seeking care among Punjabi immigrants.

Participants in both groups also reported mixed experiences and perceptions related to stigma. Those with personal experience of HCV were more likely to describe feelings of discrimination, whereas individuals without a history of HCV often did not perceive stigma as a concern. Among Egyptian participants, stigma was often tied to their dual identity as immigrants living with HCV and was occasionally reinforced by negative interactions within the healthcare system. In contrast, stigma among Punjabi participants appeared to be more community-driven, rooted in fear and silence surrounding the disease rather than direct experiences in healthcare settings. Although, some Punjabi participants did not view HCV as stigmatized, particularly when it was perceived as a non-contagious illness.

In both groups, family members played a central role in influencing health-seeking behavior, though the nature of their involvement differed. Punjabi participants frequently consulted family members prior to seeking care and relied on them to navigate language barriers during medical encounters. In contrast, Egyptian participants primarily described receiving emotional and financial support from their families, rather than assistance with communication or decision-making.

Furthermore, both groups encountered barriers to accessing healthcare system, including long wait times and difficulty securing a regular family physician. Egyptian participants were more likely to have a regular provider, possibly because they had lived in Canada longer. In contrast, many Punjabi participants, particularly asylum seekers, had limited or no access to consistent care. Experiences with healthcare providers also varied. Punjabi participants described generally positive interactions and viewed providers as trusted sources of information, which may reflect their access to community-based physicians who shared their language or cultural background. However, since recruitment occurred mainly through two practices with access to Punjabi-speaking doctors, these experiences may not be representative of the broader Punjabi immigrant population. Egyptian participants reported more mixed experiences; while those who had received treatment spoke positively about their care, others described challenges in accessing services, and a few noted that their providers had not discussed HCV screening with them.

Finally, despite all these challenges, participants from both immigrant groups expressed strong commitment to pursuing treatment and follow-up if diagnosed with HCV, and demonstrated optimism that seeking care from healthcare providers would lead to positive health outcomes.

Insights from healthcare providers' study and comparison with immigrant studies

Healthcare providers reported considerable variation in their use of HCV guidelines, with some relying on immigrant-specific recommendations while others used general protocols. Although family physicians and nurses were routinely involved in screening and referrals, many providers lacked the training or confidence to manage HCV treatment. While most participants viewed HCV screening as clinically beneficial, practical constraints such as high workload, administrative

burden, and limited time for patient discussions often led to its de-prioritization during clinical encounters. These challenges are not unique to HCV screening and reflect broader systemic barriers to delivering preventive care in primary care settings.

Healthcare providers also observed that many immigrants tend to prioritize symptomatic health concerns and may not perceive screening as necessary in the absence of visible illness. This view closely aligned with the accounts of immigrant participants who often delayed screening due to the asymptomatic nature of HCV. Both groups also expressed mixed views regarding HCV-related stigma. While some healthcare providers believed that stigma and fear could discourage immigrants from seeking screening or disclosing their status, others reported that stigma was not a prominent concern in their clinical practice.

Consistent with findings from our study with Punjabi immigrants, healthcare providers identified language and communication barriers as significant challenges to delivering HCV care. Due to limited access to professional interpretation services, many providers reported relying on informal interpreters, such as family members or community contacts, which raised concerns regarding confidentiality, accuracy, and patient autonomy. A few providers in both Montreal and Ottawa noted that sharing a cultural or linguistic background with patients helped foster trust, improve communication, and enhance engagement in care. They explained that beyond language alone, cultural familiarity allowed them to present health information in more relatable ways, improving patients' comfort, understanding, and responsiveness to care.

Both immigrant participants and healthcare providers identified shortages of physicians and long wait times as major barriers to accessing HCV care. In addition, healthcare providers described the absence of standardized HCV screening policies for newcomers and variability in service

availability across healthcare settings. They also pointed to infrastructure-related challenges, including a lack of integrated electronic medical records, limited access to diagnostic services, and fragmented communication between providers. The standard two-step HCV testing process was viewed by providers as cumbersome and inefficient, further hindering effective care delivery. There were, however, some differences between provider assumptions and immigrant perspectives. For instance, although providers voiced concern that screening and treatment might interfere with immigrants' already busy lives, most immigrant participants emphasized that health and caring for themselves and their families was a top priority. While a few mentioned that work obligations could occasionally take precedence, the overall sentiment strongly reflected a willingness to prioritize healthcare. Additionally, some providers feared that raising the topic of HCV screening might be perceived as stigmatizing or as imposing an agenda, potentially straining the provider–patient relationship. In contrast, several immigrants expressed disappointment that their providers had not brought up HCV screening, noting that they trusted their doctors and were likely to follow their advice.

Comparison with other studies

This study identified several barriers and enablers to HCV screening and treatment among immigrants, some of which align with previous research, while others offer new insights. In the following section, I compare the findings from this thesis with those of other studies on HCV care among immigrant populations to explore how the results converge or diverge. I then extend the comparison to studies involving other priority populations (e.g. people who inject drugs (PWID), people with experience of incarceration (PWEI), and Indigenous people), to assess whether the

barriers identified are unique to immigrants or reflect broader challenges in HCV care. Finally, I examine studies on access to care for other healthcare issues among immigrants in Canada, to determine whether certain barriers persist regardless of the specific health condition.

Comparison with other studies on barriers to HCV care among immigrants

Table 1 presents an overview of studies examining barriers to HCV care among immigrants, indicating where each study was conducted and the type of participants involved. I identified 13 studies published between 2005 and 2025 that explored immigrants' perceptions of barriers (from Australia (3) (7–9), France (3) (10–12), Germany (1) (13), UK (3) (14–16) and USA (1) (17)). Immigrant populations considered included: mixed populations (4), Africa (3) and Asia (4) (Bangladesh, Cambodia, India, Pakistan). In addition, I identified two USA studies published in 2017 (18) and 2014 (19) that explored healthcare professionals' perceptions of barriers to screening experienced by mixed populations and immigrant populations from Africa and China. Common barriers included low awareness of HCV, misconceptions about transmission and treatment, stigma, language barriers, and structural healthcare system access issues. With the exception of the study by Han et al. (19), which applied the Andersen–Aday Access to Care Model (20) and the PEN-3 framework (21) to guide data collection, none of the other studies employed theoretical frameworks for data collection or analysis. Notably, none of the studies were conducted in Canada, highlighting a significant gap in the literature. This contextual information helps situate the findings of our study within existing research.

Our studies with immigrant communities found that awareness of HCV among immigrant populations is influenced by factors such as country of origin, educational attainment, and

exposure to public health efforts. Previous research including studies involving immigrants from Pakistan and India has similarly documented generally low and uneven levels of HCV awareness across various immigrant groups, often shaped by sociocultural backgrounds and healthcare exposure in countries of origin (7,9–17). A notable exception is a study involving Egyptian immigrants in Australia, which like our findings reported relatively high levels of awareness regarding the disease and its transmission (8). This may be partly explained by Egypt's large-scale public health campaigns (22). Nonetheless, misconceptions about HCV transmission remain common, as highlighted in multiple studies (8,16).

Building on the theme of awareness, a particularly important and recurring gap is the lack of understanding that HCV can be asymptomatic. Immigrants often associate disease severity with the presence of symptoms, which reduces their likelihood of seeking screening in the absence of physical signs (11,15–17). This misconception contributes to delays in diagnosis and treatment, increasing the risk of advanced liver disease.

Beyond knowledge gaps, our findings also reflect those of earlier studies showing that experiences of HCV-related stigma differ widely both across and within immigrant communities (7,10,11,15–17). In some cases, individuals viewed stigma as a real concern, while others were uncertain or did not see it as relevant in their communities. These differences may reflect varying beliefs about illness, levels of awareness, and personal or cultural values. Some studies suggest that while stigma exists, it is not always endorsed by the broader community. For instance, participants in one study emphasized the importance of supporting people with HCV rather than judging them (8). These mixed attitudes highlight that stigma is not experienced uniformly and that assumptions about its presence or impact should be made cautiously.

In addition to stigma, language barriers emerged as another factor shaping access to care. Language was a notable challenge among Punjabi participants in our study but was not reported as a barrier by Egyptian participants. While some studies have similarly identified language as a barrier to HCV care among immigrant populations (10,11,13–15,17), the extent of its impact appears to vary across communities. In our sample, many Punjabi participants relied on English-speaking family members or friends to navigate appointments. Similar concerns have been reported in previous research, including preferences for native-language providers (16).

Structural barriers within the healthcare system further limited access. Participants frequently described the shortage of family physicians and extended wait times as key obstacles to accessing HCV care. Similar issues have been also identified in a previous study in UK, where difficulty securing primary care and delays in appointments were reported as common barriers (16).

Finally, only two studies explored healthcare providers' experiences in delivering viral hepatitis care to immigrant populations, but their findings closely align with ours. Providers commonly reported system-level barriers such as the lack of clear screening guidelines, time constraints, and limited training in hepatitis diagnosis and management (18,19). Patient-related challenges were also frequently cited, including long work hours, caregiving responsibilities, difficulty navigating unfamiliar healthcare systems, and low motivation to seek care for asymptomatic conditions like HCV (18,19). Language barriers particularly when patients are referred outside their communities were seen as a further obstacle to follow-up, with many patients preferring providers who speak their native language to enhance comfort and communication (19).

Table 1-Overview of studies on barriers to HCV care among immigrants

Study	Location of study	Participants
Azadi 2021 (10)	France	Mixed immigrant populations
Cailhol 2020 (11)	France	Immigrants from Pakistan
Caruana 2005 (7)	Australia	Immigrants from Cambodia & Laos
Duracinsky 2020 (12)	France	Mixed immigrant populations
Eborall 2020 (14)	UK	Mixed immigrant populations
Fitzgerald 2017 (18)	USA	Healthcare providers providing care to Chinese and African immigrants
Han 2014 (19)	USA	Healthcare providers providing care to different immigrant communities
Hendy 2019 (15)	UK	Immigrants from Pakistan, India, Bangladesh
Horwitz 2010 (8)	Australia	Immigrants from Egypt
Mohamed 2020 (17)	USA	Immigrants from Africa
O'Connor 2008 (9)	Australia	Immigrants from Vietnam
Santos-Hövener 2015 (13)	Germany	Immigrants from Africa
Sweeney 2015 (16)	UK	Mixed immigrant populations

Comparison with studies on barriers to HCV care among other priority groups

In addition to immigrants, other priority populations must also be addressed to achieve HCV elimination goals in Canada (23). In the following section, I compare the findings from this thesis to studies involving other priority groups such as PWID, PWEI, and Indigenous people to explore whether the barriers identified are unique to immigrants or reflect broader systemic challenges in HCV care. While there is a substantial body of literature examining barriers among PWID and PWEI, fewer studies have focused specifically on Indigenous populations, and I was unable to identify any Canadian studies that examined HCV care barriers among Indigenous peoples. For this comparison, I reviewed a selection of studies rather than conducting an exhaustive review (Table 2). Across the reviewed literature, studies consistently reported that knowledge gaps,

stigma, asymptomatic infection, and system-level barriers undermine engagement with HCV care across priority populations. While common themes emerged the specific manifestations and intensity of these challenges varied by group.

All groups demonstrated varying levels of knowledge gaps about HCV. Many PWID, PWEI, and Indigenous participants lacked basic understanding of HCV transmission, testing processes, and the availability or effectiveness of curative treatment options (24–31). While some PWID were familiar with HCV and knew that it was treatable, many held outdated or incorrect belief and were unaware of DAAs (25,32–34). In several studies, participants reported receiving most of their information from peers rather than healthcare providers, which contributed to persistent misinformation (35,36).

The asymptomatic nature of HCV was another shared barrier to early detection. Immigrant participants often believed testing was unnecessary unless symptoms were present. Similarly, PWID, PWEI, and Indigenous people delayed screening and treatment due to the absence of symptoms and the prioritization of more immediate needs (24,31,37,38).

Stigma emerged as a major cross-cutting barrier across groups, though its sources and manifestations varied. Some immigrants in our studies described stigma and fear of social judgment, particularly within close-knit cultural communities or due to the dual identity of being both an immigrant and living with HCV. For Indigenous participants and PWEI, stigma was intensified by intersecting factors such as race, substance use, and longstanding mistrust in institutions (28,31,39). PWID reported both enacted and internalized stigma, often perceiving themselves as underserving of care, especially in hospital-based or abstinence-oriented

environments (29,32,40). In correctional settings, stigma was frequently tied to concerns about privacy and the fear of involuntary disclosure when accessing healthcare services (41,42).

Language and communication barriers were uniquely prominent among immigrants particularly Punjabi participants who frequently relied on informal interpreters to access care. These barriers were not consistently reported among Indigenous peoples or PWEI, but some immigrant PWID also faced language-based exclusion from services (35).

Systemic and logistical barriers including long wait times, difficulty finding providers, and fragmented care pathways affected all groups, but in different ways. Immigrants, particularly asylum seekers, faced delays due to provider shortages and long wait times for appointments. PWID reported inaccessible clinic locations, rigid scheduling, and lack of co-located services, which hindered ongoing care (29,38). PWEI experienced disjointed care, with short sentences, facility transfers, and a lack of in-prison treatment infrastructure disrupting the continuum of care (31,41,42).

Across all populations, missed opportunities and gaps in provider engagement were consistently reported. Some immigrant participants described how healthcare providers often failed to initiate discussions about HCV screening, even when it would have been appropriate. Similar experiences were noted among PWID, who reported that HCV testing and education were not routinely offered, even in harm reduction settings (35). Many PWID stated that they only received respectful, nonjudgmental care in syringe service programs, while broader healthcare environments were perceived as unwelcoming (40). Across groups, provider-level biases and gatekeeping contributed to care gaps. For example, Indigenous people and PWEI, encountered more explicit denial of treatment based on assumptions about an individual's 'instability' or

ongoing substance use, despite clinical guidelines supporting universal access (28,41). These missed opportunities were further exacerbated by system-level policy and infrastructure gaps. In correctional settings, the lack of harmonized screening protocols (e.g., opt-in vs. opt-out) and absence of coordinated inter-ministerial frameworks contributed to fragmented and inconsistent HCV care (41). Among immigrants, no systematic or mandatory HCV screening policy exists for newcomers, despite their elevated risk. Similarly, harm reduction services often lacked standardized integration of HCV testing into routine care, reflecting broader deficiencies in policy alignment and service coordination (35,40). Together, these structural shortcomings contributed to inconsistent screening, delayed diagnoses, and missed opportunities for early intervention across all priority populations.

Finally, mistrust in healthcare systems varied across groups. Immigrants generally trusted their providers and took their advice and recommendations, while Indigenous participants and PWEI described long-standing institutional mistrust rooted in discrimination, trauma, and inadequate care (28,43). PWID similarly reported distrust in mainstream medical systems, with greater trust placed in harm reduction or peer-led services (29,44).

Some barriers identified in other research were not prominent in our findings, likely reflecting the unique contexts faced by Indigenous peoples, PWID, and PWEI. For example, concerns about privacy and fear of involuntary disclosure were commonly reported in correctional settings, where seeking care could unintentionally reveal one's health status (41,42). Deep-rooted institutional mistrust, shaped by systemic racism and intergenerational trauma, was also more prominent among Indigenous participants and PWEI (28,39). In contrast to our findings, psychological barriers such as fear of diagnosis, low morale, and trauma-related avoidance were

frequently reported among incarcerated individuals and PWID (26,43). Additionally, ongoing substance use was a major competing priority that hindered engagement in HCV care among PWID and some PWEI, a barrier not observed in our immigrant sample (29,30,35,38). Finally, policy-level gaps, such as inconsistent screening protocols in prisons and administrative exclusions due to documentation or sobriety requirements, were reported among marginalized PWID and PWEI (34,41), issues that were not relevant or reported in our community-based immigrant research.

Table 2-Overview of studies on barriers to HCV care among other priority groups

Name	Location of study	Participants
People who inject drugs		
Akiyama 2022 (37)	Kenya	PWID
Aung 2024 (33)	Australia	PWID
Austin 2022 (36)	USA	PWID
Fontaine 2023 (32)	Canada	PWID
Fontaine 2024 (38)	Canada	PWID & service providers
Goodyear 2021 (44)	Canada	PWID
Khezri 2025 (25)	Iran	PWID
Manley 2025 (29)	Kenya	PWID
Muncan 2020 (40)	USA	PWID
Skeer 2018 (34)	USA	PWID
Yela 2024 (35)	Spain	PWID
People with experience of incarceration		
Akiyama 2020 (30)	USA	PWEI
Crowley 2018 (42)	Ireland	PWEI
Lafferty 2020 (43)	Australia	PWEI
Mambro 2024 (31)	Canada	PWEI
Mambro 2025 (26)	Canada	PWEI
Ruiz 2022 (41)	Canada	Correctional stakeholders and healthcare providers
Sheehan 2024 (27)	Australia	PWEI
Indigenous people		

Lim 2023 (24)	Australia	Healthcare providers serving Indigenous people
Puljević 2022 (28)	Australia	Indigenous people and Healthcare providers serving them
Rashidi 2020 (39)	Australia	Indigenous people

Comparison with studies on barriers to care for other diseases among immigrants

Several barriers identified in our study of HCV care among immigrants were also evident in research examining access to care for other health conditions among immigrants in Canada. For this comparison, I focused solely on Canadian studies involving immigrant populations to isolate the role of the health condition itself (e.g., HCV, diabetes, mental health) while keeping other factors consistent, such as the priority group (immigrants) and the study setting (Canada) (Table 3). This approach aimed to better understand whether the barriers observed in our research are specific to HCV or reflect broader systemic patterns. It is important to note that I selected a limited sample of studies from the existing literature, rather than conducting a comprehensive review. Nonetheless, Canadian studies on immigrant healthcare system access consistently highlight common barriers such as language challenges, limited system knowledge, and stigma. These barriers appear across a range of health conditions and reinforce the need for culturally responsive and system-aware interventions.

Lack of awareness about the disease and system navigation challenges were also common across other health conditions. In our study, some participants (prominently Punjabi immigrants) were unfamiliar with how or where to access HCV screening or treatment. Similarly, other research has shown that immigrants often struggle to navigate healthcare systems, including understanding referral processes, service coverage, or how to book appointments (45–49).

Perceived stigma and discrimination emerged as cross-cutting barriers across our study and other research involving immigrant populations. In our work, participants described fear of being judged within their cultural communities and, in some cases, recounted negative interactions with healthcare providers. These findings are consistent with studies in mental health and reproductive health, where stigma associated with illness, gender norms, or cultural taboos led to silence, shame, and disengagement from care (47,49–51).

Cultural beliefs and expectations played a significant role in shaping healthcare system engagement across our study and others. In our research, participants' decisions around HCV screening and treatment were strongly influenced by community norms, including the perception that care was only necessary when symptoms were present. This aligns with findings from other immigrant health studies, which reported low uptake of preventive services such as cancer or diabetic screening, often attributed to limited awareness, competing life demands, or beliefs that screening is unnecessary in the absence of symptoms (48,52). Additionally, mismatched expectations regarding provider roles such as anticipating immediate prescriptions, preferring gender-concordant providers, or favoring traditional or alternative medicine were reported to contribute to dissatisfaction or disengagement from mainstream care (46,48,51). Together, these cultural and perceptual factors present important barriers to early detection and timely treatment across a range of health conditions.

Language and communication barriers were prominent across both our findings and other studies. In our research, Punjabi-speaking participants in particular reported challenges navigating care due to limited English or French proficiency, often relying on family members to interpret. This is consistent with findings from studies on maternal care, diabetes, and mental

health services, which describe language limitations as a key factor undermining communication, confidentiality, and autonomy (46–49,51,52).

Structural and logistical barriers such as long wait times, limited appointment availability, and transportation challenges were raised frequently in our study and others. These systemic issues were especially pronounced for newcomers and individuals with limited support networks (46–49).

Insufficient provider-initiated communication emerged as a common barrier across studies. In our study, some participants expressed disappointment that providers had not initiated conversations about HCV screening, even when risk factors were present. This aligns with findings from other settings, where patients felt that preventive care options were not clearly explained or routinely offered (46–48).

Some barriers identified in other research were not prominent in our findings, likely reflecting the condition-specific nature of HCV care. For example, studies focused on mental and reproductive health highlighted challenges such as fear of gossip, cultural taboos around emotional disclosure, and discomfort discussing sensitive or stigmatized topics (50). In contrast, while stigma did emerge in our study, it was more commonly tied to perceptions of infection and community judgment rather than gender or mental health norms. Gender-specific access barriers such as women's reluctance to see male physicians or limited access to culturally appropriate maternal health services were emphasized in reproductive health studies (51), but were not strongly represented in our findings, possibly due to the gender composition of our sample and the focus on HCV. Financial constraints also differed across studies. Cost-related barriers were not a major theme in our work, likely because HCV testing and treatment are publicly funded in

Canada. However, in other health domains, immigrants reported difficulties affording services not fully covered by provincial insurance, such as prescription medications, dental care, and vision services (45,46,48,49).

Table 3-Overview of studies on barriers to care for other diseases among immigrants

Study	Problem/Health condition	Participants
Dahal 2024 (46)	Access to primary care	Immigrants from Nepal
Pandey 2020 (47)	Access to healthcare services	Mixed immigrant populations
Redwood-Campbell 2011 (52)	Screening for cervical cancer	Mixed immigrant populations
Salam 2025 (49)	Seeking mental health	Mixed immigrant populations
Turin 2020 (45)	Access to primary care	Immigrants from Bangladesh
van Allen 2020 (48)	Screening for diabetic retinopathy	Mixed immigrant populations
Wang 2019 (50)	Screening for colorectal cancer	Mixed immigrant populations
Yalcinoz-Ucan 2025 (51)	Seeking help for gender-based violence	Mixed immigrant populations

Overall, these comparisons demonstrate that while immigrants share several common barriers to HCV care with other priority populations, they also face distinct challenges shaped by migration experiences, cultural norms, and patterns of healthcare system access. Additionally, comparisons with studies on access to care for other health conditions among immigrants suggest that many of the barriers identified in this thesis are not unique to HCV but rather reflect broader structural and systemic challenges encountered by immigrants within the Canadian healthcare system. At the same time, some obstacles appear to be disease-specific, underscoring the need for both population- and disease-specific strategies to promote equitable access to care. Finally, it is important to recognize that immigrant populations are not a homogeneous

group; their healthcare system experiences and perceptions vary significantly based on country of origin, settlement context, and other intersecting factors.

Implications for practice and policy

To guide the development of practical and theory-informed program recommendations, this section draws on the model proposed by French et al. (53) which provides a systematic framework for designing implementation interventions. According to this model (Fig 1), step 1 involves identifying the evidence-practice gap, and step 2 focuses on identifying modifiable barriers and enablers to behavior change, both of which have been addressed in this thesis. The discussion that follows centers on step 3 which is selecting and tailoring intervention strategies to address the identified barriers and enablers.

The integrated barriers to HCV screening and treatment among immigrants, and their corresponding implications, can be organized into ten overarching themes across three levels (Figure 2):

- **Level 1-Immigrants:** Lack of awareness about HCV and its asymptomatic nature, language barriers, and fear or stigma (with some of these barriers being more prominent in one community than the other).
- **Level 2-Healthcare Providers:** Limited familiarity with immigrant-specific guidelines and HCV treatment, lack of role clarity, and time and administrative constraints.
- **Level 3-Healthcare System and Public Health:** Shortage of family physicians, long wait times, absence of universal or mandatory HCV screening, and limitations within diagnostic and data systems.

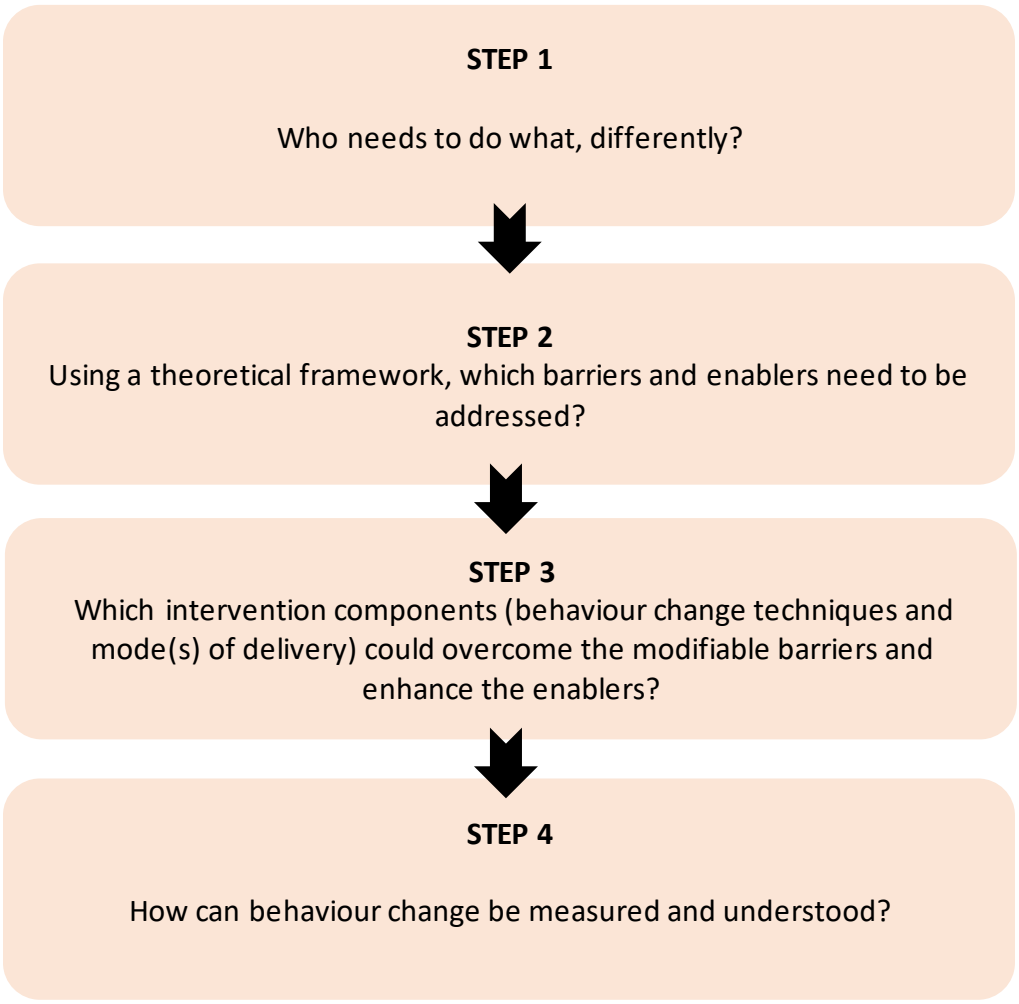
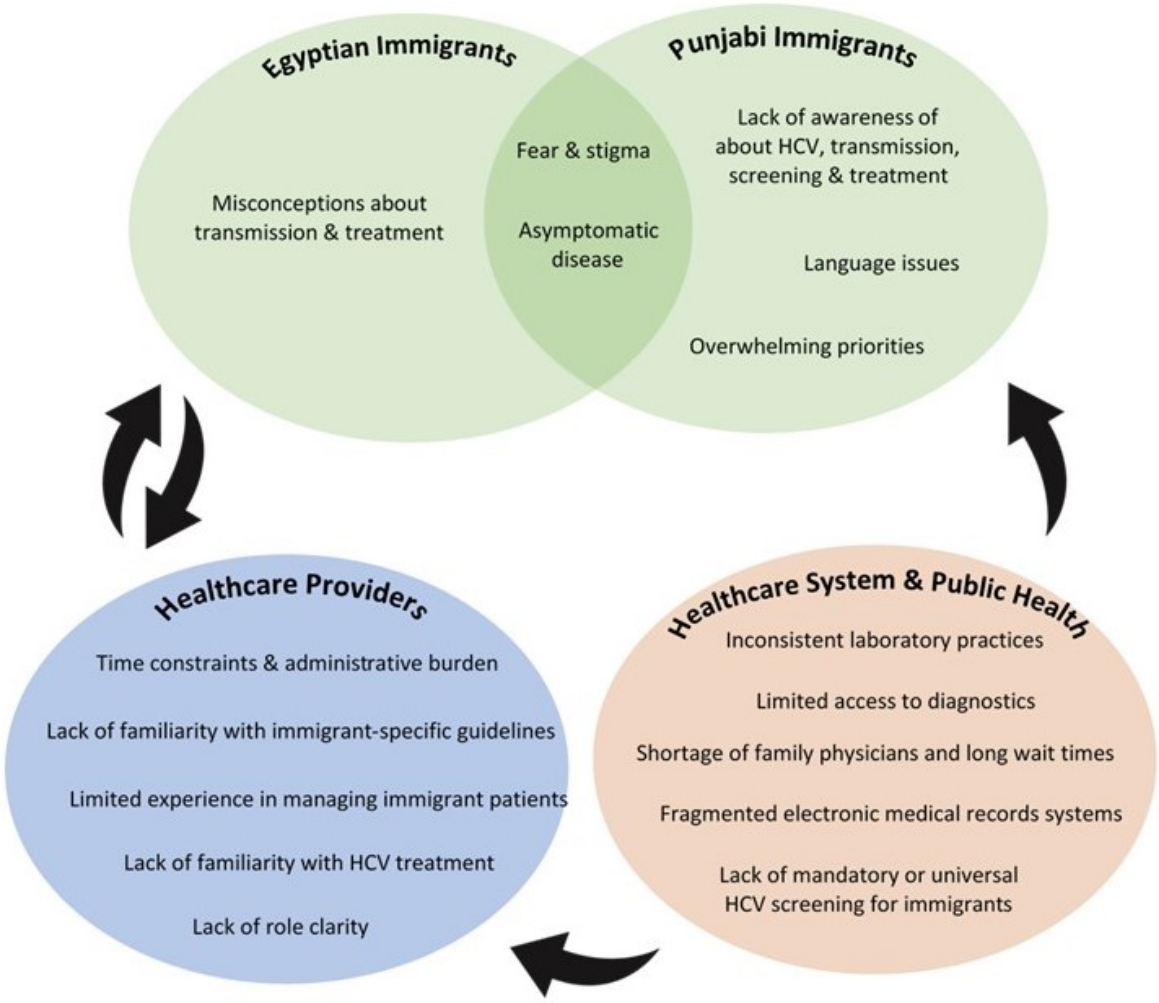


Figure 1- Steps for developing a theory-informed implementation intervention (French et al. 2012) (53)

While the challenges at each level are interrelated, classifying them by level helps clarify their distinct contributions. These levels apply to barriers, but the strategies to address them often span multiple levels. For instance, limited awareness of HCV among immigrants, an individual-level barrier, requires coordinated action from providers, the healthcare system, and public health agencies. Likewise, language barriers noted at the immigrant level also call for provider- and system-level measures, such as interpreter access and supportive policies. To maximize the

effectiveness of programs, implementation science recommends clearly differentiating between the content of interventions (what is delivered), the mode of delivery (how it is delivered), and the behaviour change techniques (BCTs) (54) employed (the techniques with which change is facilitated) (53). BCTs are defined as the smallest, observable, and replicable components of an intervention that can bring about change in a specified behaviour. The BCT taxonomy includes 93 distinct techniques, each with a clear definition and examples, organized into 16 higher-order groupings. The barriers and enablers identified through the TDF analysis can be mapped to corresponding BCTs, following established TDF–BCT mapping tools (55,56). Each BCT label in the following sections is accompanied by a brief operationalization, a concrete example of how it could be applied in the context of improving HCV screening and treatment among immigrant communities. This structured approach supports the development of theoretically grounded and contextually relevant strategies. In the sections that follow, I outline practice and policy implications at the individual, provider, and system levels, applying this framework to inform the design of effective and tailored interventions. These examples are not intended to be comprehensive, but rather to illustrate how insights from the data might inform future intervention development. The goal is to stimulate further thinking and discussion, including with end-users, researchers, and system stakeholders, about how barriers identified in this research could be addressed in practice.

Figure 2-Integrated barriers to HCV screening and treatment among immigrants in Canada



Level 1- Immigrants

Although both immigrant communities demonstrated knowledge gaps and misconceptions regarding HCV, these issues were substantially more pronounced among Punjabi participants, for whom limited awareness emerged as a critical barrier to screening and treatment. Addressing these barriers requires carefully developed content that explains key aspects of the disease,

including its transmission, asymptomatic nature, and the importance of early screening, even in the absence of symptoms (BCT 4.2: *Information about antecedents*). These resources should be culturally appropriate and linguistically accessible to ensure they resonate with diverse immigrant communities and effectively promote engagement in screening and care. In addition, it is essential to provide accurate and accessible information about recent treatment advances particularly the availability, safety, and effectiveness of DAAs as outdated beliefs about injection based interferon therapy may discourage individuals from seeking care (BCT 5.1: *Information about health consequences*). Improving knowledge in these areas can also help to reduce fear and stigma by reframing HCV as a curable and manageable condition. Intervention content should also highlight the emotional relief and improved quality of life associated with successful treatment, while acknowledging and addressing the emotional distress, anxiety, or shame that stigma can create (BCT 5.6: *Information about emotional consequences*). Messages should also make the positive and negative consequences of action or inaction more salient and personally relevant, for example, by linking early screening to protecting one's family and community from infection or by illustrating the potential long-term health impacts of delayed diagnosis (BCT 5.2: *Salience of consequences*). To achieve these outcomes, intervention content should include clear, evidence-based information about the health consequences of untreated HCV and the broader social and system-level impacts of delayed diagnosis and treatment, such as ongoing community transmission and increased healthcare system costs (BCT 5.3: *Information about social and environmental consequences*). Culturally relevant narratives or success stories that normalize engagement in care can further enhance message resonance. Equally important is ensuring that individuals understand what screening involves and how to access it, including step-by-step

guidance during clinical or community encounters (BCT 4.1: *Instruction on how to perform the behaviour*). In clinical settings, brief, personalized counselling from trusted healthcare providers can serve as a highly effective entry point for initiating discussions about HCV. Many participants in our study reported relying on healthcare professionals for health information, highlighting the value of integrating targeted HCV messaging into routine care encounters. Physician recommendation is a well-established determinant of HCV screening uptake in immigrant communities, emphasizing the critical role of healthcare providers in supporting early detection and treatment (57,58). This can be reinforced with linguistically and culturally adapted handouts and decision aids to enhance comprehension and retention. In parallel, community-based delivery through trusted figures such as religious leaders or representatives from cultural organizations offers an alternative route for reaching long-settled or disengaged immigrants who may not regularly interact with the formal healthcare system. Tailoring messaging for delivery in culturally familiar settings can enhance both credibility and resonance. For our study populations, this could include mosques for Muslim communities from Punjab and Egypt, Coptic churches for Christian communities from Egypt, and gurdwaras or Hindu temples for Sikh and Hindu communities from Punjab. Collaborations with these groups have been shown to enhance the effectiveness of health promotion activities by fostering trust and cultural relevance (59–63). Moreover, mass communication via ethnic media and social media platforms can reinforce key messages and provide repeated cues to action, especially when messages are presented in the language and visual style of the target communities. Together, a multi-modal, culturally tailored strategy that engages both clinical and community-based information sources is likely to be most

effective in improving awareness, reducing stigma, and promoting timely HCV screening and treatment uptake among immigrant populations.

Language barriers emerged as a major obstacle to effective HCV care, as noted by Punjabi immigrant participants and healthcare providers. To address this issue, intervention content should emphasize the importance of clear, accurate, linguistically accessible (i.e., materials in immigrants' first language) and culturally appropriate communication as a core component of high-quality, equitable care. Targeted strategies should reinforce healthcare providers' professional role in facilitating inclusive communication, including the ethical obligation to avoid reliance on informal interpreters such as family members or untrained community contacts. In practice, this could involve integrating trained medical interpreters who are fluent in relevant languages, culturally competent, and equipped with a basic understanding of HCV and its modes of transmission into standard clinic workflows, ensuring their availability is routine rather than optional (BCT 12.2: *Restructuring the social environment*). Additionally, visible interpreter request stations, multilingual signage, or printed materials in patients' first languages can make interpreter services more accessible and visible, prompting both providers and patients to use them (BCT 12.5: *Adding objects to the environment*). While ideally implemented through system-wide protocols, such measures face barriers such as funding constraints, workforce shortages, and already stretched clinical infrastructures. Acknowledging these challenges is essential to ensuring that recommendations remain realistic and feasible. Future research and pilot programs are needed to identify scalable, sustainable approaches for embedding these supports into existing healthcare settings. Where feasible, language-concordant care can further enhance patient comfort and reduce miscommunication. Although embedding these approaches into

clinic infrastructure is an important long-term goal, doing so will require supportive healthcare system–level policies, resource allocation, and careful planning for implementation in busy, resource-constrained environments. Recent Canadian research underscores that the lack of a unified national policy on medical interpreting results in inconsistent and inequitable access across provinces and institutions, and frames medical interpretation as both a human rights obligation and a cost-effective strategy to improve care for immigrants (64).

Level 2- Healthcare providers

Lack of familiarity with immigrant-specific HCV screening guidelines and treatment protocols emerged as a key barrier among healthcare providers in our study. To address this, intervention content should include concise, evidence-based clinical guidance tailored to the needs of providers serving diverse populations (BCT 4.1: *Instruction on how to perform the behaviour*). This should outline the importance of early detection (BCT 5.1: *Information about health consequences*), provide step-by-step instructions for initiating screening and treatment, and clarify referral pathways to specialist care. Embedding this information into electronic medical record systems as prompts or decision aids can support consistent practice and reduce cognitive burden during clinical encounters (65–67). The mode of delivery should prioritize accessible, flexible, and practice-relevant formats. For example, incorporating immigrant-focused HCV education modules into medical residency programs and continuing professional development (CPD) can facilitate sustained knowledge acquisition (BCT 4.1: *Instruction on how to perform the behaviour*). Short workshops and online modules can provide time-efficient opportunities for providers to build confidence in managing HCV in immigrant populations, particularly in high-

volume or resource-constrained settings. These sessions should allow providers to apply new skills in simulated or supervised settings (BCT 8.1: *Behavioural practice/rehearsal*) and observe expert role models carrying out key tasks (*BCT 6.1: Demonstration of the behaviour*). Evidence from a Cochrane review shows that well-designed educational meetings and workshops for healthcare professionals can lead to modest but important improvements in professional practice and, in some cases, patient outcomes (68) . In parallel, targeted communication skills training can strengthen providers' abilities to engage effectively with patients from diverse cultural and linguistic backgrounds. This training should focus on culturally responsive communication, shared decision-making, and addressing stigma-related concerns. It is shown that communication skills training for healthcare providers can improve the patient–provider interaction, enhance patient satisfaction, and in some cases positively influence health outcomes, particularly when training includes opportunities for practice and feedback (69). Additionally, providing access to linguistically and culturally tailored patient education materials such as multilingual brochures, videos, or interactive tools can support mutual understanding, reinforce provider messaging, and improve patient engagement in care. Culturally appropriate health education for ethnic minority groups has been shown to improve health behaviours, disease knowledge, and clinical outcomes compared with usual care, underscoring the value of tailoring both language and content to the target community (70). By building providers' knowledge base, communication skills, and confidence, these interventions target both individual and systemic barriers to the delivery of high-quality, culturally safe HCV care for immigrant communities. By building providers' knowledge base, communication skills, and

confidence, these interventions target both individual and systemic barriers to the delivery of high-quality, culturally safe HCV care for immigrant communities.

Given the reported uncertainty around provider roles within the HCV care cascade, it is essential to develop and disseminate clearly defined care pathways and role-specific guidance, as structured clinical pathways have been shown to improve adherence to evidence-based care, reduce complications, and enhance efficiency without compromising patient outcomes (71). Intervention content should specify the responsibilities of different healthcare professionals including primary care providers, nurses, and specialists at each step of HCV screening, diagnosis, referral, and treatment within specific context of different jurisdictions. This clarity can be reinforced through visual care algorithms or flowcharts embedded within electronic medical records and decision support tools (67) (BCT 7.1: *Prompts/cues;* BCT 5.1: *Information about health consequences*). To operationalize these roles, healthcare professionals must be supported with adequate training and access to relevant clinical resources (BCT 4.1: *Instruction on how to perform the behaviour;* BCT 6.1: *Demonstration of the behaviour*). Short modular training programs or integrated professional development sessions can help strengthen role identity and confidence in managing HCV care among diverse providers (68) (BCT 15.1: *Verbal persuasion about capability*). At the systems level, reducing workflow disruptions through simplified referral processes, streamlined reimbursement procedures, and administrative task delegation can improve efficiency and reduce provider burden (BCT 12.1: *Restructuring the physical environment;* BCT 12.5: *Adding objects to the environment*). Together, these strategies support a shared understanding of professional roles and optimize work environments, for effective and coordinated HCV care delivery.

Level 3- Healthcare system and public health

There are currently no national guidelines recommending a standardized package of routine HCV screening for newly arrived immigrants and asylum seekers in Canada. The only existing recommendation from the Canadian Collaboration for Immigrant and Refugee Health (CIRH) is now outdated (72). Updated, evidence-based national guidelines could provide a clear framework for implementation (BCT 12.5: *Adding objects to the environment*; BCT 4.1*: Instruction on how to perform the behaviour*). Incorporating routine or opt-out HCV screening into initial health assessments, where they do occur (e.g., in refugee clinics), could facilitate earlier detection and timelier linkage to care, particularly for individuals who may not otherwise engage with preventive health services (BCT 12.1: *Restructuring the physical environment*). Prompts in electronic health records, such as automated reminders or checklist items, can further ensure consistent delivery (BCT 7.1: *Prompts/cues*). However, as this approach largely benefits recent arrivals, it must be complemented by additional outreach strategies targeting long-settled immigrants who remain underserved and at risk of undiagnosed infection.

To address broader access-related environmental barriers such as physician shortages, long wait times, and language obstacles, decentralizing HCV services into community-based and primary care settings, as endorsed by the WHO (73), presents a viable and effective strategy. This model emphasizes integrating HCV care into routine services, expanding the roles of non-specialist providers (e.g., nurses, family physicians), and minimizing dependence on specialist-led care pathways (73,74) (*BCT 12.2: Restructuring the social environment*). Evidence from varied settings, including harm reduction programs, correctional facilities, and general practice, demonstrates that decentralized models improve HCV screening and treatment uptake while achieving

outcomes comparable to those of specialist care (75–77). Our findings support the relevance of this approach for immigrant populations. Many participants expressed a preference for receiving care from providers embedded within their communities, particularly those who speak their language and understand their cultural context. Embedding HCV services in these trusted settings not only facilitates access but also addresses stigma and logistical challenges, thereby fostering engagement and continuity of care (78) (*BCTs: Social support;*). Providing clear information on how screening and treatment benefit both the individual and the wider community can further encourage participation (BCT 5.3: *Information about social and environmental consequences*). Given the simplicity and safety of DAAs, primary care settings are well-positioned to deliver treatment (79). Enabling this transition requires targeted training for primary care teams that offers step-by-step clinical guidance on diagnosis and treatment (BCT 4.1: *Instruction on how to perform the behaviour*) and opportunities to observe or practise these skills through case-based learning or supervised sessions (BCT 6.1: *Demonstration of the behaviour*). Reducing administrative barriers such as simplifying reimbursement procedures and documentation requirements can be achieved by streamlining forms and embedding standardized referral templates into electronic medical records (BCT 12.1: *Restructuring the physical environment;* BCT 12.5: *Adding objects to the environment*). Together, these system-level changes create an enabling infrastructure for delivering equitable, accessible, and culturally responsive HCV care to immigrant populations.

In addition, findings from this study suggests that the two-step HCV testing process often leads to delays in diagnosis, contributes to patient anxiety, increases provider workload, and results in loss to follow-up due to the need for repeated referrals and laboratory visits, especially among

immigrants facing systemic and logistical barriers. Reflex HCV RNA testing, which performs RNA confirmation automatically on the same sample after a positive antibody result, offers a streamlined alternative that simplifies care pathways and reduces transportation, language, and fragmentation-related barriers (80,81) *(BCT 12.1: Restructuring the physical environment*).

To support equitable access to HCV diagnosis, we should ensure that all laboratories and healthcare providers consistently offer HCV screening and accept Interim Federal Health (IFH) program coverage for refugees and asylum seekers. This includes the development and implementation of clear, standardized laboratory protocols that explicitly outline eligibility, procedures, and reimbursement processes. From a mode of delivery perspective, these changes should be embedded within provincial laboratory policies and communicated through training sessions, provider bulletins, and public health advisories targeting both frontline staff and administrative personnel (BCT 12.1: *Restructuring the physical environment;* BCT 4.1: *Instruction on how to perform the behaviour*). Expanding access to diagnostic services within community-based and immigrant-serving clinics is equally important. Delivering testing services through familiar, local settings can minimize logistical barriers, reduce patient burden, and enhance comfort and trust particularly for those who may not engage with hospital-based care (BCT 12.1: *Restructuring the physical environment;* BCT 3.1: *Social support*).

While full-scale integration of electronic medical records across institutions remains a complex and long-term goal, interim improvements in data-sharing between laboratories, primary care providers, and specialists can meaningfully enhance continuity of care. By facilitating timely communication and reducing duplicative testing, these infrastructure upgrades support more coordinated and patient-centered service delivery (*BCT 7.1: Prompts/cues*). Although such

changes may not directly influence individual behaviour, they form a critical enabling environment that complements interventions targeting knowledge, beliefs, and motivation.

Taken together, adopting reflex testing, standardizing protocols, and improving data interoperability offer tangible, system-level solutions to reduce friction within the HCV care cascade and improve outcomes for immigrant communities.

Implications for research

Although this thesis focused on HCV screening and treatment in two distinct immigrant communities in two Canadian provinces, further research is needed to determine the extent to which these findings are transferable. Specifically, future studies could replicate this approach among Punjabi and Egyptian immigrants in other contexts to assess the robustness of the current findings. Additionally, expanding this work to include other immigrant communities would help assess the extent to which community-specific cultural beliefs and healthcare system interactions necessitate tailored intervention strategies. Finally, because healthcare delivery systems and public health infrastructure vary not only across Canadian provinces but also across jurisdictions globally, it is important for future research to examine how meso- and macro-level contextual factors shape barriers and enablers to care. Conducting similar work in other healthcare system domains could also help assess the transferability of these findings and inform strategies for addressing comparable barriers in different health contexts. Collectively, these lines of inquiry would strengthen the evidence base for designing contextually and culturally appropriate strategies to improve hepatitis C care among immigrant populations. Future research should also

adopt a theoretically driven approach to ensure that intervention design and evaluation are grounded in established behavioural and implementation science frameworks.

In addition, future research should focus on evaluating the effectiveness of theory-informed interventions designed to address the identified barriers and enablers. Consistent with Step 4 of the French framework (53), such evaluations are essential to determine not only whether proposed strategies lead to improved uptake of HCV screening and treatment, but also how and why they work in different contexts. Mixed-methods evaluations that incorporate both process and outcome measures can provide insight into the feasibility, acceptability, and impact of interventions, while also guiding their adaptation for other communities or healthcare settings. This step is critical for advancing the practical application of implementation science in immigrant health research.

Strengths and limitations

While the strengths and limitations of each study that compose this thesis are described in detail in each chapter, this section provides an overview of the strengths and weaknesses of the thesis overall.

Strengths

Theory-informed approach across studies: A major strength of this thesis is its systematic application of theoretical frameworks (CS-SRM and TDF) to guide data collection and analysis. This theory-informed approach provided a structured lens to examine participants' beliefs, experiences, and the contextual factors shaping their behaviors. It enhanced the analytical rigor

and interpretability of findings, enabled meaningful cross-study comparisons, and informed the identification of actionable targets for intervention development. Moreover, this approach offers a strong foundation for designing and evaluating tailored interventions to address immigrant-specific needs, with the potential for replication in other Egyptian and Punjabi communities across Canada and among additional ethno-cultural groups (82,83).

Use of dual theoretical frameworks: This thesis employed two theoretical frameworks, the CS-SRM and the TDF, to guide the studies involving immigrant populations. The CS-SRM facilitated an understanding of how participants perceived HCV, including their beliefs about its causes, consequences, emotional responses, and coping strategies. In parallel, the TDF provided a structured approach to explore one specific coping behavior: seeking HCV screening and treatment from healthcare providers, enabling the identification of relevant barriers and enablers to this behavior. In contexts where individuals may be unfamiliar with biomedical concepts of disease, combining a model that explores lay understandings of illness (such as the CS-SRM or Kleinman's explanatory model of illness (84)) with a behaviorally oriented framework like the TDF enhances both the depth and relevance of the inquiry. This integrated approach provides insight into how individuals conceptualize illness and engage with care while clarifying why certain beliefs or contextual factors act as barriers or enablers. It also highlights opportunities to correct misperceptions and build upon existing knowledge to promote effective engagement in screening and treatment services. This combined use of frameworks allowed for a comprehensive exploration of participants' perceptions and health-related behaviors.

Triangulation of perspectives: One methodological strength of this thesis is the deliberate use of data triangulation, a strategy that enhances the credibility and depth of qualitative research. Triangulation involves collecting information from multiple sources to develop a more comprehensive understanding of the phenomenon under study and to validate findings through convergence across perspectives (85). In this research, data were gathered from both immigrants and healthcare providers, as well as across multiple geographic settings, allowing for comparison and contextualization of experiences. This multi-source and multi-site design strengthens the trustworthiness of the findings by corroborating themes across different participant groups and settings. Triangulation is widely recognized as a key technique for increasing the validity of qualitative research, as it reduces the likelihood that findings are the result of isolated or subjective viewpoints.

Community-engaged methods: This study adopted a community-engaged approach, emphasizing partnership, co-learning, and shared decision-making between researchers and community members (86). Community advisory groups were actively involved throughout data collection and analysis, contributing to the refinement of interview guides, participant recruitment, and interpretation of findings. Their involvement helped ensure cultural relevance, enhanced ethical rigour, and increased the trustworthiness of the data (87). Community-engaged research literature highlights that involving individuals with intimate knowledge of the setting can strengthen both internal and external validity by providing contextual insight and empowering participants (88). Accordingly, the integration of community advisory groups contributed meaningfully to the credibility and dependability of this study.

Multi-jurisdictional data: Collecting data across multiple provinces enabled exploration of how variations in local healthcare system structures shape barriers and enablers to HCV care. This geographic diversity not only offered valuable insights into jurisdictional differences in perceptions and access, but also strengthened the transferability of the findings, the extent to which results may apply to other contexts. Cross-jurisdictional comparisons highlighted the influence of structural and contextual factors on healthcare system experiences, and the use of rich, context-specific descriptions allows readers to assess the relevance of findings to other settings (89).

Language accessibility: Interviews were conducted in participants' preferred languages, working with native speakers from the respective communities. This approach helped build rapport, increase participant comfort, and enhance the accuracy and cultural relevance of the data collected.

Limitations

Limited transferability: Although this study focused on two immigrant communities and was conducted in Ontario and Quebec, the findings may not be fully generalizable to all immigrant populations or jurisdictions in Canada. Differences in provincial healthcare system delivery models, immigrant integration supports, and community demographics can influence access to care and shape the nature of barriers encountered. Likewise, variations in cultural background, health literacy, and familiarity with the healthcare system may affect how immigrants perceive and respond to HCV-related challenges. However, consistent with the goals of qualitative

research, the aim was not to achieve generalizability but to generate in-depth, contextualized understanding of participants' lived experiences (90). This approach enables the identification of nuanced insights and transferable themes that can inform future research, policy, and practice across diverse populations and provincial contexts.

Language and translation considerations: This study involved cross-language qualitative research, which refers to the collection of qualitative data in one language that must then be translated into another for the purposes of analysis, presentation, or publication (91). Despite efforts to conduct interviews in participants' preferred languages and ensure high-quality translation, some nuances may have been lost during translation or cross-language analysis. Such research poses unique methodological challenges, as translation involves more than converting words, it also requires preserving conceptual and cultural meaning. Inaccurate or overly literal translation can distort participants' intended meanings and compromise the credibility and dependability of findings. To enhance conceptual equivalence, professional translators were used, and a subset of translated transcripts was reviewed by a bilingual interviewer familiar with the language and context. Nevertheless, the potential for subtle shifts in meaning or the loss of culturally embedded expressions remains. To address these challenges, it is important to use qualified translators, involve bilingual reviewers familiar with the cultural context, and transparently report translation procedures, all of which help uphold the trustworthiness and rigour of cross-language qualitative research (91).

Urban focus: All studies included in this research were conducted in urban settings, where participants generally had access to a wider range of healthcare system services, community resources, and specialist providers. While important barriers to HCV care were identified, these findings may not reflect the experiences of immigrants living in rural or remote areas, where geographic isolation, provider shortages, limited transportation options, and reduced availability of linguistically and culturally appropriate services may present additional or distinct challenges. The absence of rural representation limits the scope of the findings and underscores the need for future research to explore how structural and contextual factors in non-urban settings shape access to and engagement with HCV care among immigrant populations.

Self-selection or social desirability bias: A potential limitation of this study is the risk of self-selection and social desirability bias**.** Participants who chose to take part may have been more engaged, informed, or interested in HCV care than non-participants, potentially influencing the types of barriers and enablers they reported. In addition, given the sensitive nature of the topic and the interview-based format, some participants may have tailored their responses to align with what they perceived as socially acceptable or favorable. Social desirability bias is a well-documented form of systematic error in qualitative research, where individuals present themselves in a more positive light, either consciously or unconsciously, based on the study context, interviewer characteristics, or perceived social norms (92). This may have led some participants to downplay stigmatized behaviors or overemphasize socially approved actions. While efforts were made to reduce this bias by building rapport, assuring confidentiality, and

using neutral, non-judgmental questioning, the possibility of its influence on the authenticity of the data cannot be ruled out.

Conclusion

This thesis offers a comprehensive, theory-informed exploration of the barriers to HCV screening and treatment among immigrant populations in Canada. By integrating perspectives from both immigrants and healthcare providers, it provides a nuanced understanding of the individual, provider, and system-level challenges that undermine timely and equitable HCV care. Key barriers identified at the immigrant level include limited awareness of HCV, its asymptomatic nature, stigma, and language difficulties. Among healthcare providers, gaps in knowledge of immigrant-specific guidelines and HCV treatment, unclear roles, and time and workload pressures impeded care delivery. At the system level, physician shortages, long wait times, fragmented data systems, limited diagnostic access, and the absence of standardized HCV screening policies and universal access to interpreters further constrained care. The findings underscore the need for coordinated strategies across all levels to strengthen provider capacity, streamline service delivery, and promote culturally responsive care. This thesis contributes important evidence to inform implementation and equity-focused interventions, supporting efforts toward Canada's HCV elimination goals.

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Appendix A-Ethics approval

July 18, 2022

Dr. Jeremy Grimshaw

The Ottawa Hospital- General Campus
Ottawa Hospital Research
Institute Centre for Practice
Changing Research
501 Smyth Road, Room 1286, Box 711
Ottawa, ON K1H 8L6

Re: OHRI Institutional Approval for Ottawa Health Science Network Research Ethics Board (OHSN-REB) Submission

Protocol ID#: 20220418-01H;

Toward eradication of Hepatitis C infection among immigrants in Canada

Dear Dr. Jeremy Grimshaw,

This letter serves as **Ottawa Hospital Research Institute (OHRI)** Institutional Approval for the above-referenced study. Please maintain this documentation in your investigator study file.

Based on the information you provided about this study through the Clinical Research Registration Form, you have satisfied the requirements for institutional (OHRI) approval. This includes initial research ethics approval by OHSNREB, appropriate departmental/service area notifications and execution (fully signed versions) of all agreement(s) required to begin the study locally. Please note there may be additional agreement(s) pending execution that are required to send funds, samples, or data to external sites, but are not required for you to begin your study locally.

Changes and/or additions to your study that may require additional agreement(s) or revisions to existing agreement(s) must be communicated to the OHRI Contracts Office. This should be undertaken simultaneously with any related OHSN-REB amendment submission.

Changes and/or additions to your study that affect various hospital/institution departments (e.g., pharmacy, Department of Medical Imaging, EORLA, EEG, etc.) must be communicated to the relevant departments.

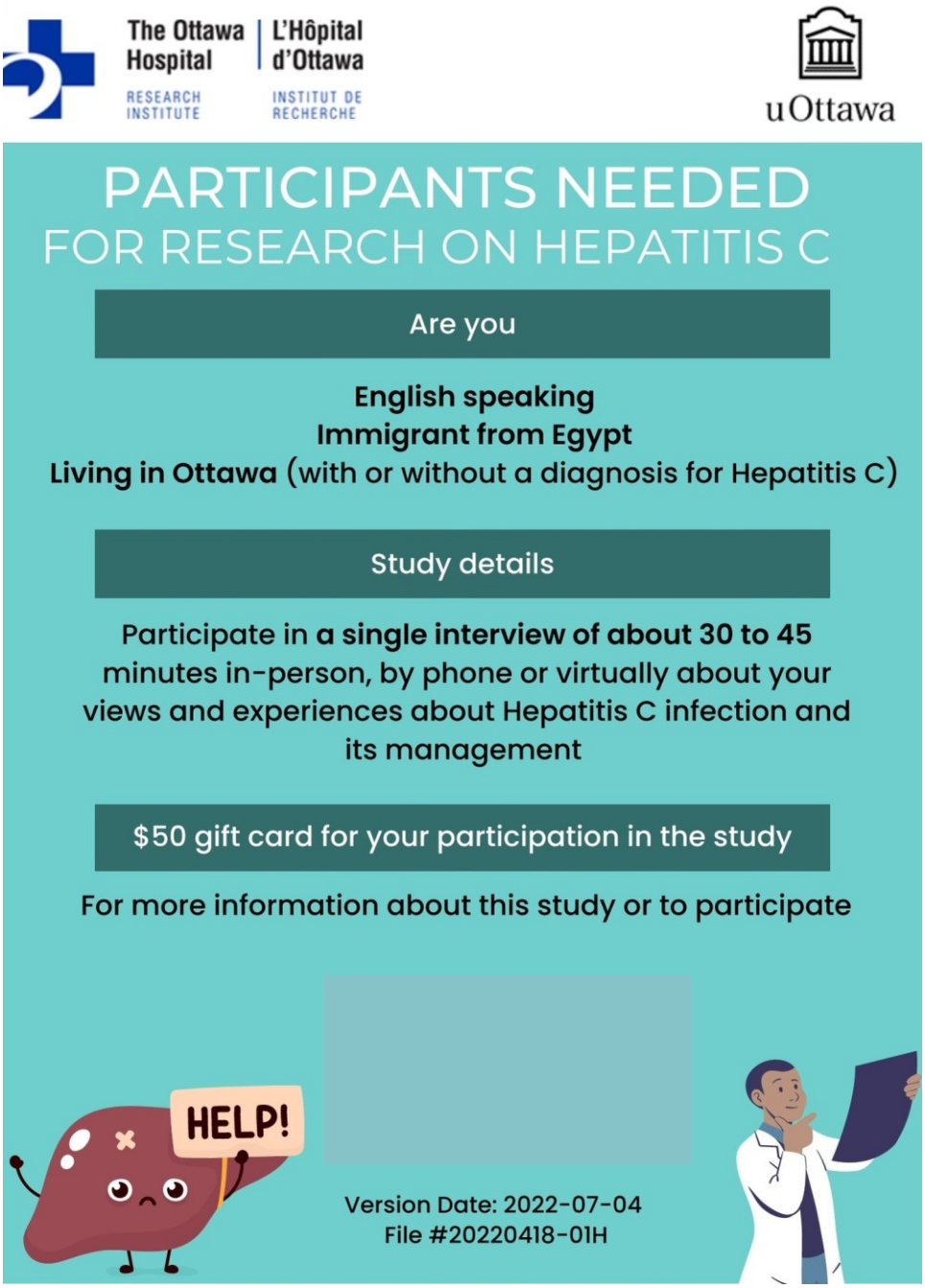
As mentioned in the 'Response' tab of the Ethics application, you have 3 months from the date of initial OHSN-REB approval to submit French documents including the translation certificate to OHSN-REB through the Translated Documents section of the ethics application (if applicable).

Should you have any questions, please contact REBadministration@ohri.ca or _

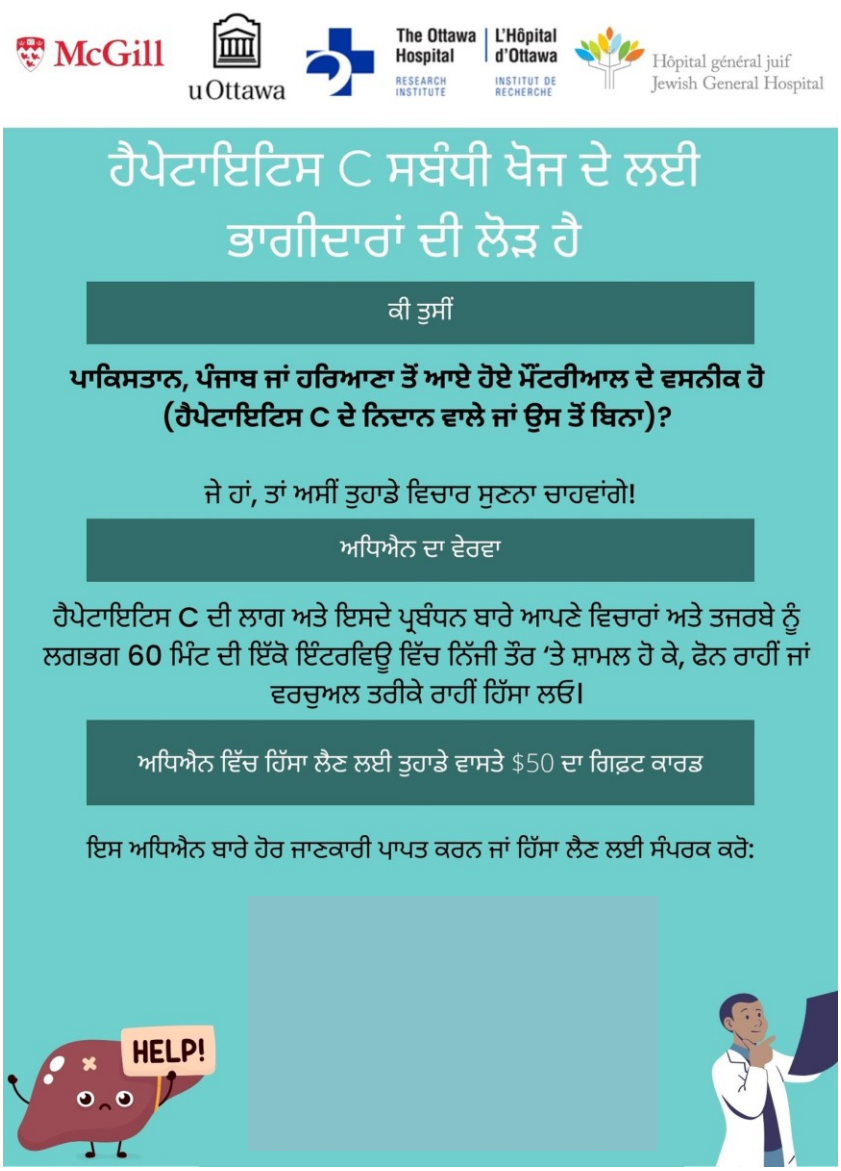
Penny Phillips
Director, Clinical Research Administration
Ottawa Hospital Research Institute | Institut de recherche de l'Hôpital d'Ottawa

Civic Campus, Box 675, 725 Parkdale Avenue, Ottawa, Ontario, K1Y 4E9

Appendix B-Recruitment poster for immigrants



Appendix C- Recruitment poster for immigrants (Punjabi)

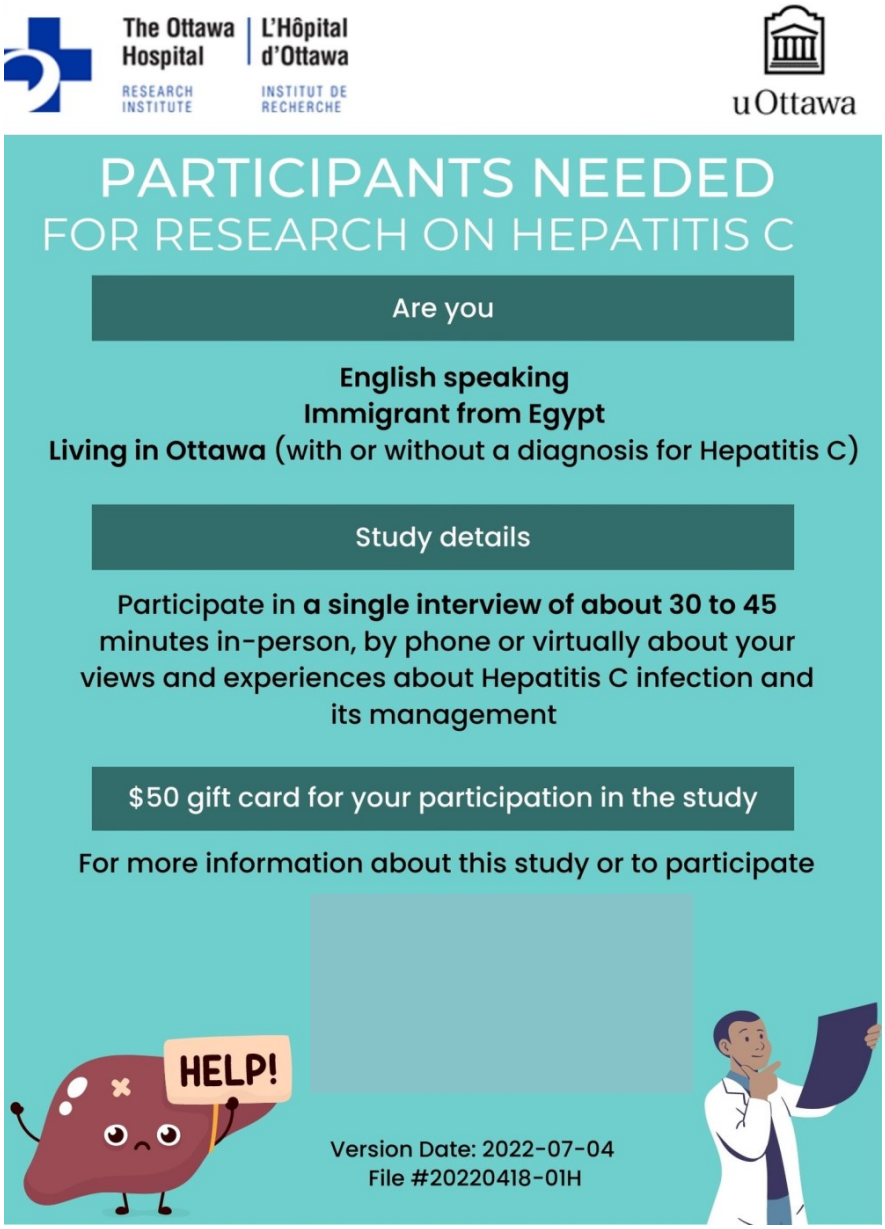


Appendix D- Recruitment poster for immigrants (Urdu)

Appendix E-Social media recruitment script-Immigrants

Calling for participants:

Are you an **English-speaking immigrant from Egypt (with or without Hepatitis C) who lives in Ottawa**? We would like to hear about your thoughts on Hepatitis C and/or your experiences with receiving care for it.
If this sounds like you, feel free to get in touch for more info!



Appendix F-Recruitment email for healthcare providers

Recruitment Email

Subject Line: Private/Confidential: Invitation to participate in research

Hello,

You are being asked to participate in a research study that we are conducting.

Participation is voluntary.

Briefly, in this study we would like to understand the barriers and facilitators to providing HCV care to immigrants in Canada. The findings of this study will inform design of interventions to improve providing HCV care to immigrants.

You will be asked to attend a single interview with a member of the research team. The interview will be about 45 minutes and will take place at a time and place convenient for you (Due to COVID-19 restrictions, it may happen over the phone or MS Teams). You will be asked to speak about the challenges you face when providing HCV screening and care to immigrants. Participants will receive a $50 gift card in recognition of their time.

You can choose to end your participation in this research (called withdrawal) at any time without having to provide a reason. If you withdraw your consent, the study team will no longer collect your personal information for research purposes. Information given before you withdraw this consent may still be used.

If you have any questions or if you are interested in participating, please contact the Research Coordinator (Sameh Mortazhejri) at _.

Thank you,

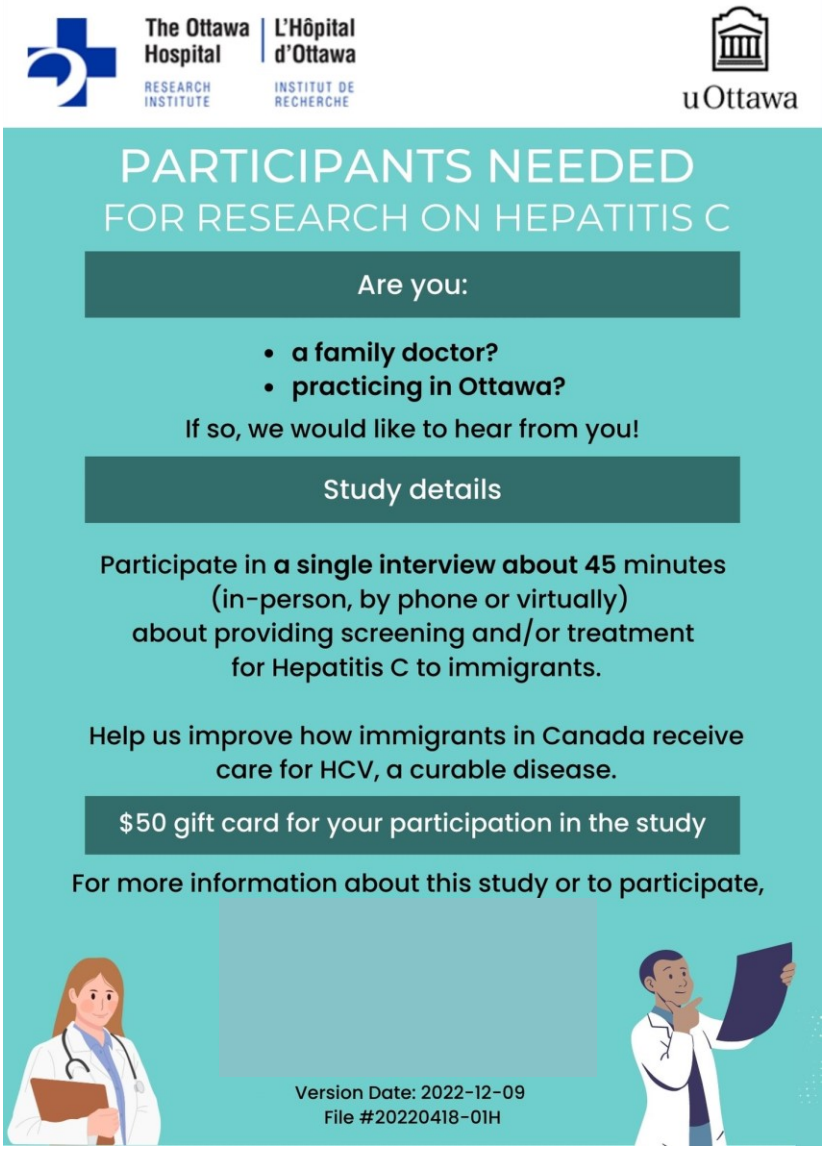
Sameh Mortazhejri
Ottawa Hospital Research Institute
Clinical Epidemiology Program

Appendix G-Social media script for recruiting healthcare providers

Sameh Mortazhejri, a uOttawa PhD student, is conducting a research study to understand the barriers to providing screening and care for Hepatitis C to immigrants in Canada and will design interventions to improve the current cascade of care.

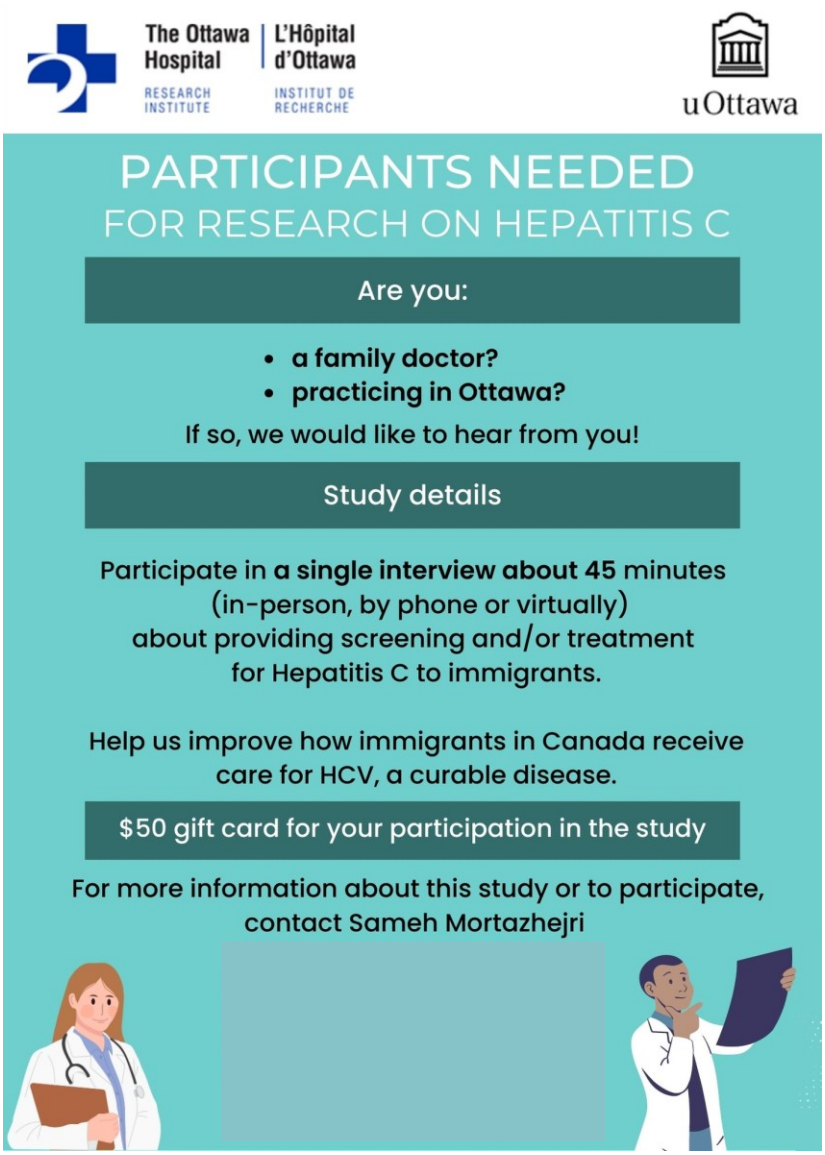
Participation includes attending a single interview (about 45 min) with Sameh at a time and place convenient for you (in person, via phone, or virtually on MS Teams). Participants will receive a $50 gift card in recognition of their time.

Please let Sameh know if you are able to participate. Her email and phone are included.



Appendix H-Twitter script for recruiting healthcare providers

#Research call for participants. Calling all family doctors in Ottawa-Please see the graphic below and help us improve how immigrants receive care for #hepatitisC in Canada. If you are interested, please do contact me for more information.



Appendix I- Fax script for recruiting healthcare providers

Hello Dr_____

Sameh Mortazhejri, a uOttawa PhD student is conducting a research study to understand the barriers and facilitators to providing screening and care for Hepatitis C to immigrants in Canada to design interventions to improve the current cascade of care. We are wondering if you are willing to participate in this study.

It will require participating in a single interview with Sameh (about 45 min) at a time and place convenient for you (in person, via phone, or MS Teams). Participants will receive a $50 gift card in recognition of their time.

Please let Sameh know if you are able to participate. Her email and phone number are _

Thank you,

Curtis Cooper

Curtis Cooper, MD, FRCPC

Professor- University of Ottawa

Division of Infectious Diseases

Director- The Ottawa Hospital Viral Hepatitis Program

Appendix J-Participant informed consent form-Immigrants

Study title: Toward eradication of Hepatitis C infection among immigrants in Canada

OHSN-REB Number: 20220418-01H

Study Doctor: Dr Jeremy Grimshaw
Phone:
Email:
Address: Centre for Practice-Changing Research, Ottawa Hospital Research Institute (OHRI)
501 Smyth Rd, Room 1286, Box 711
Ottawa, Ontario K1H 8L6 Canada

Funder: Canadian Network on Hepatitis (CanHepC)

INTRODUCTION

You are being invited to participate in a research study. You are invited to participate in this study because we would like to understand immigrants' perceptions and beliefs about Hepatitis C (HCV) infection and their experiences with regard to receiving screening and care in Canada. This consent form provides you with information to help you make an informed choice. Please read this document carefully and ask any questions you may have. All your questions should be answered to your satisfaction before you decide whether to participate in this research study.

Please take your time in making your decision. You may find it helpful to discuss it with your friends and family.

Taking part in this study is voluntary. You have the option to not participate at all or you may choose to leave the study at any time. Whatever you choose, it will not affect the usual medical care that you receive outside the study. The decision will not affect your employment or your legal Status in Canada. Please read this Participant Informed Consent Form carefully before you decide if you would like to participate. Ask the study team as many questions as you like.

IS THERE A CONFLICT OF INTEREST?

There are no conflicts of interest to declare related to this study.

WHY IS THIS STUDY BEING DONE?

This study aims to explore immigrants' perceptions and beliefs about HCV infection and their experiences with regards to receiving screening and care in Canada. The findings of this study will be used to help design of programs to improve access to HCV care for immigrants.

HOW MANY PEOPLE WILL TAKE PART IN THIS STUDY?

It is anticipated that about 10 to 20 people will take part in this study, from research sites located in Ottawa.

This study should take about 6 months to complete, and the results should be known in about 12 months.

WHAT WILL HAPPEN DURING THIS STUDY?

You will be asked to attend one interview. During this interview, you will meet with a member of the research team and a community representative (if you prefer). Each interview will be about 60 minutes in length and will take place at a time and place convenient for you (due to COVID-19 restrictions, it may happen over the phone or virtually using MS Teams). You will be asked to speak about your perceptions and beliefs about HCV infection, as well as your experiences with receiving HCV screening or care in Canada. You will be audio recorded during the interview, so that the researchers can record your thoughts and comments correctly.

The information you provide is for research purposes only. Some of the questions may be personal. You can choose not to answer questions if you wish.

Even though you may provide medical information during the interview, your responses will not be reviewed by your physician/health care team. If you wish them to know this information, please bring it to their attention.

WHAT ARE THE RESPONSIBILITIES OF STUDY PARTICIPANTS?

If you choose to participate in this study, you will be expected to attend one interview with the research team.

HOW LONG WILL PARTICIPANTS BE IN THE STUDY?

Your participation on this study will last for about 60 minutes.

CAN PARTICIPANTS CHOOSE TO LEAVE THE STUDY?

You can choose to end your participation in this research (called withdrawal) at any time without having to provide a reason. If you choose to withdraw from the study, you are encouraged to contact the research team.

If you withdraw your consent during the interview, the study team will no longer collect your personal information for research purposes. Information given before you withdraw this consent may still be used, unless you ask the interviewer to destroy it. If you withdraw you consent once the interview has been completed, you can request that the information be destroyed; however, this may not be possible if it's already been grouped with other participant's data.

CAN PARTICIPATION IN THIS STUDY END EARLY?

Your participation on the study may be stopped early, and without your consent, for reasons such as:

- New information shows that the research is no longer in your best interest.
- The research team decides to stop the study.
- The Ottawa Health Science Network Research Ethics Board withdraws permission for this study to continue.

If you are removed from this study, the research team will discuss the reasons with you.

WHAT ARE THE RISKS OR HARMS OF PARTICIPATING IN THIS STUDY?

There are no medical risks to you from participating in this study but taking part in this study may make you feel uncomfortable. You may become uncomfortable while discussing your experiences. You may choose not to answer questions or leave the group/interview at any time if you experience any discomfort.

WHAT ARE THE BENEFITS OF PARTICIPATING IN THIS STUDY?

You may not receive any direct benefit from taking part in this study. Your participation in this research will help us to design appropriate interventions to improve access to HCV care in immigrants.

HOW WILL PARTICIPANT INFORMATION BE KEPT CONFIDENTIAL?

If you decide to participate in this study, the research team will only collect the information they need for this study.

Records identifying you at this centre will be kept confidential and, to the extent permitted by the applicable laws, will not be disclosed or made publicly available, except as described in this consent document.

Authorized representatives of the following organizations may look at your original study records at the site where these records are held, to check that the information collected for the study is correct and follows proper laws and guidelines.

- The Ottawa Health Science Network Research Ethics Board who oversees the ethical conduct of this study.
- Ottawa Hospital Research Institute, to oversee the conduct of research at this location.

Information that is collected about you for the study (called study data) may also be sent to the organizations listed above. Your name, address, email, or other information that may directly identify you will not be used. The records received by these organizations may contain your participant code, sex, and age.

During the interview discussions, participants will be encouraged to refrain from using names. If names or other identifying information is shared during the discussion, it will not be included in the written records.

Communication via e-mail is not absolutely secure. We do not recommend that you communicate sensitive personal information via e-mail.

The audio recordings will be stored in a secure location and listened to only by members of the research team. The recordings will be kept until they have been transcribed (turned into written records), and then they will be destroyed.

Any documents leaving The Ottawa Hospital will contain only your unique study number. If the results of this study are published shared, or presented at scientific meetings, your identity will remain confidential. It is expected that the information collected during this study will be used as aggregated data in analyses and will be published/ presented to the scientific community at meetings and in journals. Even though the likelihood that someone may identify you from the study data is very small, it can never be completely eliminated. This includes publications or presentations resulting from this study.

Your study data will not be used or shared with other researchers for future studies, even if the researchers remove any information that could directly identify you.

WHAT IS THE COST TO PARTICIPANTS?

Participation in this study will not involve any additional costs to you or to your private health care insurance.

ARE STUDY PARTICIPANTS PAID TO BE IN THIS STUDY?

If you decide to participate in this study, you will receive a $50 gift card for time taken to participate in the study.

WHAT ARE THE RIGHTS OF PARTICIPANTS IN A RESEARCH STUDY?

You will be told, in a timely manner, about new information that may be relevant to your willingness to stay in this study.

You have the right to be informed of the results of this study once the entire study is complete. If you would like to be informed of the results of this study, please contact the research team.

Your rights to privacy are legally protected by federal and provincial laws that require safeguards to ensure that your privacy is respected.

By signing this form, you do not give up any of your legal rights against the researchers, nor does this form relieve the researchers of their legal and professional responsibilities.

You will be given a copy of this signed and dated consent form prior to participating in this study.

WHOM DO PARTICIPANTS CONTACT FOR QUESTIONS?

If you have questions about taking part in this study, you can contact the principal investigators of this study, Sameh Mortazhejri at _ or Dr. Jeremy Grimshaw at _.

If you have questions about your rights as a participant or about ethical issues related to this study, you can talk to someone who is not involved in the study at all. Please contact The Ottawa Health Science Network Research Ethics Board, Chairperson at _.

Study Title: Toward eradication of Hepatitis C infection among immigrants in Canada

SIGNATURES

- All my questions have been answered,
- I understand the information within this informed consent form,
- I do not give up any of my legal rights by signing this consent form,
- I agree to take part in this study.

Signature of Participant	Printed Name	Date
Signature of Person Conducting the Consent Discussion	Printed Name and Role	Date

Study Title: Toward eradication of Hepatitis C infection among immigrants in Canada

Participant Assistance

Complete the following declaration only if the participant is unable to read:

☐ The consent form was read to the participant. The person signing below attests that the study as set out in this form was accurately explained to the participant, and any questions have been answered.

Signature of Impartial Witness Printed Name Date

_____
Relationship to Participant

Complete the following declaration only if the participant has limited proficiency in the language in which the consent form is written and interpretation was provided as follows:

☐ The person signing below acted as an interpreter and attests that this study as set out in the consent form is accurately sight translated and/or interpreted, and that interpretation was provided on questions, responses and in additional discussion arising from this process.

Signature of Interpreter Printed Name Date

Appendix K-Participants informed consent form-Healthcare providers

Study title: Toward eradication of Hepatitis C infection among immigrants in Canada

OHSN-REB Number: 20220418-01H

Study Doctor: Dr Jeremy Grimshaw
Phone:
Email:
Address: Centre for Practice-Changing Research, Ottawa Hospital Research Institute (OHRI)
501 Smyth Rd, Room 1286, Box 711
Ottawa, Ontario K1H 8L6 Canada

Funder: Canadian Network on Hepatitis (CanHepC)

INTRODUCTION

You are being invited to participate in a research study. You are invited to participate in this study because we would like to understand the barriers and facilitators to providing HCV care to immigrants in Canada. This consent form provides you with information to help you make an informed choice. Please read this document carefully and ask any questions you may have. All your questions should be answered to your satisfaction before you decide whether to participate in this research study.

Please take your time in making your decision.

Taking part in this study is voluntary. You have the option to not participate at all or you may choose to leave the study at any time. Whatever you choose, it will not result in any penalty or affect current or future employment. Please read this Participant Informed Consent Form carefully before you decide if you would like to participate. Ask the study team as many questions as you like.

IS THERE A CONFLICT OF INTEREST?

There are no conflicts of interest to declare related to this study.

WHY IS THIS STUDY BEING DONE?

This study aims to explore barriers and facilitators to providing HCV care to immigrants in Canada. The findings of this study will inform design of interventions to improve providing HCV care to immigrants.

HOW MANY PEOPLE WILL TAKE PART IN THIS STUDY?

It is anticipated that about 10 to 20 people will take part in this study, from research sites located in Ottawa.

This study should take about 6 months to complete, and the results should be known in about 12 months.

WHAT WILL HAPPEN DURING THIS STUDY?

You will be asked to attend one interview. During this interview, you will meet with a member of the research team. Each interview will be about 45 minutes in length and will take place at a time and place convenient for you (due to COVID-19 restrictions, it may happen over the phone or virtually using MS Teams). You will be asked to speak about the challenges you face when providing HCV screening and care to immigrants. You will be audio recorded during the interview, so that the researchers can record your thoughts and comments correctly.

The information you provide is for research purposes only. Some of the questions may be personal. You can choose not to answer questions if you wish.

WHAT ARE THE RESPONSIBILITIES OF STUDY PARTICIPANTS?

If you choose to participate in this study, you will be expected to attend one interview with the research team.

HOW LONG WILL PARTICIPANTS BE IN THE STUDY?

Your participation on this study will last for about 45 minutes.

CAN PARTICIPANTS CHOOSE TO LEAVE THE STUDY?

You can choose to end your participation in this research (called withdrawal) at any time without having to provide a reason. If you choose to withdraw from the study, you are encouraged to contact the research team.

If you withdraw your consent during the interview, the study team will no longer collect your personal information for research purposes. Information given before you withdraw this consent may still be used, unless you ask the interviewer to destroy it. If you withdraw you consent once the interview has been completed, you can request that the information be destroyed; however, this may not be possible if it's already been grouped with other participant's data.

CAN PARTICIPATION IN THIS STUDY END EARLY?

Your participation on the study may be stopped early, and without your consent, for reasons such as:

- New information shows that the research is no longer in your best interest.
- The research team decides to stop the study.
- The Ottawa Health Science Network Research Ethics Board withdraws permission for this study to continue.

If you are removed from this study, the research team will discuss the reasons with you.

WHAT ARE THE RISKS OR HARMS OF PARTICIPATING IN THIS STUDY?

There are no medical risks to you from participating in this study but taking part in this study may make you feel uncomfortable. You may become uncomfortable while discussing your experiences. You may choose not to answer questions or leave the group/interview at any time if you experience any discomfort.

WHAT ARE THE BENEFITS OF PARTICIPATING IN THIS STUDY?

You may not receive any direct benefit from taking part in this study. Your participation in this research will help us to design appropriate interventions to improve providing HCV care to immigrants.

HOW WILL PARTICIPANT INFORMATION BE KEPT CONFIDENTIAL?

If you decide to participate in this study, the research team will only collect the information they need for this study.

Records identifying you at this centre will be kept confidential and, to the extent permitted by the applicable laws, will not be disclosed or made publicly available, except as described in this consent document.

Authorized representatives of the following organizations may look at your original study records at the site where these records are held, to check that the information collected for the study is correct and follows proper laws and guidelines.

- The Ottawa Health Science Network Research Ethics Board who oversees the ethical conduct of this study.
- Ottawa Hospital Research Institute, to oversee the conduct of research at this location.

Information that is collected about you for the study (called study data) may also be sent to the organizations listed above. Your name, address, email, or other information that may directly identify you will not be used. The records received by these organizations may contain your participant code, sex, and age.

During the interview discussions, participants will be encouraged to refrain from using names. If names or other identifying information is shared during the discussion, it will not be included in the written records.

Communication via e-mail is not absolutely secure. We do not recommend that you communicate sensitive personal information via e-mail.

The audio recordings will be stored in a secure location and listened to only by members of the research team. The recordings will be kept until they have been transcribed (turned into written records), and then they will be destroyed.

Any documents leaving The Ottawa Hospital will contain only your unique study number. If the results of this study are published shared, or presented at scientific meetings, your identity will remain confidential. It is expected that the information collected during this study will be used as aggregated data in analyses and will be published/ presented to the scientific community at meetings and in journals. Even though the likelihood that someone may identify you from the study data is very small, it can never be completely eliminated. This includes publications or presentations resulting from this study.

Your study data will not be used or shared with other researchers for future studies, even if the researchers remove any information that could directly identify you.

WHAT IS THE COST TO PARTICIPANTS?

Participation in this study will not involve any additional costs to you or to your private health care insurance.

ARE STUDY PARTICIPANTS PAID TO BE IN THIS STUDY?

If you decide to participate in this study, you will receive a $50 gift card for time taken to participate in the study.

WHAT ARE THE RIGHTS OF PARTICIPANTS IN A RESEARCH STUDY?

You will be told, in a timely manner, about new information that may be relevant to your willingness to stay in this study.

You have the right to be informed of the results of this study once the entire study is complete. If you would like to be informed of the results of this study, please contact the research team.

Your rights to privacy are legally protected by federal and provincial laws that require safeguards to ensure that your privacy is respected.

By signing this form, you do not give up any of your legal rights against the researchers, nor does this form relieve the researchers of their legal and professional responsibilities.

You will be given a copy of this signed and dated consent form prior to participating in this study.

WHOM DO PARTICIPANTS CONTACT FOR QUESTIONS?

If you have questions about taking part in this study, you can contact the principal investigators of this study, Sameh Mortazhejri at _ or Dr. Jeremy Grimshaw at _.

If you have questions about your rights as a participant or about ethical issues related to this study, you can talk to someone who is not involved in the study at all. Please contact The Ottawa Health Science Network Research Ethics Board, Chairperson at _.

Study Title: Toward eradication of Hepatitis C infection among immigrants in Canada

SIGNATURES

- All my questions have been answered,
- I understand the information within this informed consent form,
- I do not give up any of my legal rights by signing this consent form,
- I agree to take part in this study.

Signature of Participant	Printed Name	Date
Signature of Person Conducting the Consent Discussion	Printed Name and Role	Date

Appendix L-Interview guide for immigrants

Please note that the text in Blue is for the interviewer only

Introduction script:

Thank you for agreeing to participate in this interview. The purpose of this interview is to understand your perceptions of Hepatitis C infection (HCV) and the way you manage it. We also would like to understand the barriers and challenges you faced/face with regards to visiting healthcare providers to receive HCV screening and care in Canada.

Our discussion will be audio-recorded and transcribed, and the transcription will be cleared of any identifying information. The results will be published in a way such that your responses cannot be traced back to you. If you prefer not to answer a question, or would like to withdraw at any time, you are free to do so. Feel free to give examples if it helps you answer a question.

I am not a healthcare provider, nor am I here to make any clinical judgments. I just want to get a sense of your views. There are no right or wrong answers; however, I am looking for honest answers. It helps me to understand the current concerns of immigrants with regards to HCV infection.

Is this ok with you? Circle: YES NO (Note: if no, do not proceed with interview)

Do you have any questions before we start?

_____

NOTE THAT RECORDING WILL START NOW

Background:

I'd like to start with some basic questions:

1. How old are you?
2. What is your highest level of education?
3. What is your country of birth?
4. How long have you been living in Canada?
5. What is your legal status in Canada (Canadian citizen, Permanent resident, refugee, on visa)?
6. Do you have a family doctor?

First part:

Now, I would like to ask about your experience with HCV. If you're ready, we can start.

1. Could you please tell me if you have ever experienced any symptoms related to HCV and if so, what were they? How severe were they? What did you think of the symptoms when they first appeared? If you haven't had any symptoms, do you know what the possible symptoms are? *(Identity: perceptions of symptoms and label)*

2. How long has it been since you first experienced the symptoms/diagnosed? How long do the symptoms usually last? Do your symptoms fluctuate? How long do you think your illness will last? *(Timeline: perceptions about the rate of onset, duration, and fluctuation in the illness)*

3. How do you think you acquired HCV or what caused it?
PROMPTS: Biological causes, emotional causes, environmental causes) *(Cause: perceived causal antecedents of the illness)*

4. What are/were the consequences of HCV infection on you? (PROMPTS: Has it affected your working life/social life/daily life? Has it resulted/has it had long-lasting complications? Has it affected your personal relationships? Has it affected your interaction with your community?) *(Consequences: beliefs in the extent to which the illness will seriously impact life event)*

5. Do you think your HCV infection can be cured? How? If not, can HCV infection be controlled? Is there anything that can improve your symptoms?
(Controllability/curability: perceptions about whether the illness is expected to be, or has previously been, responsive to self-initiated or medically prescribed treatment)

6. How does this illness and its symptoms make you feel? Does it make you angry, scared, upset/depressed? Does it make you feel isolated? What are your most important concerns about it? *(Emotional representations: individual's affective responses to illness)*

7. Apart from your personal experiences, how do you get information about HCV and its treatment/care? Where do you usually look for information? (e.g., internet, friends, family, community, doctors) *(Sources of information)*

8. How do you usually manage your symptoms, if any? Does it help? *(Coping strategies)*

9. Could you please tell me what you did when your symptoms started/when you were diagnosed? Did you seek help from a healthcare provider? *(Coping strategies)* a) If yes, what were you aiming for? Did it help? b) If no, why not? Do you have any other plans to deal with it?

10. How well do you feel you understand your illness and treatment options? Does it all make sense to you? *(Coherence: representing patients' comprehension of their illness)*

Second part

For the rest of our conversation, I have some specific questions that focus on hepatitis screening and care. In answering these questions, I'd like you to think about the following specific behaviour:

Behavior: Seeking HCV screening/care
Actor: Immigrants visiting HCPs
Action: Seeking HCV screening/care
Target: Immigrants visiting HCPs
Time: At any time during a visit
Context: HCPs' offices/clinics

If at any point, you would like me to repeat this description of the behaviour, please let me know.

Some questions may seem repetitive, but please bear with me as they do try to get at slightly different things that may influence this behaviour.

If you're ready, we can start.

1. Have you ever visited any HCP to receive HCV screening or care in Canada (If no, move to next question)? Could you walk me through your experience? (PROMPT: When did you go? Where did you go? What happened during the visit?)

Knowledge

(WHAT DO THEY KNOW, AND HOW DOES THAT INFLUENCE WHAT THEY DO?)

2. What is your understanding of HCV infection, screening, and care?
   PROMPT: Are you familiar with navigating the healthcare system to receive HCV screening/care? Do/did you know anything about the process? Has is it been explained to you? Do you know the rational for visiting HCPs for HCV screening/care?

Social/ Professional Role and Identity

(HOW DOES WHO THEY ARE AS AN HEALTHCARE PROVIDER INFLUENCE WHETHER THEY DO SOMETHING OR NOT?)

3. There are certain individual characteristics that increase or decrease the likelihood of visiting HCPs for HCV screening/care. For immigrants, it can be anything related to their status as a foreign-born individual (e.g., norms and culture of your country of origin, language barriers, stigma, not being familiar with the healthcare system of Canada, unemployment, …). Do you think being an immigrant had/has any impact on your likelihood of visiting HCPs for HCV screening/care? If you weren't an immigrant in Canada, would you have reacted differently?

Beliefs about Capabilities

(DO THEY THINK THAT THEY CAN DO WHAT THEY SHOULD DO AND HOW DOES THAT INFLUENCE WHETHER THEY DO IT OR NOT?)

4. Do/would you feel comfortable visiting HCPs for HCV screening or care? Why or why not?

Optimism

(HOW DOES WHETHER THEY ARE OPTIMISTIC/PESSIMISTIC INFLUENCE WHAT THEY DO?)

5. How optimistic are/were you that visiting HCPs can/could be helpful to you? Why?

Beliefs about Consequences

(WHAT ARE THE GOOD AND BAD THINGS THAT CAN HAPPEN FROM WHAT THEY DO AND HOW DOES THAT INFLUENCE WHETHER THEY'LL DO IT IN THE FUTURE?)

6. What do you think are be the benefits or positive impacts of visiting HCPs for HCV screening/care?
    - PROMPT: For yourself, your friends, your family?
7. Are there any harms or negative impacts that you think may occur from visiting HCPs for HCV screening/care?
    - PROMPT: For yourself, your friends, your family?
8. Do the potential benefits outweigh the potential harms? If not, what could help achieve this?

Reinforcement

(HOW HAVE THEIR EXPERIENCES (GOOD AND BAD) OF DOING IT IN THE PAST INFLUENCE WHETHER OR NOT THEY DO IT?)

9. Were there any incentives or rewarding experiences that encouraged you to visit/re-visit HCPs
10. Were there any punishments or negative experiences that discouraged you from visiting/re-visiting HCPs?

Intention

(HOW DOES HOW INCLINED THEY ARE TO DO SOMETHING INFLUENCE WHETHER THEY WILL DO IT?)

11. Would you consider visiting HCPs for HCV screening/care? Do you intend to visit/re-visit HCPs for HCV screening/care?

Goals

(HOW IMPORTANT IS WHAT THEY DO AND DOES THAT INFLUENCE WHETHER OR NOT THEY DO IT? WHAT STANDARDS ARE THEY TRYING TO REACH, HOW DOES THAT INFLUENCE WHETHER OR NOT THEY DO IT?)

12. What drove you to visit HCPs for HCV screening/care?
13. How much of priority was it for you to visit HCPs for HCV screening/care? (PROMPT: Why was/wasn't it a priority? Were there any other goals/priorities that conflicted with your visit to HCPs?
14. How important is it/was it for you to visit HCPs for HCV screening/care?

Memory, Attention and Decision Processes

(HOW DOES THEIR FORGETFULNESS OR REMEMBERING TO DO IT INFLUENCE WHETHER OR NOT THEY DO IT?

HOW DOES THEIR ABILITY TO FOCUS ON THE BEHAVIOUR IINFLUENCE WHETHER OR NOT THEY DO IT? HOW DO THE DECISIONS THEY MAKE ABOUT THE BEHAVIOUR INFLUENCE WHETHER THEY DO IT OR NOT?)

15. Was visiting HCPs for HCV screening/care an automatic decision for you or was it something you needed to stop and take time to think about?

16. What helped with your decision to visit HCPs for HCV screening/care?
17. In what situations might you have decided not to visit HCPs for HCV screening/care? Why?

Environmental Context and Resources

(WHAT ARE THE THINGS IN THEIR ENVIRONMENT THAT INFLUENCE WHAT THEY DO AND HOW DO THEY INFLUENCE? (NOT JUST PHYSICAL STUFF, BUT ACCESS TO OTHER PROFESSIONALS)

18. What aspects of the environment influenced you to visit HCPs for HCV screening/care?
    - PROMPT: Clinic staff, nurses, consult room, location of the clinic
19. What environmental factors affected/could have affected you not to visit HCPs for HCV screening/care? What could have helped overcome them?
    - PROMPT: Time constraint, Clinic location/set up, language barriers, costs

Social Influences

(WHAT DO OTHERS THINK OF WHAT THEY DO? WHO ARE THEY AND HOW DOES THAT INFLUENCE WHAT THEY DO?)

20. Was there anybody who influenced you to visit HCPs for HCV screening/care?
    - PROMPT: Family, friends, community, others?
21. How might the views or opinions of others have affected your visit to HCPs for HCV screening/care?
22. What do you think others think about your visit to HCPs for HCV screening/care? Does/did it affect you?

Emotion

(HOW DO THEY FEEL ABOUT WHAT THEY DO AND DO THOSE FEELINGS INFLUENCE WHAT THEY DO?)

23. Did you have any worries or concerns about visiting HCPs for HCV screening/care? How did you feel about visiting HCPs for HCV screening/care?
    - PROMPT: Fear, anger, stress, sadness, embarrassment, stigma, positive emotion

Behavioral Regulation

(WHAT DO THEY THINK WOULD HELP / WHAT STRATEGIES HAVE HELPED THEM DO WHAT YOU SHOULD DO? WHAT STRATEGIES ARE ALREADY IN PLACE TO HELP THEM DO WHAT THEY SHOULD DO?)

24. If you wanted to implement some changes to the current process, what would be some of those changes? How do you think this process can be improved?

Those are all the questions I have for you. I appreciate the time and insight that you've given me today. Is there anything else related to this topic you would like to talk about that we haven't covered? Thank you!

STOP RECORDING NOW

Appendix M-Interview guide for healthcare providers

Please note that the text in Blue is for the interviewer only

Introduction script:

Thank you for agreeing to participate in this interview. The purpose of this interview is to understand the barriers and facilitators you face with regards to providing HCV screening and care to immigrants in Canada.

Our discussion will be audio-recorded and transcribed, and the transcription will be cleared of any identifying information. The results will be published in a way such that your responses cannot be traced back to you. If you prefer not to answer a question, or would like to withdraw at any time, you are free to do so. Feel free to give examples if it helps you answer a question.

I am not a healthcare provider, nor am I here to make any clinical judgments. I just want to get a sense of your views and experiences. There are no right or wrong answers.

Is this ok with you? Circle: YES NO (Note: if no, do not proceed with interview)

Do you have any questions before we start?

_____

NOTE THAT RECORDING WILL START NOW

Background:

I'd like to start with some basic questions:

1. What is your role/title?
2. What kind of setting do you work at (e.g., family health team, private clinic, hospital)?
3. How long have you been working in your current position?
4. What percentage of your patients will be identified as immigrants with HCV infection?

For the rest of our conversation, I have some specific questions that focus on HCV screening and care. In answering these questions, I'd like you to think about the following specific behaviour:

Behavior: Providing HCV screening and care to immigrants
Actor: Healthcare provider (HCP)
Action: Providing HCV screening and care to immigrants
Target: Immigrants visiting HCPs
Time: At any time during a visit
Context: HCPs' offices/clinics

If at any point, you would like me to repeat this description of the behaviour, please let me know.

Some questions may seem repetitive, but please bear with me as they do try to get at slightly different things that may influence this behaviour.

If you're ready, we can start.

5. Could you walk me through the current process for HCV screening and care in immigrants at your work setting? (PROMPT: Can you describe the steps (that would be) involved from start to finish?

Knowledge

(WHAT DO THEY KNOW, AND HOW DOES THAT INFLUENCE WHAT THEY DO?)

6. What is your understanding of HCV infection screening and care? What are your thoughts on it? (PROMPT: Are you familiar with all the steps involved?)
7. Do you use / have any guidelines or policies for it? (PROMPT: If yes, which guidelines/policies, and what do they recommend? If no, what do you use to guide your practice?)

Social/ Professional Role and Identity

(HOW DOES WHO THEY ARE AS AN HEALTHCARE PROVIDER INFLUENCE WHETHER THEY DO SOMETHING OR NOT?)

8. What role do you play in the provision of HCV care?
9. Is there anything in your professional role that influences you in providing screening/care to immigrants? (Prompt: professional training, guidelines, other technologies)
10. Who else is involved to make sure that these procedures happen?
11. Would you see it as part of your job/responsibility to offer HCV screening/care to immigrants?
12. Are there others who should be involved? Who should be involved, why, and how? Would you anticipate any problems arising?

Skills

(WHAT DO THEY KNOW ABOUT HOW THEY SHOULD BE DOING SOMETHING AND HOW DOES THAT INFLUENCE WHETHER THEY DO IT OR NOT?)

13. What expertise does someone in your role need to provide HCV screening/care to immigrants?
14. Do you think that you have the necessary expertise to provide HCV screening/care to immigrants?? If not, what could help?
15. Is there any additional training you think you'd need to provide HCV screening/care to immigrants?? Or that you think other people you work with would benefit from? What would that be?

Beliefs about Capabilities

(DO THEY THINK THAT THEY CAN DO WHAT THEY SHOULD DO AND HOW DOES THAT INFLUENCE WHETHER THEY DO IT OR NOT?)

16. How easy or difficult is it for you to provide HCV screening/care to immigrants? What would make it easier?
    - PROMPT: What makes it easy? Why?
    - PROMPT: What makes it difficult? Why?
17. How confident do you feel in your ability to provide HCV screening/care to immigrants? What makes you feel less confident/what would make you feel more confident?
18. How much power or control do you think you have over your ability to provide HCV screening/care to immigrants? What things would influence your use that are beyond your control? What would increase your control?

Optimism

(HOW DOES WHETHER THEY ARE OPTIMISTIC/PESSIMISTIC INFLUENCE WHAT THEY DO?)

19. How optimistic are you that (BEHAVIOUR A/ BEHAVIOUR B) will help you in your setting? Why?
    - PROMPT: level of optimism high/low?

Beliefs about Consequences

(WHAT ARE THE GOOD AND BAD THINGS THAT CAN HAPPEN FROM WHAT THEY DO AND HOW DOES THAT INFLUENCE WHETHER THEY'LL DO IT IN THE FUTURE?)

20. What do you think are be the benefits or positive impacts of providing HCV screening/care to immigrants?

- PROMPT: For yourself, the immigrants you see, your colleagues, your setting, other people in the community?
- PROMPT: Impact on workload?

21. Are there any harms or negative impacts that you think may occur from providing HCV screening/care to immigrants?
    - PROMPT: For yourself, the immigrants you see, your colleagues, your setting, other people in the community?
    - PROMPT: Impact on workload? Costs?
22. Do the potential benefits of providing HCV screening/care to immigrants outweigh the potential harms? If not, what could help achieve this?

Reinforcement

(HOW HAVE THEIR EXPERIENCES (GOOD AND BAD) OF DOING IT IN THE PAST INFLUENCE WHETHER OR NOT THEY DO IT?)

23. Are there any incentives or rewarding experiences that encourages/would encourage you to provide HCV screening/care to immigrants?
24. Are there any/Can you foresee any sanctions that may be associated with providing HCV screening/care to immigrants?

Intention

(HOW DOES HOW INCLINED THEY ARE TO DO SOMETHING INFLUENCE WHETHER THEY WILL DO IT?)

25. To what extent do you want/intend to provide HCV screening/care to immigrants?
    - PROMPT: In what situations may you find yourself more motivated? Why?
    - PROMPT: In what situations may you find yourself less motivated? Why?

Goals

(HOW IMPORTANT IS WHAT THEY DO AND DOES THAT INFLUENCE WHETHER OR NOT THEY DO IT? WHAT STANDARDS ARE THEY TRYING TO REACH, HOW DOES THAT INFLUENCE WHETHER OR NOT THEY DO IT?)

26. How important is it for you to provide HCV screening/care to immigrants?
27. Is providing HCV screening/care to immigrants something that you feel you would want or need to do? What would drive that?

28. Thinking about all your other tasks in the healthcare setting, how much of a priority is it for you to provide HCV screening/care to immigrants compared to other priorities that you may have?
    - PROMPT: Why is/ isn't it a priority?

Memory, Attention and Decision Processes

(HOW DOES THEIR FORGETFULNESS OR REMEMBERING TO DO IT INFLUENCE WHETHER OR NOT THEY DO IT?

HOW DOES THEIR ABILITY TO FOCUS ON THE BEHAVIOUR IINFLUENCE WHETHER OR NOT THEY DO IT? HOW DO THE DECISIONS THEY MAKE ABOUT THE BEHAVIOUR INFLUENCE WHETHER THEY DO IT OR NOT?)

29. Is providing HCV screening/care to immigrants an automatic or routine part of your work, or is it be something you need to stop and take time to think about?
30. In what situations do/would you decide to provide HCV screening/care to immigrants? Why?
31. In what situations might you decide not to provide HCV screening/care to immigrants? Why? What would you do instead?
32. In what situations could you see yourself forgetting to provide HCV screening/care to immigrants)? Why?
33. What could help you to integrate providing HCV screening/care to immigrants into your routine or habits?

Environmental Context and Resources

(WHAT ARE THE THINGS IN THEIR ENVIRONMENT THAT INFLUENCE WHAT THEY DO AND HOW DO THEY INFLUENCE? (NOT JUST PHYSICAL STUFF, BUT ACCESS TO OTHER PROFESSIONALS)

25. What aspects of your setting influences you in providing HCV screening/care to immigrants?
26. Are there competing tasks/demands or time constraints that interferes with providing HCV screening/care to immigrants? What are they? What could help overcome them?
27. Is there anything in your work environment that influences you in providing HCV screening/care to immigrants?
28. Are there any additional resources you would need in order to provide HCV screening/care to immigrants?
    - PROMPT: To what extent are additional resources needed available?

Social Influences

(WHAT DO OTHERS THINK OF WHAT THEY DO? WHO ARE THEY AND HOW DOES THAT INFLUENCE WHAT THEY DO?)

34. Who influences your likelihood of providing HCV screening/care to immigrants, and how?
    - PROMPT: Colleagues; residents/trainees; immigrants; managers; others?
35. How might the views or opinions of others affect you in providing HCV screening/care to immigrants?
36. Do your colleagues agree with what you do in your practice with regards to proving HCV screening/care to immigrants? Do they have similar procedures or not?

Emotion

(HOW DO THEY FEEL ABOUT WHAT THEY DO AND DO THOSE FEELINGS INFLUENCE WHAT THEY DO?)

29. Do you have any worries or concerns about providing HCV screening/care to immigrants?
30. How do you feel about providing HCV screening/care to immigrants (when you think of providing HCV screening/care to immigrants, what sorts of emotions come to mind)?
    - PROMPT: anxiety, stress, positive emotion?

Behavioral Regulation

(WHAT DO THEY THINK WOULD HELP / WHAT STRATEGIES HAVE HELPED THEM DO WHAT YOU SHOULD DO? WHAT STRATEGIES ARE ALREADY IN PLACE TO HELP THEM DO WHAT THEY SHOULD DO?)

37. What strategies or supports or ways of working do you have in place that help you in providing HCV screening/care to immigrants?
38. If you wanted to implement changes in your own practice setting to encourage HCV screening/care to immigrants, what would be some ways to do this?

Those are all the questions I have for you. I appreciate the time and insight that you've given me today. Is there anything else related to this topic you would like to talk about that we haven't covered? Thank you!

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