Cancer screening programmes for refugees in Canadian primary care:

A realist review

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Abstract

Hundreds of thousands of people are diagnosed with cancer in Canada every year; an effective way to diagnose and treat cancers earlier and to improve mortality is to carry out organised cancer screening programmes in primary care. Canada accepts approximately 25,000 refugees annually, and refugees often carry a higher risk for cancer. While Canadian physicians have committed to a vision of equitable and accessible primary care, encompassed in the vision of a Patient's Medical Home, Canada also has a complex network of health systems, each of which have different ways to approach cervical, breast, and colorectal cancer screening. This dissertation asks: why don't refugees in Canada participate in these cancer screening programmes? To answer this question, a realist review was undertaken to dissect the contexts, mechanisms, and outcome configurations (CMOCs) presented in the literature. A realist review comprises a literature search, construction of initial programme theory, extracting data from literature to test the initial theory, and iteratively searching, testing, and synthesising evidence. There were very few primary sources to consult regarding the specific topic of refugees and cancer screening in Canada. However, from this small body of work, it was possible to find a number of CMOCs from which to provide an explanation of why refugees do and don't access primary care cancer screening programmes, and to point toward future research topics. Health system complexity, language and culture differences, and difficulties creating a strong relationship with a primary care provider cause a lack of understanding of the importance and immediacy of screening. However, there are models of care as demonstrated in refugee-friendly clinics in Canada that can mitigate some of the barriers refugees face to participating in cancer screening. It is clear that additional research is required to ensure that refugees in Canada are cared for appropriately and equitably through reducing cancer mortality.

Lay summary

Many people in Canada die of cancer each year but cancer screening tests can save lives by finding cancers early. Canada takes in over 25,000 refugees every year, and refugees are often more likely to have cancer than other people living in Canada. Refugees face many problems when they arrive in Canada, and even though there is a programme to help them pay for healthcare, it can be hard for them understand the health system. Because of that, they often don't get tested for cancers early enough. This paper talks about three types of screening tests: tests for breast cancer, the Pap or smear test for cervical cancer, and tests for bowel cancer, and I used a type of review that looks at why and in what settings refugees may or may not get these tests. This review looks at published papers, but there weren't many on the exact topic. I found that because refugees don't all speak or read English or French, which are the most common languages used in Canada, they may have a hard time understanding why cancer screening is important, especially if they did not have screening in their own country. They also have problems because healthcare is complicated in Canada and because sometimes it is hard to get to know a new doctor well enough to let them explain to you and give you uncomfortable tests. There are some clinics in Canada that other primary care clinics could learn from, where they have people who speak refugees' languages and who help refugees through the process of understanding cancer tests. The review also showed that more research should be done to find out how to care properly for refugees and to help stop them from getting cancer.

Acknowledgments

This dissertation was completed at a time when the legacy of Canada's residential schools came into sharp focus with the discovery of a mass grave of Indigenous children in British Columbia. I acknowledge that I have written this work on unceded Treaty Six territory and that I currently reside on land of the Papaschase Nêhiyawak First Nation.

I am very grateful to my supervisor, Dr Geoff Wong and my Kellogg college advisor, Dr Stephanie Tierney for their insight and support in pursuing this degree during a global health crisis.

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Thanks, Mom, for your patience and outstanding editing skills.

Contents

Introduction

This dissertation comprises a realist review of cancer screening programmes in primary care for adult refugees to Canada. I focus on cervical, breast, and colorectal cancer screening as the three major cancer screening programmes offered to all residents in Canada. Other screening tests, such as the prostate-specific antigen (PSA) test, have been and are still offered in some Canadian health system jurisdictions, but cervical, breast, and colorectal screening, through the Papanicolaou (Pap) test, mammography, and faecal immunochemical testing (FIT), respectively, are the three where the evidence suggests most strongly that benefits of screening outweigh the potential harms.

Canada has accepted over 1 million refugees since 1980 (UNHCR, 2021). Refugees come to Canada with varying degrees of trauma and health statuses, and with variable past healthcare interactions. Syrian refugees, for example, may have not been able to interact with primary and preventive care services in their home country for several years, due to the ongoing conflict in their region and the length of time it takes to get to Canada as a refugee. The Interim Federal Health Program (IFHP), which provides health insurance coverage to refugees, has changed over the past decade, and can be confusing to navigate while also navigating local health care provider jurisdictions.

I chose a realist review for this dissertation because I want to explore how, why, and in what contexts refugees do, or don't, participate in cancer screening programmes. I chose this topic because improving health services for vulnerable populations in Canada, including refugees, is a neglected topic. Increasingly, studies are being undertaken looking at health experiences and outcomes of migrants generally, however, most migrant health studies do not address the complexities facing the refugee patient population specifically. Refugees have many aspects of life to adapt to and to navigate when they arrive in Canada, including negotiating the health system, living in a new country with often shocking temperatures and temperature variations, navigating new ways of accessing housing, work, and education, and traversing Canada's complex immigration rules alongside the distress and difficulty of their forced migration itself. It is important to find out why, and in what conditions, refugees do and do not access cancer screening programmes in Canada to understand how we can achieve the goals of improving the experience of care while improving the health of refugees, while also reducing the system costs of care to newcomers (Berwick et al., 2008). The commitment by the College of Family Physicians of Canada to the model of a patient's medical home also necessitates the provision of connected, patient-centred care, where patients are cared for by a family physician and care team within the context of their own environment (CFPC, 2019) for all patients, including refugees.

The COVID-19 pandemic has decreased cancer screening rates for all categories of residents in Canada. Initially, many cancer screening programmes in Canada were temporarily suspended due to healthcare worker shortages (CPAC, 2020). People have also avoided seeking out medical care due to concerns about contracting the virus in public spaces, and due to interpretations of stay-at-home guidelines (Boucher, 2020), but also due to beliefs that primary care offices were either closed, or that healthcare workers were overwhelmed by the pandemic (CPAC, 2020), creating a 'care deficit' (Boucher, 2020). Understanding how, why, and in what contexts refugees access cancer screening will enable health systems in Canada to move closer to equitable provision of healthcare, especially as the world recovers from the effects of the pandemic.

Background

Why is this issue important?

Public opinion in high-income countries like Canada is sometimes sympathetic toward refugees, but even sympathetic narratives convey concern about the potential burden on health services. Cancer screening programmes allow health systems to reduce morbidity and mortality of patients, including refugees. Thus, early cancer screening of refugees could mitigate the perceived and actual strains on health services, as well as delivering improved morbidity and mortality outcomes for the refugee patient.

Canada has accepted well over 1 million refugees since 1980 (UNHCR, 2021). Justin Trudeau, Prime Minister of Canada committed to taking in at least 25,000 Syrian refugees at the start of his administration in 2015, and refugees settle all across Canada in different centres, although the majority settle in Toronto and Montréal (Statistics Canada, 2017). In 2021, Canada committed to admitting 45,000 refugees due to limited numbers permitted to enter during 2020 as a result of the COVID-19 pandemic which closed Canada's borders (Canadian Press, 2021). Many Canadians are happy to have newcomers to Canada, yet others feel they are a drain on the finances of the country and are suspicious of alleged 'health tourism' (Burns-Pieper and Mayor, 2020) and abuses of the healthcare system (Holtzer et al., 2017). The federal programme that funds refugee healthcare cost nearly $85 million in 2011, and changes implemented by the then-Conservative government in 2012 reduced or eliminated coverage for many newcomers (Holtzer et al., 2017). The federal cuts in that year merely shifted the cost burden to the provinces. However, Canada under Trudeau remains committed to the principle of humanitarian assistance and reversed many of the draconian changes of the previous administration. Furthermore, refugees in Canada contribute to the economy and to cultural diversity (Canadian Press, 2021). The unemployment rate for refugees is only marginally higher than that of other Canadians (UNHCR, 2021). Canada also allows refugees to be sponsored by private individuals or by organisations, which increases the numbers of refugees admitted to Canada but drives down some of the costs of resettlement (Government of Canada 2019a). Throughout the paper, I use the term ‘refugee’ to encompass all of the definitions used in the Canadian context, as there are many meanings associated with the word. For additional explanation of this and other terminology choices, see Appendix A.

Cancer remains the second leading cause of death globally, with breast cancer the most common cause of cancer-related mortality. (WHO, 2020). In Canada (excluding Québec), approximately 150,000 people are diagnosed with cancer on an annual basis, and it is the third leading cause of death (Statistics Canada, 2020). Cervical cancer is the fourth most commonly diagnosed malignancy in women worldwide (Beckett, 2016). The majority of patients with cervical cancer in the developing world present at an advanced stage and have limited access to adequate treatment (Small et al., 2017). Most cases of invasive cervical cancer are found in women who have never had a Pap test or who have been irregularly screened (Amankwah et al., 2009). Colorectal cancer is the second most common cause of cancer-related mortality in Canada and 40% of Canadian cases are found in Ontario residents (Shen et al., 2018). Cancer screening programmes allow health services to reduce the morbidity and mortality of patients, while also saving health system costs: later diagnoses of cancers cost the health system more than when cancer is found early. “It is always easier and cheaper to treat an illness in its first stages than after it has developed.” (Daynes, 2016). Appropriate utilisation of healthcare resources is thought to drive down costs (Donnelly and McKellin, 2007), which could mitigate some of the concerns related to refugees accessing Canadian healthcare services.

What is known?

Screening helps

Early detection of some cancers through screening has been found to be successful in reducing morbidity and mortality (Racine et al., 2021). In Canadian primary care environments, cervical screening with the Papanicolaou or Pap test for female patients over 25 is conducted every three years, breast cancer screening by mammography is every two to three years for women over 50, depending on jurisdiction, and colorectal screening is recommended for adults over 50 every 5 years (CPAC, 2021a, b, c). Colorectal cancer screening tests have varied over time and by jurisdiction, but most provinces and territories are now using the faecal immunochemical testing (FIT) rather than colonoscopy as the main screening method (CPAC, 2021c).

There is a plethora of literature relating to screening refugees for infectious diseases (Seedat et al., 2018), usually conducted at a point of entry to a high-income country with the immediate goal of controlling spread among migrants and into the wider host country population. According to the Government of Canada, careful screening is important: “Under our laws, we must carefully screen all resettlement cases. This makes sure that there are no issues related to security, criminality, or health.” (Government of Canada, 2019a.) To that end, Canada requires refugees and other newcomers to take an immigration medical exam (IME) prior to entry, where possible, or upon arrival in Canada; costs are covered by the Interim Federal Health Program (IFHP) (Gushulak et al., 2011). The only cancer screening that occasionally takes place during the immigration medical is the Papanicolaou (Pap) test, but it is not mandated even though many women arriving from conflict situations have been victims of sexual trauma and are at disproportionately higher risk of cervical cancer than Canadian-born women (Pottie et al., 2011). Some migrant and refugee populations who come to Canada experience a higher risk of cancer due to limited healthcare service provision in their home countries, inability to access healthcare because of conflict or other political limitations, or being in exile (Gushulak et al., 2011).

The ongoing COVID-19 global health emergency has decreased cancer screening rates for all people living in Canada. Cancer screening programmes in Canada were temporarily suspended (CPAC, 2020) due to healthcare worker shortages and concerns that patients seeking non-urgent healthcare services, like screening, could spread the virus unintentionally while visiting a primary care office. Many patients were similarly concerned about the spread of the virus and worries about overwhelming the taxed healthcare system (Boucher, 2020). In addition, many people were under the impression that primary care providers were not operating during the pandemic, although many providers were able to transition to virtual care or appointments by phone relatively quickly (CPAC, 2020). Refugees are among the most economically disadvantaged groups in Canada, and it has been established at the national level that marginalised populations, including refugees, are at higher risk for COVID-19, due to group housing and overcrowded housing alongside other socioeconomic barriers. This has compounded existing inequalities faced by refugees in the healthcare sector (PHAC, 2020).

A complex system

Canada does not make it easy for refugees to access healthcare and 31% of refugees in a focus group evaluating IRCC services felt they would have benefitted from more information about health services before arriving or upon arrival in the country (Government of Canada, 2018). In most of Canada, despite being a nominally bilingual country, patients will need to speak English to communicate with healthcare professionals; in many parts of Quebec and New Brunswick, English is not widely spoken. Refugees may not speak one of the two official languages of Canada, English or French. A 2017 evaluation by Immigration, Refugees and Citizenship Canada (IRCC) found that 63% of refugees did not have any knowledge of English or French (Government of Canada, 2018). This presents a serious barrier to navigating the complex health system in general and understanding cancer screening in particular. Due to the complex structure of Canadian healthcare, with multiple provincial and territorial jurisdictions and health insurance programmes, screening is usually organized through the health authority or a cancer organization, but relevant services are delivered by the health authority (CPAC, 2021a, b, c). For example, a patient’s British Columbia Medical Services Plan will pay for a family practice nurse to perform a Pap test; reminders may come from the BC Cervical Cancer Screening Program at the required interval. The only difference for a refugee in receipt of IFHP benefits is that they need to check that the family practice nurse’s clinic is a registered IFHP provider before having the Pap test performed there. For additional detail on the Canadian systems’ complexity, see Appendix B.

The Patient’s Medical Home

The concept of a patient-centred medical home, or the Patient’s Medical Home (PMH) was adopted in 2011 as the preferred model of family practice across Canada. The PMH model endeavours to provide “the medical care that Canadians want – readily accessible, centred on the patients’ needs, provided throughout every stage of life, and seamlessly integrated with other services in the healthcare system and community.” (CFPC, 2019) This paradigm offers a vision for healthcare in Canada that is comprehensive, accessible, uses healthcare teams, and is tailored to the individual. In 2019, an update and evaluation of the first 8 years of PMH in Canada highlighted the “central importance of community adaptiveness and social accountability… The importance of being responsive to community needs through engagement, and ensuring the provision of equitable, culturally safe, anti-oppressive practise that seeks to assess and intervene into social determinants of health is now more clearly featured.” (CFPC, 2019). The PMH and its new mental model of being responsive to community needs… equitable [and] culturally safe…” (CFPC, 2019), matches well with the idea of equitable treatment of refugees. This is also the right lens through which to view cancer screening. As the Canadian Partnership Against Cancer environmental scan reports on cervical, breast, and colorectal cancer screening show, the primary care provider is central to ensuring that people in Canada, including refugees, participate in cancer screening.

How this project addresses a gap in the literature

I found limited research on cancer screening uptake among refugee populations in Canada in my initial literature review. There appear to be differences between refugees and other immigrants in experiences of accessing primary care screening programmes that have not been explored in depth. A scoping review of US studies on cervical cancer screening uptake in migrant populations found only 5 studies exclusively focusing on refugee women (Abdi et al., 2020). Although research and policy has started to identify that immigrant and refugee health disparities have increased, there is limited research on understanding contextual factors around why these disparities exist and persist, despite the connected goals of creating a Patient's Medical Home for all people in Canada and the pursuit of health equity. In Europe, Australia, and the US, there were a number of studies looking at the refugee experience with healthcare and some relating to cancer screening.

The intricacies of the IFHP for refugees in Canada, coupled with the myriad provincial cancer screening programmes and jurisdictions, provide an interesting framework upon which to unravel complexities surrounding refugee preventive health discussions.

Research questions

I have chosen a realist review for this study of why refugees do not take up cancer screening in Canadian primary care. I want to look at why, and in what circumstances, cancer screening programmes work – or don't – for refugees, while also looking at this problem through the multiple policy jurisdictions in Canada. Specifically:

- What are the contexts and mechanisms that drive the participation or non-participation by refugees in cancer screening programmes?
- How do policy settings and screening programmes in different provinces and territories, overlaid by the IFHP, contribute to non-participation in cancer screening programmes by refugees?

Methods

A realist review, or realist synthesis, is a theory-driven review, based in a realist philosophy of science. Realism lies between constructivist and positivist approaches, between the theoretical positions that reality can be created, or it can be measured. The realist philosophy holds that outcomes are produced by underlying generative mechanisms that may or may not operate within specific contexts. Mechanisms have roots in individual volitions and reasoning, i.e., "interventions do not work, it is the interpretation of their subject that produce results" (Pawson, 2013, p. 34). Outcomes (O) and outcome patterns are produced by a range of mechanisms (M), which may function differently depending on the different contexts (C) within which they are triggered. This may be noted as C + M = O (Pawson, 2013), however, in reality, the way in which mechanisms operate in different contexts to produce outcomes is not usually linear. Realist approaches use a "working assumption… that a particular intervention triggers particular mechanisms of change. Mechanisms may be more or less effective in producing their intended outcomes, depending on their interaction with various contextual factors." (Best et al., 2012). The combination of mechanisms, contexts, and outcomes are referred to here as context – mechanism – outcome configurations, or CMOCs. A realist review looks at the relationships and interactions within and between CMOCs acknowledging that multiple mechanisms may produce a variety of outcomes for given contextual factors.

Pawson and Tilley (1997) talk about experimental evaluations as *describing outcomes*, but not necessarily *why* programs fail or succeed, thus realist research questions often ask, "What works for whom under what circumstances, how and why?" (Wong et al., 2013). My rationale for choosing a realist review for this topic was because, although we can somewhat easily measure how many refugee patients in a primary care clinic may be participating in cancer screening or not, a quantitative approach does not explain under what circumstances they participate, or why they participate. This type of approach also does not lead us to understand what circumstances resulted in refugee patients not accessing a primary care clinic at all, or what provokes them to refuse screening when it is offered. The mechanisms that assist in understanding what works, for which refugees, in which circumstances, are more complex than what can be summarised through, for example, a patient chart audit. In addition, a realist approach makes it possible to incorporate a range and variety of sources on this topic and to develop theory on why a complex group of patients access a complex preventive health intervention in particular settings. Most healthcare programmes are complex, with numerous policy layers, enablers, and constraints, composed of a variety of interventions. Often grey literature defines, supports, and evaluates the implementation of health interventions, but this documentation is usually left out of a traditional systematic review or other types of syntheses.

Critical to evidence-based healthcare is transparency in the process by which the evidence is collated, created, and disseminated; this is no different in the realist paradigm (Pawson, 2006b). Pawson’s template for a realist review comprises five stages (Pawson, 2006b), and I describe below how I used and adapted this template to construct this dissertation:

1. ***Identifying the review question(s) and developing theory***. Unlike systematic reviews, a realist review looks first to generate initial programme theory (IPT) from *generally* relevant literature, and then seeks to test this initial programme theory through analysing and synthesizing data from *directly* relevant sources and relevant grey literature. To construct an IPT, I did exploratory searches of the literature around refugee interactions with healthcare generally, refugee access to primary care, and refugee participation in screening programmes for cancer and other diseases. I used the databases PubMed, Medline, EMBASE, CINAHL, and Web of Science to find literature in these first exploratory searches, coupled with internet search engine searches to look at relevant websites such as the Canadian Partnership Against Cancer and the IFHP website. I explored sources on cancer screening of refugees and other categories of migrants, and refugee health screening and healthcare service provision in Canada and in other countries, but excluded sources relating to mental health, disability, child refugees, and refugee camps. The rationale for excluding mental health and disability is that the provision of mental health services carries its own challenges for refugees and other Canadians, and the data from this type of healthcare is not directly relevant to the provision of preventive screening. Similarly, provision of healthcare for patients living with disabilities is not likely to be relevant to this review. Cancer screening is not typically provided to patients under 18 in Canada, therefore sources pertaining to child refugees were excluded. I also removed sources that were specific to refugee camps; I am interested in the approach to healthcare provision for refugees coming to Canada, and relevant lessons from other OECD countries. The differences in health services provision and experience of healthcare are quite large when comparing refugee camps to refugees settling in OECD countries, and refugee camps usually do not have the resources to conduct comprehensive screening and preventive care. Although there are major differences between Canada and the USA in how healthcare is provided and funded, and there are differences between, for example, Canada and Australia in the way that refugees are managed upon arrival, the

experience from other countries provided useful background ideas on how cancer screening may be experienced and accessed by migrants. Similarly, there were many sources on tuberculosis (TB) screening; I scanned these for relevant lessons on screening approaches. Table 1 shows the inclusion and exclusion criteria I used to screen the literature found in my searches. I developed an IPT at this stage from these more general sources; the working IPT is described in the 'Initial programme theory' section of 'Results' below and is depicted graphically in Figure 1.

Table 1. Inclusion and exclusion criteria for the initial, general literature search

Inclusion	**Exclusion**
Written in English, French	
Preventive health screening, e.g., cancer, TB, immigration medical exams	Mental health and disability health care services
Canada, USA, Australia, Europe	Non-OECD countries
Adult refugees (18+ years)	Child refugees
Primary or community care settings	Refugee camps

2. ***Searching for primary studies***. My formal search for directly relevant primary documents was carried out using the same five databases (PubMed, Medline, EMBASE, CINAHL, and Web of Science), and three specific keywords and their associated medical subject headings (MeSH) and related terms:

- Refugees / refugee* / migrant / "displaced person"
- Cancer screening / "early detection of cancer" / Pap / Papnicolaou / mammo* / "colorectal cancer" / "faecal immunochemical test"
- Canada / Canadian

I used the same exclusion criteria as noted in Table 1, but also limited my search to primary research and grey literature from Canadian settings, included cervical, breast, and colorectal cancer screening tests, and excluded prostate-specific antigen (PSA) testing, and excluded screening for other health issues, such as cardiovascular risk or diabetes. I also used internet search engines to find details on the IFHP and cancer screening programmes across Canada.

3. ***Study selection and appraisal***. Once duplicates between databases were removed, I reviewed the papers in a two-step process. First, I checked titles and abstracts for the resulting 20 papers to determine if they were primary research and whether they met the inclusion criteria. Second, I scanned each document's full text to understand the relevance to the IPT and to the review questions, and briefly noted some limitations of the main sources. These limitations are discussed below table 2 in the Results section, however, in a realist review, even where a study has some shortcomings, it may still contain useable evidence relevant to the review's questions (Pawson, 2006a). I scanned each grey literature document to ensure they would add context to the review. Due to the limited literature available to supplement the IPT and to create meaningful CMOCs, I had informal conversations with two Alberta-based refugee health clinics that were used to inform my thinking about how and why refugee health provision generally is, or is not, successful.
4. ***Data extraction***. To extract data, I read each paper in detail, took notes on paper, and used an Excel spreadsheet to pick out and organise important concepts related to, adding to, or contradicting the IPT, with a view to creating CMOCs in the next stage, and to inform the realist analysis. Relevant data from each study was captured such that each CMOC could be directly referenced for transparency.
5. ***Data analysis and synthesis***. I began to construct CMOCs from this initial exploratory set of documents, based on the initial programme theory. Each concept was, "situated … juxtaposed, reconciled, and consolidated" (Pawson, 2006b, p. 98), against the IPT and emerging CMOCs. The additional 14 papers (see Appendix D) that did not meet all the inclusion criteria noted above in Stage 3 were reviewed for additional perspectives and to determine if similar mechanisms might have been identified in other countries, with other preventive healthcare processes, in immigrant groups, or with other types of secondary evidence.

Based on the data extracted and emerging findings, a realist review may change direction or expand in scope. However, due to the limited number of directly relevant papers discovered in this review, there was no requirement to make changes to the process. The RAMESES standards for quality and reporting of realist syntheses, as described in The RAMESES Project (2014) and Wong et al. (2013), respectively, were adhered to, to ensure that the requirements of a realist review were met.

Additional detail can be found in Appendix C – Review protocol.

Results

Initial programme theory

As previously mentioned, Canada does not make accessing healthcare easy for refugees; the IFHP is complex to navigate alongside varied provincial rules, which are not readily available or linked to the IFHP website. Many primary care providers (PCPs) do not accept IFHP because they are unwilling to engage in the bureaucratic process to register (Rahman, 2016) or wait months for reimbursement (Miedma et al., 2008). In some cases, it is easier to present at an emergency department, because hospital physicians are usually not paid through fee-for-service and their billing departments can spend the time navigating the IFHP reimbursement process on behalf of physicians (Miedma et al., 2008). This barrier to accessing primary care, where most cancer screening programmes are undertaken, is significant for refugees.

Added to the complexity of the health systems, many refugee patients do not speak either of Canada's official languages (Government of Canada, 2018). Settlement services and culturally appropriate health system navigators are not available in all areas of the country. In addition, healthcare services tailored to refugees are sparse. For example, in the two largest urban centres in the province of Alberta, Edmonton and Calgary, there is one health clinic specific to refugees in each city. The clinic in Calgary is well-resourced, has an extensive website to connect refugees to services (Refugee Health YYC, 2021), and has several PCPs and allied health professionals available to provide health and social care services (Bietz, 2020); the Edmonton clinic has just two part-time Nurse Practitioners (Estey, 2020).

Lack of understanding of the process and need for screening (Dunn et al., 2017) and both fatalistic and optimistic paradigms (Wang et al., 2019) stop some refugees from accessing screening programmes. Other barriers faced by refugees are logistical. Generally, refugees have limited financial and family resources to obtain childcare, for example, or may have difficulty accessing public transportation due to unfamiliarity with the transport system as well as having difficulty paying for transit fares, which can be expensive for someone on a low income in large cities like Toronto.

On the other hand, where community programmes and settlement services are available to refugees, navigators can assist newcomers in finding primary care providers, programmes and education sessions may be offered in a refugee's preferred language, interpreters may be available, and other enablers may be present, like the provision of transportation tokens and buses to take patients to screening appointments (Dunn et al., 2017; Wiedmeyer et al., 2012). Longer appointment times for refugee patients can enable PCPs to take time to explain the need for screening and the process of the tests alongside other pressing concerns (Wiedmeyer et al., 2012).

Figure 1 shows a diagrammatic representation of the initial programme theory.

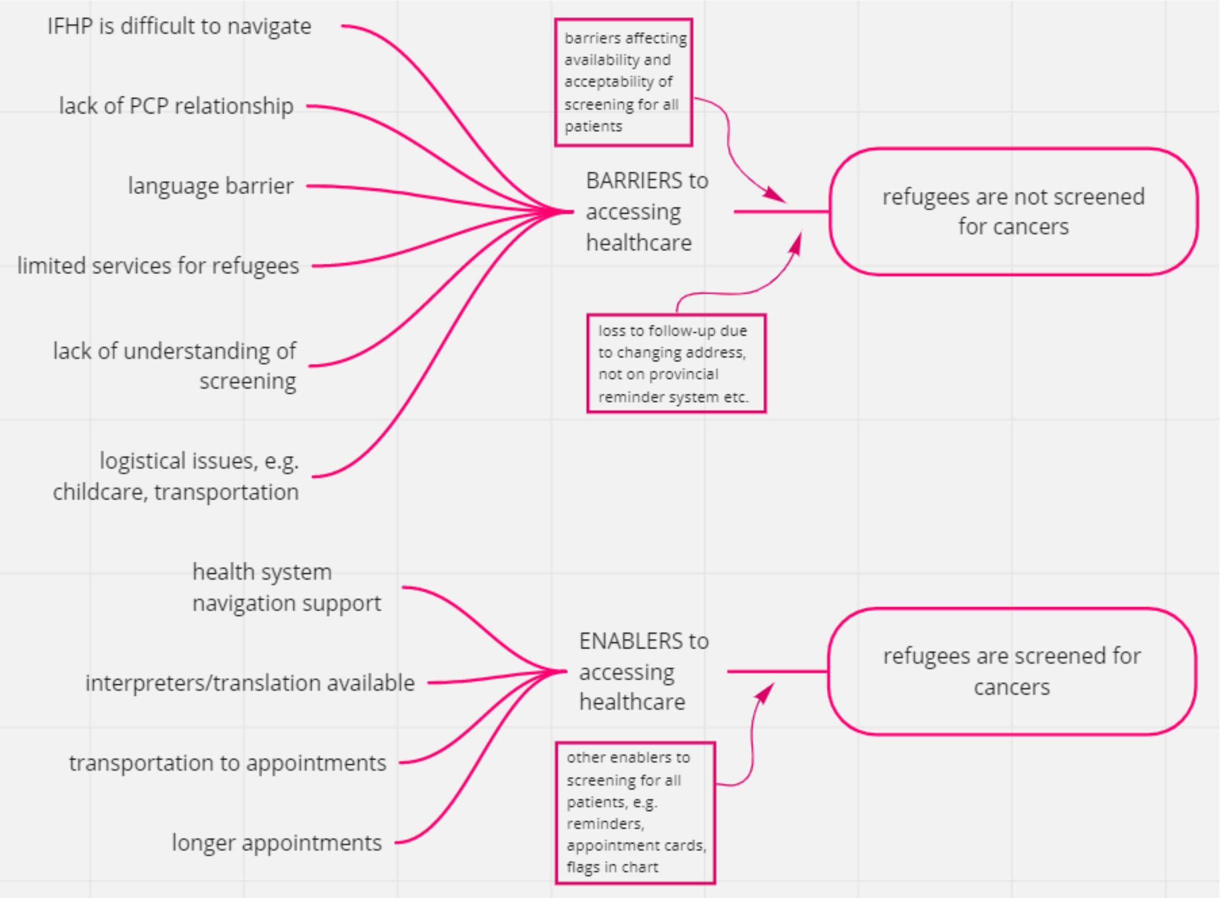

Figure 1. Initial programme theory

Findings

There was very little published literature on the topic of refugees accessing cervical, breast, and colorectal screening tests in Canada. Only six papers exactly meeting the criteria – cancer screening, refugees, Canada – were found. While there were papers available on cancer screening for the broader category of immigrants, cancer screening in Canada, cancer screening for migrants in other countries, and similar variations, there were just six that exactly matched the topic of cancer screening for refugees in Canada. Primary studies and their characteristics can be found in Table 2. Therefore, the review was also informed by grey literature and informal discussions with refugee healthcare providers. Key grey literature sources included the Government of Canada's descriptions of the Interim Federal Health Program (IFHP) over multiple websites, the Canadian Partnership Against Cancer's Breast, Cervical, and Colorectal Cancer Screening Environmental Scans (CPAC, 2021a, b, and c), and the South Riverdale Community Health Centre engagement report and environmental scan on engaging seldom or never-screened women (SRCHC, 2010). A document flow diagram is presented in Figure 2. Several other useful papers with insights from other jurisdictions or immigration categories were found either in the initial searches or through citation tracking. A comprehensive listing of sources can be found in Appendix D.

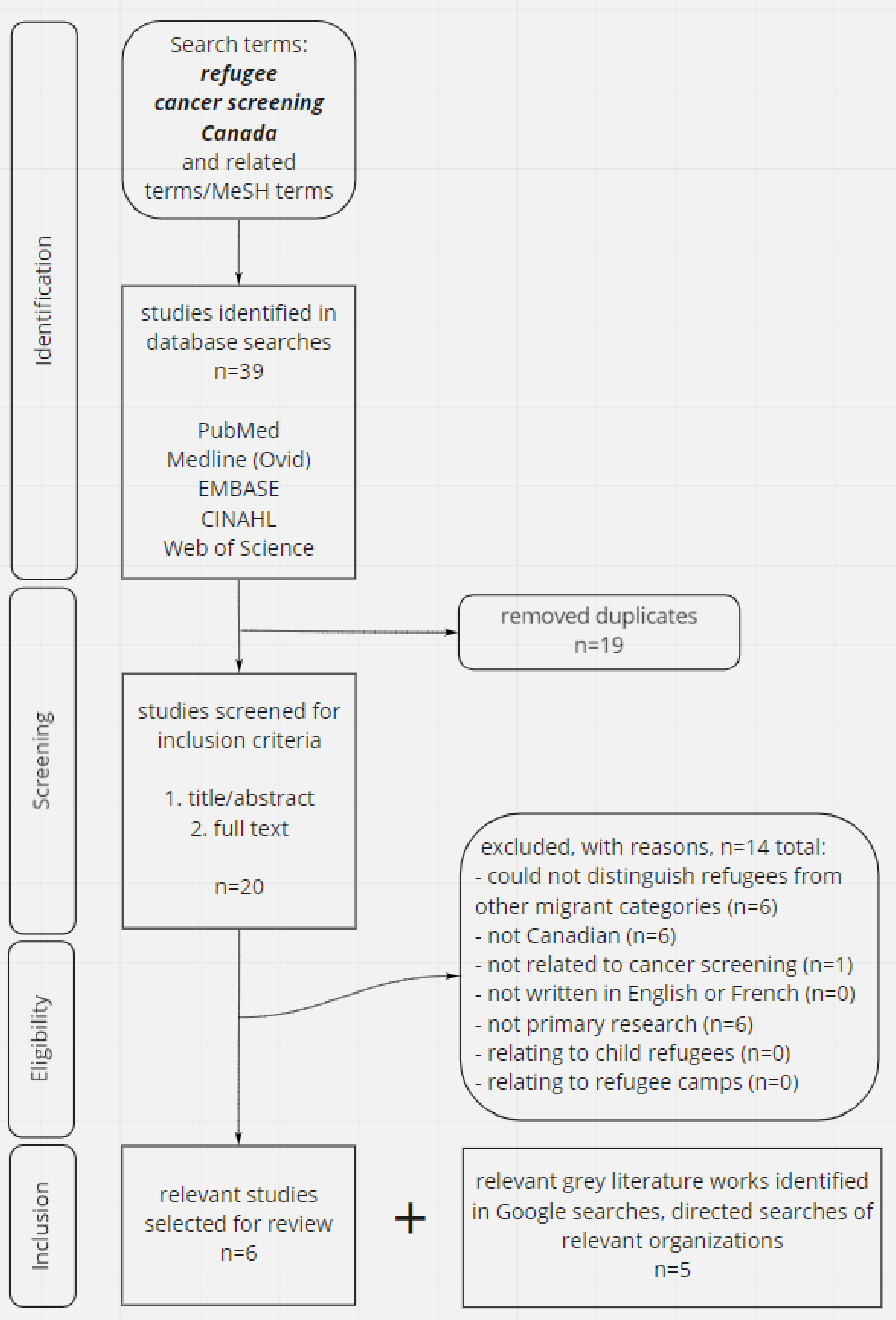

Figure 2. Document flow diagram of studies selected for inclusion in the review

While some relevant data on contexts, mechanisms, and outcomes was found in papers from other jurisdictions, disease screening programmes, or other patient populations, it is sometimes difficult to know whether all elements are transferable to the Canadian refugee cancer screening context. It was possible to use elements from these papers to compare and contrast my findings from the directly relevant sources, to augment, validate, and challenge the discussion of directly relevant CMOCs. For example, a qualitative study conducted with Burmese and Bhutanese refugee women in the USA (Lor, 2018) confirmed some of the enabling and predisposing factors associated with seeking cancer screening revealed in the main papers.

Table 2. Main sources used in this review

Author	**Year**	**Geographical area**	**Screening type / study focus**	**Population**	**Study design / data source**
1. Dunn et al.	2017	Toronto	breast and cervical cancer screening	immigrants and refugees	cohort study
2. Racine et al.	2021	Saskatchewan	breast cancer screening	refugees	cross-sectional descriptive exploratory study; survey data
3. Shen et al.	2018	Ontario	colorectal cancer screening	immigrants and refugees	cross-sectional study; health databases
4. Vahabi et al.	2016	Ontario	breast cancer screening	immigrants and refugees	cohort study; health databases
5. Wang et al.	2016	Toronto	breast and colorectal cancer screening	immigrants and refugees	mixed methods
6. Wiedmeyer et al.	2012	Toronto	cervical cancer screening	refugees	cross-sectional; chart review

All of the above papers had strengths and insights to offer the topic of this review. However, some limitations of the six primary studies include:

- Dunn et al. (2017) is based on a single project intervention that carried some self-selection bias and included both immigrants and refugees.
- Racine et al. (2021) describes a study using a small convenience sample of women, all of whom were educated to only elementary school level. They acknowledge that it is unlike to be generalizable to more educated women or all Muslim women.

- Shen et al. (2018) describes a study of healthcare administrative data including both immigrants and refugees, with few results distinguishing between categories.
- Vahabi et al. (2016) also included both immigrants of other types with refugees. One limitation noted by the authors is that the study did not include women without Ontario Health Insurance Program (OHIP) coverage.
- Wang et al. (2016) included both immigrants and refugees and although refugees made up a third of the study participants, results were not clearly distinguished as relating to refugees vs. other immigrant groups. The qualitative focus groups were with healthcare providers only; no refugees were interviewed.
- Wiedmeyer et al. (2012) had a small sample from which to draw conclusions and only examined a single site tailored specifically to refugee care.

Despite the small body of literature, 26 contexts, 28 mechanisms, and 10 outcomes were discovered within the research and will be examined in more detail below.

What drives the non-participation of refugees in cancer screening programmes?

Shen et al. (2018) note that refugees participate in cancer screening 9% less than other immigrant groups, and that 71% of refugees who qualify for at least one of the three cancer screening tests do not participate. The CMOCs described in this section will endeavour to explain why and in what contexts they are less likely to participate, using and expanding upon the initial programme theory described above and in Figure 1:

- When refugees do not understand the IFHP and local health system (C1), they may not seek out a PCP (O1) due to lack of clarity on entitlements to healthcare (M1) (Dunn et al., 2017).
- When refugees are unable to communicate in English or French with a PCP (C2), they may not participate in screening (O2), because it is difficult to establish a trusting relationship with the PCP (M2) (Wang et al., 2016).
- Similarly, if interpreters are not available at the PCP clinic (C3), the refugee may not participate in screening (O2), because the PCP cannot explain the test or its necessity in language the patient understands (M3) (Wang et al., 2016).

- If interpreters are available at the PCP clinic for a non-English/French speaker (C4), the refugee may not participate in screening (O2), because the PCP cannot spend adequate additional time working with the interpreter to cover screening as well as episodic care (M4) (Wang et al., 2016).
- When refugees do not read English or French (C5), the refugee may not participate in screening (O2), because they may not be able to find screening information in a language they understand (M5) (Racine et al., 2021; Vahabi et al., 2016; Wang et al., 2016).
- When refugees do not read English or French (C5), the refugee may not participate in screening (O2), because the screening reminders are not in a language they understand (M6) (Shen et al., 2018).
- When refugees are unfamiliar with the concept of screening (C6), the refugee may not participate in screening (O2), because the PCP does not spend adequate additional time discussing screening with the patient as well as their episodic care needs (M7) (Dunn et al., 2017; Shen et al., 2018).
- When refugees are introduced the concept of screening in Canadian primary care (C7), the refugee may not participate in screening (O2), due to a perceived lack of vulnerability (M8) (Dunn et al., 2017; Wang et al., 2016).
- When refugees are introduced the concept of screening in Canadian primary care (C7), the refugee may not participate in screening (O2), due to fatalism about the condition (M9) (Dunn et al., 2017).
- When refugees have multiple bio-psychosocial needs, including relative poverty (C8), they may not participate in screening (O2), because they are focused on immediate needs of food, finding work, and family responsibilities (M10) (Dunn et al., 2017; Shen et al., 2018; Vahabi et al., 2016; Wang et al., 2016).
- When refugees have multiple bio-psychosocial needs, including relative poverty (C8), they may not participate in screening (O2), because they cannot afford time and transportation to multiple appointments at PCP and mammography services (M11) (Shen et al., 2018; Vahabi et al., 2016).
- When a refugee is of Arabic origin (C9), they may not participate in screening (O2), because of stigma related to their perceived personal responsibility for potentially having caused cancer (M12) (Racine et al., 2021).
- When a female refugee is of Arabic origin (C9) and the mammography technician is male (C10), they may avoid breast cancer screening (O3), because they are uncomfortable with male providers performing invasive screening (M13) (Wang et al., 2016).

- When a female refugee is of Arabic origin (C9) and the PCP is male (C10), they may avoid cervical cancer screening (O4), because they are uncomfortable with male providers performing invasive screening (M13) (Wang et al., 2016).
- If the test for colorectal cancer is seen as unhygienic (C11), and refugees are not used to talking to PCPs or anyone else about faeces (C12), they may not be screened for colorectal cancer (O5), because of shame (M14) (Wang et al., 2016). There was a candidate CMOC related to the perception that mammography is painful, but this does not appear to be a concern specific to refugees. (SRCHC, 2010).
- When refugees live in smaller centres in Canada (C13), they may not be able to find a PCP (O6) because services tailored to refugees are less comprehensive outside of Toronto and most other large urban centres (M15) (Bietz, 2020; Estey, 2020).
- When refugees relocate due to housing insecurity (C14), their invitations to screening may get lost (O7), because of changes in address (M16) (Wang et al., 2016).
- When refugees have not visited a primary care provider (C15), they will not receive invitations to screening (O7), because they are not on the provincial system that creates invitation to, and reminders for, cancer screening (M17) (CPAC, 2021a, b, and c).
- When refugees live in certain parts of Canada (C16), they will not receive invitations to screening (O7), because their province does not have an organized screening programme (M18).
- When a refugee feels unsafe with a PCP (for example, due to sexual violence, genital mutilation, intimate partner violence) (C17), they may avoid primary care visits (O8), because of fear and past trauma (M19) (Wiedmeyer et al., 2012).

Figures 3a and 3b show these CMOCs and their relationships graphically.

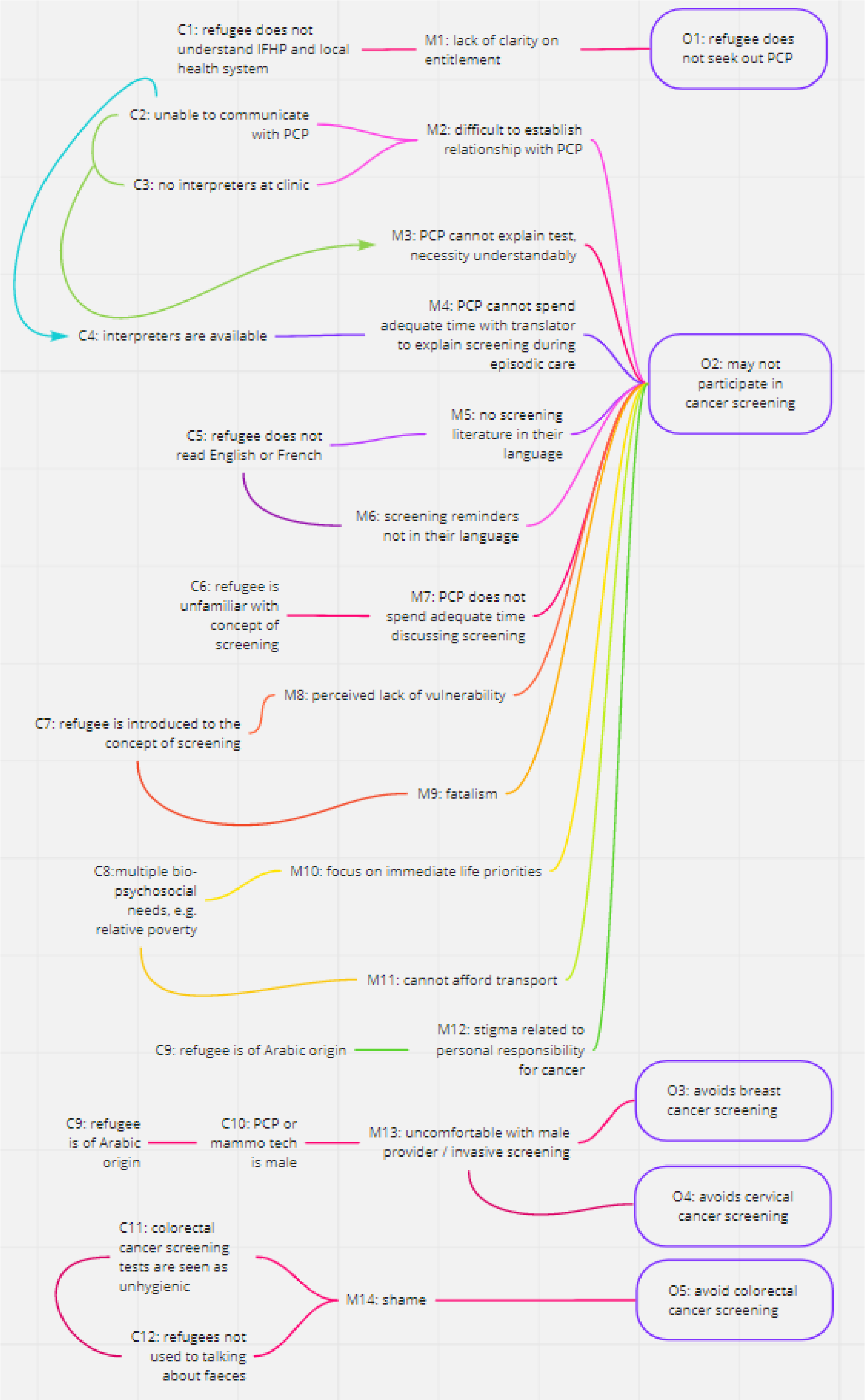

Figure 3a. CMOCs related to refugee non-participation in cancer screening.

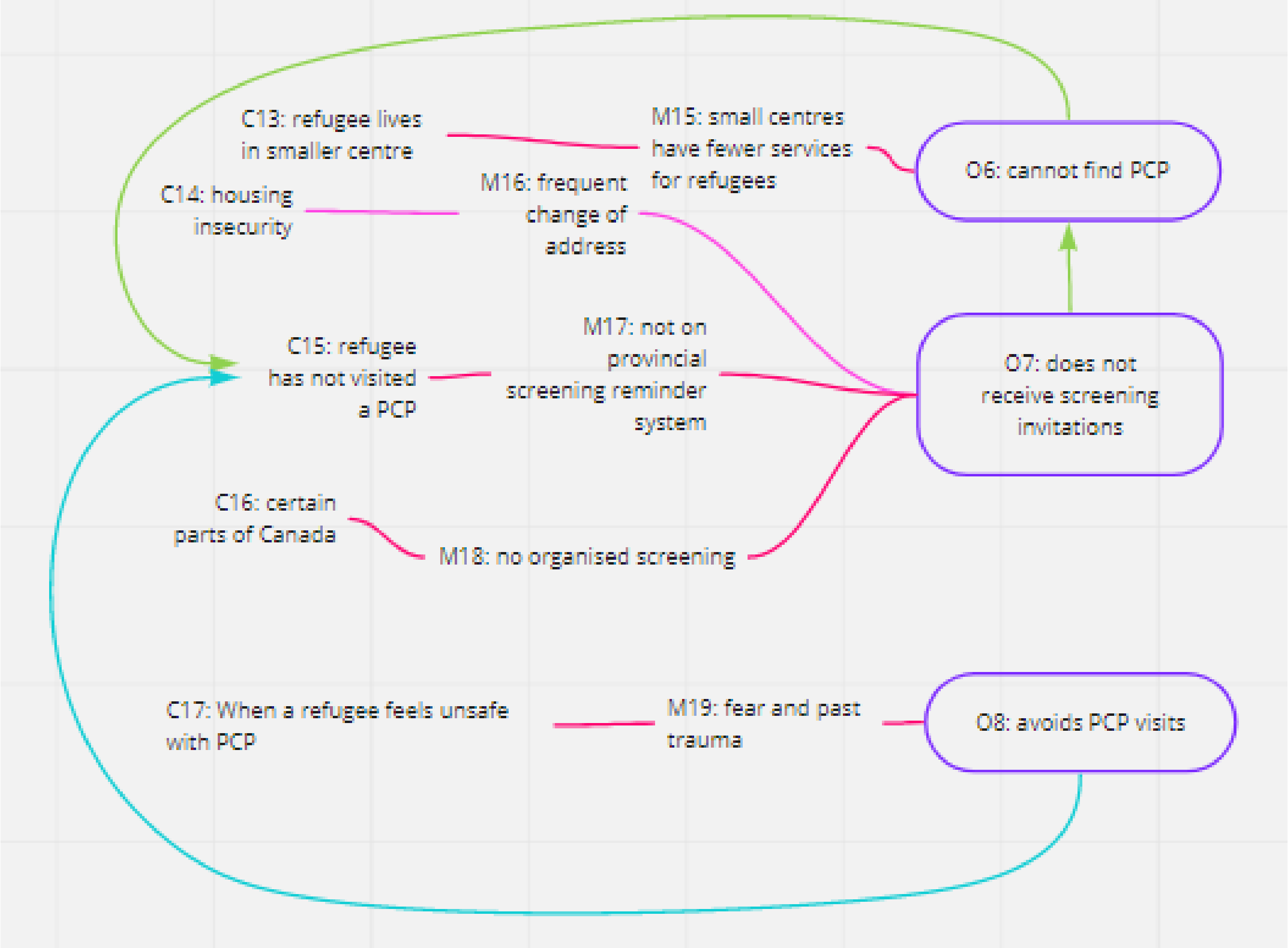

Figure 3b. CMOCs related to refugee non-participation in cancer screening.

What drives participation of refugees in cancer screening programmes?

The CMOCs described in this section will endeavour to explain why and in what contexts refugees are more likely to participate, expanding upon the initial programme theory described above and in Figure 1:

- Where a refugee has access to peer/lay educators or patient navigators who are culturally and linguistically sensitive to their needs (C18), they are more likely to access primary care and get cancer screening (O9), because language and cultural barriers have been overcome (M20) (Dunn et al., 2017; Shen et al., 2018; Wang et al., 2016; Wiedmeyer et al., 2012).

- Where a refugee can access trained medical translators in a primary care clinic (C19), they are more likely to participate in cancer screening (O10), because they can understand information about screening (M21) (Wiedmeyer et al., 2012).
- Where a refugee can access a model of care that allows for longer appointments with a PCP (C20), they are more likely to participate in cancer screening (O10), because the PCP have the time to explain information about screening (M22) (Dunn et al., 2017; Shen et al., 2018; Wiedmeyer et al., 2012).
- When a refugee has a PCP that understands and takes into account their cultural norms and expectations (C21), they are more likely to participate in cancer screening (O10), because they feel respected (M23) (Vahabi et al., 2016).
- Where a clinic has processes that facilitates the process of attending an appointment (C22), refugees are more likely to participate in cancer screening (O10), because they do not have to organize their own logistics (M24) (Dunn et al., 2017). For example, the CARES clinic in Toronto described in Dunn et al. (2017) provides a ‘Pap bus’.
- Where a clinic provides the means by which refugees can understand the value of screening (C23), refugees are more likely to participate in cancer screening (O10), because they can understand the process (M25) (Wang et al., 2016; Racine et al., 2021). 24 languages were represented in the model of care in Toronto described by Dunn et al., where they used language-specific visual aids or education sessions to explain screening (2017)
- When refugees are educated, i.e., have attended university or college (C24), they are more likely to get screened (O10), because they understand the risk factors (M26) (Racine et al., 2021). This is echoed in the background presented by Wiedmeyer et al. (2012) but by contrast, education level was not found to be significant by Wang et al. (2016).
- Where a clinic follows up with refugees who attend education sessions (C25), refugees are more likely to participate in screening (O10), because the messages about screening are reinforced (M27) (Dunn et al., 2017).
- When an organisation a refugee trusts promotes the benefits of screening to them (C26), refugees are more likely to participate in screening (O10), because they believe the message (M28) (Dunn et al., 2017).

Figure 4 shows these CMOCs and their relationships graphically.

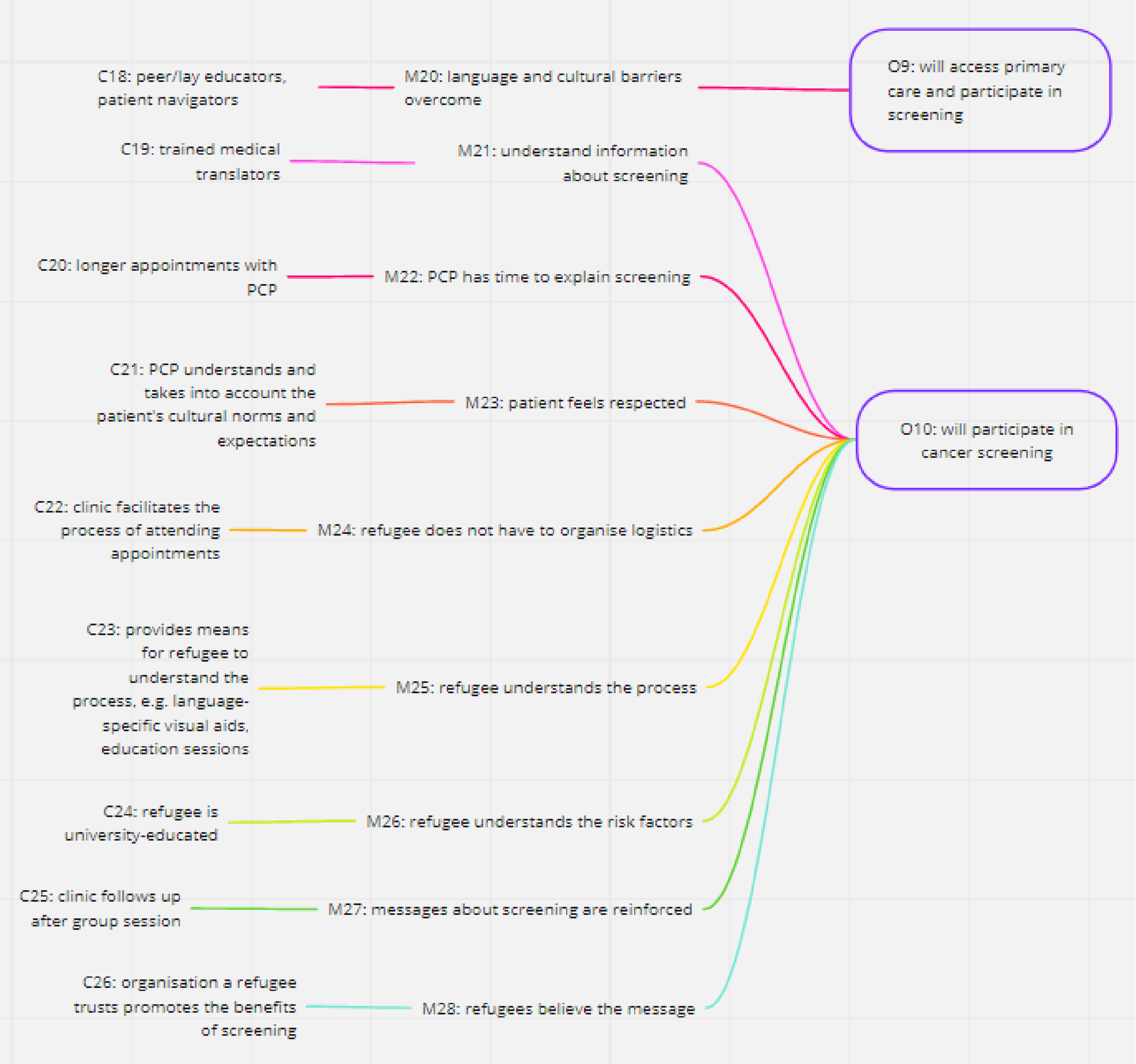

Figure 4. CMOCs influencing refugee participation in cancer screening.

Health system challenges

As noted previously, the IFHP is complex and difficult to understand the exclusions and requirements, and this is compounded if refugees do not read English or French. PCPs may choose not to register with the IFHP because it is cumbersome and bureaucratic to both register and get paid (Rahman, 2016) so it is even more difficult to find a PCP as a newcomer. Layered upon the IFHP are the provincial systems, which require an application to the relevant healthcare body, and in some provinces like Ontario, healthcare insurance programmes require refugees to wait up to 90 days before being able to access PCPs and other healthcare services. From the Government of Canada's own website about how healthcare works, is this equivocal statement:

> "Each province and territory has their own health insurance plan. Make sure you know what your plan covers. All provinces and territories will provide free emergency medical services, even if you don't have a government health card. There may be restrictions depending on your immigration status." (Government of Canada, 2021).

The lack of clarity on entitlements likely delays many refugees from seeking primary care on their own (C1M1O1). Similarly, depending on the region of Canada where they have landed, refugees may not have the navigation assistance required that would help them understand their entitlements to healthcare (C13M15O6) and likely leaves many refugees without consistent primary care, let alone with offers of screening. Most jurisdictions rely on PCPs in some way to ensure that screening is done; for example, screening reminders may come from centrally administered programmes in each province or territory but in general the onus is on the PCP to carry out the tests. Amankwah et al. (2009) noted that women who do not have a regular PCP generally do not get reminded of screening. Some provinces' screening programmes are more helpful than others: Saskatchewan Cancer Agency's (SCA's) colorectal cancer screening programme sends out a kit to eligible individuals (CPAC, 2021c), although this does require the patient to be registered and have a Saskatchewan health card, as noted in C15M17O7. In addition, housing insecurity, which is common among refugees, means that reminders may get lost in the mail because of address changes (C14M16O7). The language barrier for many refugees would prevent screening reminders from being understood as they are only sent in English and French (C5M6O2). Language barriers will be discussed in more detail below.

Conversely, CancerCare Manitoba requires eligible patients to request a kit for colorectal cancer screening, which would require a refugee to be registered for healthcare in Manitoba (CPAC, 2021c). The Yukon, Nunavut, and Northwest Territories, as well as Québec and Prince Edward Island do not have organised screening programmes for cervical cancer and rely on PCPs to advise patients to be screened at the right interval (C16M18O7) (CPAC, 2021b). This requires organisation on the part of the PCP clinic to set up automated reminders in their electronic medical records systems (EMR) to ensure screening is carried out. The Alberta Screening and Prevention (ASaP) programme provides tools for clinic staff and practice facilitators to set up templates for screening in primary care clinic EMRs, which include Pap, mammography, and colorectal cancer screens as well as other important screens such as haemoglobin A1C levels. Data from 2018 suggests that half of Alberta Health Care Insurance Program recipients are benefiting from the work of ASaP (AMA, 2019). However, this is not necessarily replicated across Canada or in the jurisdictions without screening programmes. These barriers to access to primary care, and the challenges of screening programmes themselves or the lack thereof, present a variety of structural obstacles to participation in screening.

I had expected that difficulties navigating IFHP and health jurisdictional complexities would have greater coverage in the literature, however, it is only briefly mentioned in Dunn et al., 2017 and in some of the supplementary papers, such as Rahman (2016). Similarly, discussion of racial discrimination does not appear in any of the original research in the six relevant studies. This could be due to the specific topic of cancer screening; discrimination may be covered in other, more general healthcare delivery research. In addition, half of the primary studies related to 'refugee-friendly' clinics in multicultural Toronto (Dunn et al., 2017; Wang et al., 2016; Wiedmeyer et al., 2012), which are likely to be much more reflexive about their conduct around refugees and other newcomers. Edge and Newbold (2012) also found limited discussion of discrimination and its effect on health in the Canadian literature. In his commentary on healthcare delivery for refugees, Rahman (2016) states that discrimination in healthcare in Canada tends to be subtle: rather than overt racial slurs, discrimination is apparent in the discomfort or refusal of healthcare providers to respect cultural or religious beliefs, or in pretending not to understand a patient. The IFHP and provincial structures themselves are a form of institutionally reinforced discrimination.

Language, culture, and health literacy

Many refugees are not aware of the necessity of screening or the idea of preventive healthcare. This may be due to language barriers and cultural factors and the language barrier for many refugees is significant. A 2017 evaluation by Immigration, Refugees and Citizenship Canada (IRCC) found that 63% of refugees did not have any knowledge of English or French (Government of Canada, 2018), which are the two official languages in Canada. Thus, nearly two-thirds of refuges require interpreters to engage meaningfully with healthcare providers. This review found that interpreters presented both barriers and facilitators to screening. Not using professional interpreters was found to be an issue in an Australian study on perceived barriers to cervical cancer screening: “It is a problem for a mother to talk about any women’s health problem when her son is acting as the interpreter.” This practice of using family members was found to be damaging to the provision culturally appropriate care (Parajuli, 2020b). The Canadian clinical evidence review by Pottie et al. (2011) echoes this and describes how women’s roles in the family limits their comfort around screening, particularly invasive exams like the Pap test, if a family member is present. Without interpreters, a PCP is unlikely to be able to understandably explain the test in enough detail (C3M3O2) but even where there are professional translators available in-clinic, a PCP may not be able to spend adequate time explaining cancer screening if the patient is presenting with other episodic or chronic health issues (C4M4O2) or where the refugee patient is wholly unfamiliar with the concept of screening (C6M7O2).

Of course, language barriers affect health literacy. Visual aids (C23M25O10), pamphlets, and other promotional materials explaining screening must be in understandable formats and languages (C4M5O2) for refugee patients to engage, even when a PCP is able and willing to take the time to explain the concept. Refugees also may not understand the urgency of screening. Amankwah et al. (2009) found that screening does not always fit with patients' health beliefs, and for many patients the idea of screening and risk factors for cancer were unknown to them before arriving (Abdi, 2020). Related to the lack of urgency toward cancer screening is cancer fatalism (C7M9O2), which is the belief that a cancer diagnosis is a matter of one's fate or God's will and therefore beyond an individual's control (Straughan and Seow, 1998). Similarly, some people believe that death is inevitable if you are diagnosed with cancer (Racine et al., 2021). Both views mean that individuals might not seek cancer screening because they feel it is pointless. Equally, people who are optimistic – "if I feel well, I am well" (Wang et al., 2019) or "no symptoms – no check-up" (Parajuli et al., 2020b) (C7M8O2) are less likely to seek out or see the necessity of screening. Iraqi refugees in the USA spoke of relying on God to prevent illness (Saadi et al., 2012). While these characteristics may also be present in non-refugee populations, Abdi et al. (2020) theorised that fatalism is more common in groups that are unaware of what treatment is available to them, or who believe illness is a matter of karma or personal responsibility, which also carries some stigma (Abdi et al., 2020; Racine et al., 2021). Similarly, a study of Vietnamese women migrants in British Columbia reflects this personal responsibility in the case of breast or cervical cancer: "We need to look after ourselves first. Sometimes we have difficulty because we left it too long." (Mrs. An, p. 7, Donnelly and McKellin, 2007). People, including refugees, who do not know that there are effective cancer treatments in countries like Canada, are more likely to assume cancer is a death sentence.

Level of education was noted in Racine et al. (2021) as a potential mechanism influencing participation (C24M26O10), but the study described a small sample of only elementary-educated women, so it is difficult to know if more educated women would be more likely to participate. Education level was not found to be significant in Wang et al. (2016) and this characteristic may, in any case, be applicable to the wider Canadian population. Abdi et al. (2020) found in their scoping review of cervical cancer screening for immigrants and refugees in the USA that education level was associated with higher uptake of screening; similar results were found in the survey by Amankwah et al. (2009) of ethnic minority women in Canada. Additional research is needed to understand how this mechanism actually works to motivate or discourage participation by refugees in screening.

Cultural and religious factors may also play a part in screening behaviour. The study by Wang et al. (2016) of Arabic women attending Access Alliance Multicultural Health and Community Services (AAMHCS) in Toronto found that women of Arabic origin may avoid cervical and breast cancer screening if the PCP or mammography technician are male because of the nature of the screening tests (C9C10M13O3; C9C10M13O4). Iraqi refugees would not want a male physician because it would be an embarrassment as a "covering woman" (Saadi et al., 2012). Racine et al. (2021) suggest that healthcare providers partner with communities, to understand what social, cultural, and religious barriers need to be taken into account (Racine et al., 2021) to create culturally acceptable and faith-tailored interventions to promote cancer screening participation. A scoping review from Europe also indicated that male providers presented barriers to both cancer screening and to accessing healthcare services in general (Marques et al., 2020).

Only one mechanism was specifically related to colorectal cancer screening. Wang et al. (2016) mentions that the focus groups conducted with Toronto AAMHCS patients perceived the FIT test as 'gross', or unhygienic and distasteful (C11M14O5) and this may affect refugees in particular because they are less accustomed to discussing faeces or other embarrassing topics with a PCP. Some provinces have attempted to work around these issues with FIT tests by either mailing out kits to eligible patients, but in most cases, the patient must already be interacting with a PCP to qualify (CPAC, 2021c). There was a similar mechanism noted about pain of mammography discouraging participation in breast cancer screening, but this is a mechanism known to be an issue deterring screening for many women, not just refugees (SRCHC, 2010).

The presence of lay educators who are culturally similar to refugees were found to make the greatest effect (C18M20O9) in the Ontario studies by Dunn et al. (2017), Shen et al. (2018), and Wang et al. (2016). The study of peer workers at the CARES (Cancer Awareness: Ready for Education and Screening) programme by Ahmad et al. (2016) found that they were able to learn new skills and improve their work experience as well as feel like they were able to give back to the community. Importantly, peer workers facilitated language resources, outreach to refugee groups, peer education in relevant languages for refugees, and follow-up – all of which contributed to greater participation in cancer screening programmes. This will be discussed in more detail in the section on new models of care below.

Primary care relationships and new models of care

The relationship with a PCP is reflected in an important group of CMOCs established in this review. The PMH model centres the patient with the PCP and care team providing comprehensive, continuous, and coordinated care. Patients say they are most comfortable discussing their health concerns in a PMH model (CFPC, 2019). Not being rostered to a family physician was associated with not having had a Pap test (Shen et al., 2018) and this is echoed in Lofters et al. (2011), highlighting the importance of having a regular PCP. Recently arrived women with no regular PCP have the highest risk of not having a Pap test (Amankwah et al., 2009).

Women are found to be less likely to participate in breast or cervical cancer screening if they felt unsafe with their PCP, for example, if the PCP was male and the patient had experienced sexual violence, genital mutilation, or intimate partner violence (C17C10M19O8). Pottie et al. (2011) emphasises that PCPs need to establish a trusting relationship with refugee patients, particularly those who have experienced sexual violence or intimate partner violence, as fear is a common mechanism preventing women from feeling comfortable with a male PCP. This is also presented as a mechanism in a study of migrant cervical cancer screening barriers in Europe (Marques et al., 2020). The PMH model would indicate that even if a refugee only had access to a male PCP, they could adapt the screening process and ensure that a female member of the care team, such as a Registered Nurse trained in Pap tests, carried out their cancer screening. Again, language can hinder this development of a trust-based relationship especially when interpreters are not available (C2C3M2O2). Vahabi et al. (2016) noted a positive effect of having a PCP from the same region of the world as the refugee's origin (C21M23O10), however, this could also have a negative effect, particularly if the PCP were from a different group, or was seen to be in a position of authority. It was surprising not to see more discussion of mistrust of PCPs in the literature, but there were no references in the cancer screening literature where this was a theme. Nonetheless, PCPs with cultural competencies, that include considering patients' migration histories (Lor et al., 2018) are needed. This concept of culturally competent PCPs was noted also in Wang et al. (2019), is found in European literature such as Marques et al. (2020) and was described in the Australian qualitative study that discusses how lack of cultural competency inhibits participation in screening (Parajuli et al., 2020a).

To manage the system complexities presented by the IFHP, and to promote strong relationships with PCP and clinic teams, community-based and collaborative models of care that align with the PMH model are possible. Two examples were presented in the literature, both based in Toronto:

- Cancer Awareness: Ready for Education and Screening (CARES) was a community programme in Toronto designed to boost cervical and breast cancer screening in refugee, immigrant, and other marginalized communities, designed around four interventions: outreach to community groups, education sessions, facilitated access to screening, and follow-up of participants. Over 20 languages were represented (Ahmad et al., 2016; Dunn et al., 2017).

- Access Alliance Multicultural Health and Community Services (AAMHCS) is a multidisciplinary, refugee-friendly, community health centre that serves both refugees and uninsured patients. They provide outreach to community groups, longer appointments, access to allied health professionals, translation services, and settlement services. (Beckett, 2016).

These intervention strategies were successful for several reasons. They included the use of peer/lay educators who are culturally similar to them, as noted in the section above (C18M20O9). Patient navigators were available to assist with health system complexities. Similar interventions were found to be successful with refugee clinics in Europe (Marques et al., 2020) and in the USA (Rodriguez-Torres et al., 2019). The presence of trained medical translators (C19M21O10) and language-specific visual aids (C23M25O10) facilitated understanding of screening processes and materials provided to enhance refugees' knowledge of cancer screening tests. Longer appointments were made available so that the PCP could take time to explain screening instead of focusing solely on immediate episodic care needs (C20M22O10). CARES and AAMHCS also provided peer workers to outreach to refugee community organisations to invite refugees to group education sessions (C26M28O10) that would be conducted in relevant languages. Peer workers at CARES also undertook follow-up phone calls to reinforce messages about screening after the group education sessions (C25M27O10). While these interventions were resource-intensive, the CARES programme noted 26% and 36% of refugee participants had Pap and mammography, respectively, by the end of the study period, as compared with 9% and 14% prior to the interventions (Dunn et al., 2017). Wiedmeyer's study of AAMHCS found that 80% of women were screened during the study period, which is much higher than the general screening rate observed in Toronto (Wiedmeyer et al., 2012).

Refugees usually find themselves in relative poverty when arriving in Canada, along with other significant bio-psychosocial needs. Consequently, they may be overwhelmed by their new environment, and may be preoccupied with immediate needs of food, rent, finding employment, family responsibilities, and other health issues (C8M10O2). They may not be interested in cancer screening, particularly if they were unaware of the necessity and benefit of screening prior to coming to Canada. Similarly, financial constraints may preclude refugees from taking the time and money to attend multiple appointments (C8M11O2) to learn about screening, or to attend screening appointments, such as mammogram appointment which could be in unfamiliar parts of the city and require transport costs. Models of care such as the CARES and AAMHCS programmes in Toronto can assist refugees in overcoming some of these barriers by providing transport, such as the 'Pap bus' (Dunn et al., 2017), accompanying patients to appointments and in group settings, thereby facilitating access to screening that may otherwise not have been available (C22M24O10). The success of these community-based collaborative programmes in Ontario is evident in the outcome that screening participation was shown to increase (Dunn et al., 2017). A similarly culturally informed, multidisciplinary primary care-focused intervention for tuberculosis care for refugees in Manitoba supports the success of this type of integrated care model (Benjumea-Bedoya et al., 2019).

Similarly, the qualitative study by Parajuli et al. (2020a) of Bhutanese refugees in Australia presents what a model of care could look like if designed by refugees themselves, which includes group-based appointments and opportunistic screening by PCPs. The women interviewed stressed the importance of a supportive environment for patients in their own language, with ongoing reinforcement by the PCP and by their peers in community settings. Outreach was cited in a study of Iraqi refugees in the USA as having a significant positive effect on breast cancer screening participation (Saadi et al., 2012). Also in Europe, migrant-friendly healthcare services made a difference to cancer screening uptake (Marques et al., 2020). It is clear that new models of presenting and implementing cancer screening with refugee patients are required and are possible.

Discussion

Summary of findings

Health system complexity was found to be an initial context influencing the lack of participation by refugees in cancer screening programmes in primary care. Related to system complexity, not speaking English or French compounded with cultural differences present significant barriers for refugees accessing primary care services and understanding what screening is. Similarly, difficulties creating a relationship with a primary care provider related to culture and language, lack of time in appointments, and lack of psychological safety with the provider can produce difficulty in understanding of the importance and immediacy of screening. Other factors contributing to non-participation in cancer screening are living in areas where organised screening programs don't exist or there are few PCPs available, or moving house frequently, meaning that invitations to screening are lost in the mail. However, there are models of care as demonstrated in refugee-friendly clinics in Toronto that can mitigate some of the barriers that refugees face to participating in cancer screening. The use of patient navigators, trained medical translators, and other culturally sensitive and language-appropriate resources can support refugees in gaining an understanding of the need for cancer screening, as well as facilitating the logistical challenges arising from the social factors and system complexity noted above. In addition, working with organisations that are trusted by refugees to provide educational resources, messaging, and follow-up relating to cancer screening and its importance can assist in building trust between healthcare providers and the refugee community. The use of team-based care, as is promoted in the PMH model of healthcare, could greatly assist in trust-building initiatives, for example, where a female team member is able to perform sensitive tests like the Pap test instead of a male PCP where needed. Although there is not a great deal of literature specifically relating to refugees' participation in cancer screening programmes in Canada, some themes have arisen in the small body of work that was available, which appear to match with the experience in other parts of the world. Sources from

Australia, Europe, and the USA confirm that system navigation issues, language and culture barriers, stigma and trauma, and lack of understanding of the importance of cancer screening are common concerns in refugee populations, regardless of where they land.

Strengths, limitations and implications for future research

This review has a number of strengths and limitations and provides pointers toward future research in this field. This is the first realist review exploring why and in which circumstances refugees access cancer screening programmes in Canada. While the review found only a limited number of directly relevant sources, these six papers generated 26 CMOCs that explain why refugees do not participate in cancer screening, and nine CMOCs to explain why refugees do participate in screening programmes, including 26 contexts, 28 mechanisms, and ten outcomes. However, due to the limited number of studies and empirical evidence available that were directly relevant to my topic, these results must be seen as provisional.

Some limitations of the six primary studies are noted. Most of the studies, except Wiedmeyer et al. (2012) included both immigrants and refugees, and in some cases, the distinction between these categories were not clear. In Dunn et al. (2017), just a single project intervention was investigated, and they acknowledged their study exhibited some self-selection bias. Racine et al. (2021) describes a study using a small convenience sample of Syrian refugee women, all of whom were educated to only elementary school level. They acknowledge that their findings are unlikely to be generalizable to more educated women or all Muslim women. Shen et al. (2018) describes a study of healthcare administrative data including both immigrants and refugees, with few results distinguishing between these categories. One limitation noted by Vahabi et al. (2016) is that their study did not include women without Ontario Health Insurance Program (OHIP) coverage. Thus, there were no results described for refugees waiting for provincial healthcare coverage, although it might be assumed that refugees without OHIP are very unlikely to access screening programmes. Wang et al. (2016) included both immigrants and refugees in their study, but it was not always clear where results related to refugees as distinct from other immigrant groups. No refugees were interviewed in the focus groups; only refugee healthcare providers participated in focus groups. Wiedmeyer et al. (2012) used a relatively small sample from which to draw quantitative conclusions and only examined a single site tailored specifically to refugee care, therefore their conclusions may not be transferable to other settings or larger groups.

Because this is a review, the results are confined to what is already known, published, or available as grey literature. There were studies where it was not easy to determine which contexts, mechanisms, or outcomes were specific to refugees, as opposed to the broader class of 'migrants'. There were not many studies conducted on this topic outside of Ontario, and Canada's 12 other provincial and territorial health system jurisdictions have slightly different rules and guidance around cancer screening programmes, some which may have an effect on the participation in screening by refugees. For example, five Canadian jurisdictions do not have an organised cervical cancer screening programme at all (CPAC, 2021b). In the study of migrant and refugee healthcare delivery in high-income countries, Brandenberger et al. (2019) said that all studies they reviewed, "mentioned that healthcare delivery was embedded in the regional context," which indicates that the myriad of jurisdictions and diversity of screening programmes in Canada are likely to significantly affect the delivery of services and information about screening to all residents. The CPAC environmental scan reports confirm a heterogeneity of approaches in Canada (2021a, b, c).

The studies showing great success with cancer screening programmes for refugees were based around resource-intensive, multi-faceted interventions involving community health services sites with multi-disciplinary health teams (Dunn, 2017; Wiedmeyer 2012). It would be difficult to replicate this type of service provision in more resource-constrained environments in Canada, or where structured screening programmes are not currently provided at the provincial level. Furthermore, areas where smaller numbers of refugees are settled are unlikely to have the required human and financial resources to create such an intervention. However, there may be opportunities to use creative approaches to implementing smaller-scale peer-led interventions and education sessions, with relevant languages represented, depending on resource limitations. Family Health Teams in Ontario, Health Networks in Saskatchewan, Family Medicine Groups in Québec, and similar groups in other jurisdictions could work with their PCP members, multidisciplinary health teams, and community refugee centres to outreach to this vulnerable population. Although the effects of COVID-19 pandemic on the provision of healthcare services are not as acute as they were in March 2020, there are undoubtedly consequences for screening programmes and settlement programmes that will further impede participation in screening by refugees.

Provider effects were not discussed in depth in most of these papers, aside from mentioning that further research should look at the impact of provider characteristics on screening programmes. For example, internationally-trained physicians like refugees, coming from other countries, may lack knowledge about the necessity of screening or be used to resource-constrained environments where screening is unavailable or unable to be prioritised (Shen et al., 2018). Lofters et al. (2011) and Zha et al. (2019) also note that international medical graduates and male physicians are less likely than Canadian medical school graduates and women physicians to perform Pap tests. Other provider effects may be related to payment structures. It is noted in Shen et al. (2018) in the Canadian context, as well as in the USA (Lor et al., 2018) that fee-for-service payment models are not always ideal in incentivising preventive care, or longer appointments to explain the context and necessity of cancer screening. More of the primary studies and supplementary works focused on breast and cervical cancer screening. There may be different contexts and mechanisms related to male refugees participating in colorectal cancer screening that should be explored.

Primary research on cancer screening, for refugees specifically, in jurisdictions across Canada is needed. Only two of the included primary studies and none of the additional relevant peer-reviewed studies covered the topic of colorectal cancer screening; I would suggest that further research on colorectal cancer screening for refugees in Canada is urgently needed. A comprehensive, multiple jurisdiction quantitative evaluation of refugees' medical records such as that described in a small scale in Racine et al. (2021) would provide a baseline dataset upon which to select urgent areas of further study. For example, if this evaluation demonstrated poor uptake of colorectal cancer screening among refugees in several provinces, further investigation could be undertaken to determine which CMOCs were relevant in those jurisdictions, and improvement opportunities could be identified. A realist evaluation including primary research, both quantitative and qualitative, would greatly assist in understanding the perspective of refugees in greater detail and would contribute to meeting the vision of the patient's medical home for refugees in Canada.

Conclusion

Accessing primary healthcare in Canada is challenging for refugees, which leads to lack of participation in cancer screening programmes. Lack of comprehensive healthcare navigation services for refugees across Canada, coupled with a diverse landscape of screening programmes, generates obstacles beyond obvious language and cultural barriers to creating continuity with primary care providers, who are largely responsible for offering cancer screening in Canada. Provider characteristics are related to these challenges and could be explored in more depth to understand how to improve participation by refugees in preventive care and cancer screening. Team- and community-based models of care, which are at the heart of the patient's medical home concept, coupled with peer educators from similar cultural and linguistic backgrounds providing navigation supports have shown promise in this review of why refugees do or don't participate in cancer screening. Encouraging and motivating refugees to get screened requires both institutional and individual efforts; more attention is needed by the research and healthcare provider community (Donnelly et al., 2006). Improved experiences for refugees around cancer screening programmes in primary care, that consider the contexts and mechanisms at play in this crucial area of healthcare, will ultimately contribute to improved outcomes for refugee populations but also for Canada; refugees do not just consume healthcare resources but also contribute to the economy and culture in Canada. Universal healthcare is not universal if it is not extended to the most vulnerable (Perehudoff, 2020).

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Appendices

Appendix A – Notes on Language

Throughout the paper, I use the term ‘refugee’ to encompass all of the definitions used in the Canadian context, including:

- **Resettled refugees or member of the convention refugee abroad class**, including:
    - **government-assisted refugees**;
    - **privately sponsored refugees**; there is a different process of sponsorship in the province of Québec, including **refugees under the blended visa office-referred program**;
    - **Refugees sponsored by organizations** in cost-sharing arrangements with Immigration, Refugees and Citizenship Canada (IRCC), including **joint assistance sponsorship refugees**.
- **Member of the country of asylum class**, which are refugees who are applying from a country different from their home, i.e., where they have been forced to leave their home country, but the new country is similarly unsafe, or they are persecuted there.
- **Refugee claimants**, those whose claims are either still under review or who have had a stay of deportation. This terminology is used legally in Canada in preference to ‘asylum seeker’.
- **Protected persons**, referring to asylum seekers who have been granted protected status. The term used is different because the individuals were not given refugee status outside of Canada.
- People, “who are being resettled in Canada as a result of a public policy or humanitarian and compassionate considerations on the Minister’s own initiative.” (Government of Canada, 2020)

These categories are not mutually exclusive, for example, a refugee claimant may be a member of the country of asylum class. This complexity adds to the confusion when navigating IFHP benefits, however, this is presented here to avoid ambiguity about what constitutes a ‘refugee’ in the context of this review. In addition, the literature and in common parlance, there are a myriad of terms used interchangeably and not always specifically, including asylum-seeker, migrant, illegal, etc. Canada has a history of using language to change the narrative around refugees; during the Conservative Harper government, Citizenship and Immigration Minister Jason Kenney began to use terminology such as ‘bogus’, ‘rejected’, ‘smuggled’, and ‘illegal’, while also cutting IFHP benefits in 2012 for most categories of refugees (Canadian Press, 2012; Webster, 2015). In some cases, pregnant refugee claimants avoided healthcare appointments due to fears about costs (Jones, 2013), patients with diabetes were left unable to afford insulin (Jones, 2013), and refugees undergoing chemotherapy for cancer were left without insurance partway through treatment (CBC, 2013), with doctors ‘donating’ care and performing surgery for free for their patients (CBC, 2012).

Finally, some authors and providers use terminology around non-participation in cancer screening programmes, such as ‘non-adherence’ (e.g., Shen et al., 2018) or ‘non-compliance’ (e.g., quoted in Donnelly and McKellin, 2006). Abdi et al. (2020) mentions that while many papers in their scoping review use this kind of language, only a few of the studies explicitly focused on developing interventions to improve screening rates. It is my view that these terms are unhelpful, and at worst, stigmatising to individuals who are trying to work their way through complex information that was likely previously unfamiliar to them. In the context of forced migration, it is more supportive to discuss refugee patients as ‘not accessing’ screening or their ‘non-participation’ in screening programmes.

Appendix B – System complexity

Canada does not make it easy for refugees to access healthcare and 31% of refugees in a focus group evaluating IRCC services felt they would have benefitted from more information about health services before arriving or upon arrival in the country (Government of Canada, 2018). In most of Canada, despite being a nominally bilingual country, patients will need to speak English to communicate with healthcare professionals; in many parts of Quebec and New Brunswick, English is not widely spoken. Refugees may not speak one of the two official languages of Canada, English or French. A 2017 evaluation by Immigration, Refugees and Citizenship Canada (IRCC) found that 63% of refugees did not have any knowledge of English or French (Government of Canada, 2018). This presents a serious barrier to navigating the complex health system in general and understanding cancer screening in particular. Canada also has many health system jurisdictions. There are 13 provinces and territories with their own health systems and authorities, and there are three additional federal programmes: for Indigenous peoples in Canada, military personnel, and the Interim Federal Health Program (IFHP), which provides limited and temporary health benefits to refugee and other individuals, such as victims of human trafficking. In general, refugee health service costs are covered under the IFHP, but when awaiting the processing of their claim, the costs of some services are borne by the relevant provincial health system, to be reimbursed once a refugee’s claim is deemed successful. For the refugee patient, they need to be aware of which providers can be paid by the IFHP, otherwise they may face high out-of-pocket costs (Government of Canada, 2021). Some provincial programmes will treat patients who are uninsured by the provincial programme, or if their coverage is ambiguous. However, in some provinces, physicians can no longer be paid for treating patients without provincial insurance cards, for example, in Alberta by a recent order of the health minister (AFL, 2020; Slade, 2020).

To clarify, the IFHP is an insurance programme; it does not organize or provide health services, but it does dictate which services are covered and by which providers. Provincial and territorial health authorities provide healthcare services to all patients who use health services in the region covered by their authority, whether insured or not. Insurance status determines who pays for the service – the patient, the IFHP, the provincial/territorial health insurance programme, or private insurance (Government of Canada, 2021). Due to this structure, screening programmes are usually organized through the health authority or a cancer organization, but relevant services are delivered by the health authority (CPAC, 2021a, b, c). For example, a patient's British Columbia Medical Services Plan will pay for a family practice nurse to perform a Pap test; reminders may come from the BC Cervical Cancer Screening Program at the required interval. The only difference for a refugee in receipt of IFHP benefits is that they need to check that the family practice nurse's clinic is a registered IFHP provider before having the Pap test performed there. To add to the complexity, registration of IFHP providers is administered by Medavie Blue Cross / Croix Bleue Médavie), a non-profit Canadian medical care insurance company (MBC, 2021).

While basic provision of primary and hospital care is covered by the IFHP, dental, eye care, and prescription drugs were not covered for a time during the Conservative Harper government that lasted until 2015. Canadians either need to pay out-of-pocket for these healthcare services or use employment benefit programmes, therefore, when Conservative Prime Minister Stephen Harper was in power, he removed benefits from the IFHP to appease voters uncomfortable with newcomers, to ensure that, "we do not provide healthcare [to refugees] better than the average Canadian gets." (Webster, 2015). Although the subsequent Trudeau government reversed those changes, the current rules around accessing healthcare under the IFHP remain less than straightforward and require navigation of both federal and provincial rules. For example, if a refugee needs to access primary care, they need to check the provider is registered with IFHP, which is by no means guaranteed. It is a cumbersome process and often going to an emergency department is easier (Miedma, 2008). If a refugee lives near a border, for example, between Ontario and Quebec, they need to ensure that any prescriptions for medication are filled in the same province as their provider operates, otherwise they will pay full price for the prescription.

Appendix C – Review protocol

Background

This dissertation comprises a realist review of cancer screening programmes in primary care for adult refugees to Canada. I focus on cervical, breast, and colorectal cancer screening via the Papanicolaou (Pap) test, mammography, and faecal immunochemical testing (FIT), as the three major cancer screening programmes offered to all residents in Canada. The evidence for these three tests suggests most strongly that benefits of screening outweigh the potential harms.

I chose a realist review for this dissertation because I want to explore how, why, and in what contexts refugees do, or don't, participate in cancer screening programmes. I chose this topic because improving health services for vulnerable populations in Canada, including refugees, is a neglected topic. Increasingly, studies are being undertaken looking at health experiences and outcomes of migrants generally, however, most migrant health studies do not address the complexities facing the refugee patient population specifically. It is important to find out why, and in what conditions, refugees do and do not access cancer screening programmes in Canada to understand how we can achieve the goals of improving the experience of care while improving the health of refugees, while also reducing the system costs of care to newcomers (Berwick et al., 2008). Public opinion in high-income countries like Canada is sometimes sympathetic toward refugees, but even sympathetic narratives convey concern about the potential burden on health services. Cancer screening programmes allow health systems to reduce morbidity and mortality of patients, including refugees. Thus, early cancer screening of refugees could mitigate the perceived and actual strains on health services, as well as delivering improved morbidity and mortality outcomes for the refugee patient.

There is a plethora of literature relating to screening refugees for infectious diseases (Seedat et al., 2018), usually conducted at a point of entry to a high-income country with the immediate goal of controlling spread among migrants and into the wider host country population. The only cancer screening that occasionally takes place during an immigration medical exam is the Papanicolaou (Pap) test, but it is not mandated (Pottie et al., 2011). Some migrant and refugee populations who come to Canada experience a higher risk of cancer due to limited healthcare service provision in their home countries, inability to access healthcare because of conflict or other political limitations, or being in exile (Gushulak et al., 2011). Canada does not make it easy for refugees to access healthcare once they arrive; in most of Canada, despite being a nominally bilingual country, patients will need to speak English to communicate with healthcare professionals, whereas in many parts of Quebec and New Brunswick, English is not widely spoken. This presents a significant barrier to navigating the complex health system in general and understanding cancer screening in particular. Due to the complex structure of Canadian healthcare, with multiple provincial and territorial jurisdictions and health insurance programmes, screening is usually organized through the health authority or a cancer organization, but relevant services are delivered by the health authority (CPAC, 2021a, b, c).

The intricacies of the federal funding for refugees in Canada, coupled with the myriad provincial cancer screening programmes and jurisdictions, provide an interesting framework upon which to unravel complexities surrounding refugee preventive health discussions.

Research questions

I have chosen a realist review for this study of why refugees do not take up cancer screening in Canadian primary care. I want to look at why, and in what circumstances, cancer screening programmes work – or don’t – for refugees, while also looking at this problem through the multiple policy jurisdictions in Canada. Specifically:

- What are the contexts and mechanisms that drive the participation or non-participation by refugees in cancer screening programmes?
- How do policy settings and screening programmes in different provinces and territories, overlaid by the IFHP, contribute to non-participation in cancer screening programmes by refugees?

Existing reviews

No realist reviews on this subject have been found. A number of reviews exist A realist review of the literature will allow for a more nuanced understanding of causal mechanisms, in the contexts confronting refugees in Canada.

Realist review

A realist review, or realist synthesis, is a theory-driven review, based in a realist philosophy of science. Realism lies between constructivist and positivist approaches, between the theoretical positions that reality can be created, or it can be measured. The realist philosophy holds that outcomes are produced by underlying generative mechanisms that may or may not operate within specific contexts. Mechanisms have roots in individual volitions and reasoning, i.e., “interventions do not work, it is the interpretation of their subject that produce results” (Pawson, 2013, p. 34). Outcomes (O) and outcome patterns are produced by a range of mechanisms (M), which may function differently depending on the different contexts (C) within which they are triggered. This may be noted as C + M = O (Pawson, 2013), however, in reality, the way in which mechanisms operate in different contexts to produce outcomes is not usually linear. Realist approaches use a “working assumption… that a particular intervention triggers particular mechanisms of change. Mechanisms may be more or less effective in producing their intended outcomes, depending on their interaction with various contextual factors.” (Best et al., 2012). The combination of mechanisms, contexts, and outcomes are referred to here as context – mechanism – outcome configurations, or CMOCs. A realist review looks at the relationships and interactions within and between CMOCs acknowledging that multiple mechanisms may produce a variety of outcomes for given contextual factors.

Pawson and Tilley (1997) talk about experimental evaluations as *describing outcomes*, but not necessarily *why* programs fail or succeed, thus realist research questions often ask, "What works for whom under what circumstances, how and why?" (Wong et al., 2013). My rationale for choosing a realist review for this topic was because, although we can somewhat easily measure how many refugee patients in a primary care clinic may be participating in cancer screening or not, a quantitative approach does not explain under what circumstances they participate, why they participate, and what circumstances brought them to participate, or not. This type of approach also does not lead us to understand what circumstances resulted in refugee patients not accessing a primary care clinic at all, or what provokes them to refuse screening when it is offered. The mechanisms that assist in understanding what works, for which refugees, in which circumstances, are more complex than what can be summarised through a patient chart audit. In addition, a realist approach makes it possible to incorporate a range and variety of sources on this topic and to develop theory on why a complex group of patients access a complex preventive health intervention in particular settings. Most healthcare programmes are complex, with numerous policy layers, enablers, and constraints, composed of a variety of interventions. Often grey literature defines, supports, and evaluates the implementation of health interventions, but this documentation is usually left out of a traditional systematic review or other types of syntheses.

Pawson's template for a realist review comprises five stages (Pawson, 2006b):

1. ***Identifying the review question(s) and developing theory***. Unlike systematic reviews, a realist review looks first to generate initial programme theory (IPT) from *generally* relevant literature, and then seeks to test this initial programme theory through analysing and synthesizing data from *directly* relevant sources and relevant grey literature. To construct an IPT, I will conduct exploratory searches of the literature around refugee interactions with healthcare generally, refugee access to primary care, and refugee participation in screening programmes for cancer and other diseases. I plan to use the databases PubMed, Medline, EMBASE, CINAHL, and Web of Science to find literature

in these first exploratory searches, coupled with internet search engine searches to look at relevant websites such as the Canadian Partnership Against Cancer and the IFHP website. I will explore sources on cancer screening of refugees and other categories of migrants, and refugee health screening and healthcare service provision in Canada and in other countries, while excluding sources relating to mental health, disability, child refugees, and refugee camps. The rationale for excluding mental health and disability is that the provision of mental health services carries its own challenges for refugees and other Canadians, and the data from this type of healthcare is not directly relevant to the provision of preventive screening. Similarly, provision of healthcare for patients living with disabilities is not likely to be relevant to this review. Cancer screening is not typically provided to patients under 18 in Canada, therefore sources pertaining to child refugees will be excluded; also excluded will be sources that were specific to refugee camps: I am interested in the approach to healthcare provision for refugees coming to Canada, and relevant lessons from other OECD countries. The differences in health services provision and experience of healthcare are quite large when comparing refugee camps to refugees settling in OECD countries, and refugee camps usually do not have the resources to conduct comprehensive screening and preventive care. Although there are major differences between Canada and the USA in how healthcare is provided and funded, and there are differences between, for example, Canada and Australia in the way that refugees are managed upon arrival, the experience from other countries provided useful background ideas on how cancer screening may be experienced and accessed by migrants. Table 1 shows the inclusion and exclusion criteria for literature searches to develop IPT.

Table 1. Inclusion and exclusion criteria for the initial, general literature search

Inclusion	**Exclusion**
Written in English, French	
Preventive health screening, e.g., cancer, TB, immigration medical exams	Mental health and disability health care services
Canada, USA, Australia, Europe	Non-OECD countries
Adult refugees (18+ years)	Child refugees
Primary or community care settings	Refugee camps

2. ***Searching for primary studies***. My formal search for directly relevant primary documents will be carried out using the same five databases (PubMed, Medline, EMBASE, CINAHL, and Web of Science), and three specific keywords and their associated medical subject headings (MeSH) and related terms:

   - Refugees / refugee* / migrant / “displaced person”
   - Cancer screening / “early detection of cancer” / Pap / Papnicolaou / mammo* / “colorectal cancer” / “faecal immunochemical test”
   - Canada / Canadian

   I will use the same exclusion criteria as noted in Table 1, limiting the search to primary research and grey literature from Canadian settings, excluding cancer screens other than cervical, breast, and colorectal cancer screening tests, such as prostate-specific antigen (PSA) testing, and excluding screening for other health issues, such as cardiovascular risk or diabetes. Internet search engines will be used to find details on the IFHP and cancer screening programmes across Canada.

3. ***Study selection and appraisal***. Once any duplicates between databases are removed, I will review the papers in a two-step process. First, I will check titles and abstracts to determine if they are primary research and whether they meet the inclusion criteria. Second, I will scan each document’s full text to understand the relevance to the IPT and to the review questions, and briefly note some limitations of the main sources. Each grey literature document will be scanned to ensure they add useful context to the review.

4. ***Data extraction***. To extract data, each paper will be read in detail, notes will be taken, and I will use an Excel spreadsheet to pick out and organise important concepts related to, adding to, or

contradicting the IPT, with a view to creating CMOCs in the next stage, and to inform the realist analysis. Relevant data from each study will be captured such that each CMOC can be directly referenced for transparency.

5. ***Data analysis and synthesis***. At this stage, CMOCs will be constructed, based on the initial programme theory. Each concept will be, “situated … juxtaposed, reconciled, and consolidated” (Pawson, 2006b, p. 98), against the IPT and emerging CMOCs. Any additional that do not fully meet all the inclusion criteria noted above in Stage 3 will be reviewed for additional perspectives.

Limitations and risks

An important potential limitation of this study will be the availability of evidence that is available. Initial scoping searches suggested that there is not a large amount of material on the subject of cancer screening for refugees specifically, in the Canadian primary care context. It is likely that any conclusions drawn from this review will be provisional and will require further primary research to validate.

Outputs and dissemination

The main output of this review will be a dissertation for submission as part of the requirements of the Master of Science in Evidence-Based Healthcare programme. In addition, the review may be published at a later date to anticipate policy discussions in the Canadian primary care context.

Appendix D – Table of included sources

Author	Year	Geographical area	Screening type / study focus	Population	Study design / data source	Comment
Primary studies						
1. Dunn et al.	2017	Toronto	breast and cervical cancer screening	immigrants and refugees	cohort study	
2. Racine et al.	2021	Saskatchewan	breast cancer screening	refugees	cross-sectional descriptive exploratory study; survey data	Syrian refugees
3. Shen et al.	2018	Ontario	colorectal cancer screening	immigrants and refugees	cross-sectional study; health databases	
4. Vahabi et al.	2016	Ontario	breast cancer screening	immigrants and refugees	cohort study; health databases	
5. Wang et al.	2016	Toronto	breast and colorectal cancer screening	immigrants and refugees	mixed methods	
6. Wiedmeyer et al.	2012	Toronto	cervical cancer screening	refugees	cross-sectional; chart review	
Additional relevant studies (shaded boxes indicate where the study does not exactly match review criteria)						
7. Abdi et al.	2020	USA	cervical cancer screening	immigrants and refugees	scoping review	
8. Ahmad et al.	2016	Toronto	breast and cervical cancer screening	recent immigrants	qualitative; focus groups	
9. Amankwah et al.	2009	Canada	cervical cancer screening	visible minorities	descriptive cross-sectional; survey data	
10. Beckett	2016	Canada	cervical cancer screening	immigrants and refugees	systematic review	
11. Donnelly & McKellin	2007	British Columbia	breast and cervical cancer screening	immigrants and refugees	qualitative; interviews	None of the informants had lived in Canada for fewer than 9 years; experience may not match the definition of "refugee"
12. Lofters et al.	2011	Ontario	cervical cancer screening	immigrants	cohort study; health databases	Few elements related to refugee women
13. Lor et al.	2018	USA	breast and cervical cancer screening	refugees	qualitative; focus groups	

14. Marques et al.	2020	Europe	cervical cancer screening	migrants	scoping review	
15. Parajuli et al.	2020a	Australia	cervical and breast cancer screening	refugees	qualitative; interviews	
16. Parajuli et al.	2020b	Australia	cervical cancer screening	refugees	qualitative (IPA); interviews	
17. Pottie et al.	2011	Canada	cervical cancer screening	immigrants and refugees	evidence review	Used to create a clinician summary of evidence with a brief case study
18. Rahman	2016	Canada	health care delivery	refugees	commentary	
19. Saadi et al.	2012	USA	breast cancer screening	refugees	qualitative; interviews	
20. Zha et al.	2019	Canada	breast cancer screening	at-risk population groups	systematic review	
Grey literature						
21. South Riverdale Community Health Centre (SRCHC)	2010	Canada	breast, colorectal, and cervical cancer screening	seldom or never-screened women	engagement report, environmental scan	
22. Canadian Partnership Against Cancer	2021	Canada	breast, colorectal, and cervical cancer screening (3 reports)	Canadian patients	environmental scan	Comparisons of screening programmes across Canada
23. Government of Canada	2020	Canada	health insurance programme	refugees	policy website	Interim Federal Health Program description

Appendix E – Acronyms

AAMHCS	Access Alliance Multicultural Health and Community Services
CARES	Cancer Awareness: Ready for Education and Screening
CMOC	Context – Mechanism – Outcome Configuration
CPAC	Canadian Partnership Against Cancer
FIT	Fecal Immunochemical Test
IFHP	Interim Federal Health Program
IME	Immigration Medical Exam
IRCC	Immigration, Refugees and Citizenship Canada
PCP	Primary Care Provider
PMH	Patient's Medical Home