



Closing the gaps in cancer screening with First Nations, Inuit, and Métis populations: A narrative literature review

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Abstract

The objective of this review is to identify cancer screening rates amongst First Nations, Inuit, and Métis to inform cancer screening practices by identifying facilitators and barriers from interventions specific to Indigenous peoples. The Canadian Partnership Against Cancer along with First Nation, Inuit, Métis stakeholders recognise the need to improve cancer screening rates among the Indigenous peoples of Canada (Beben & Muirhead, 2016). And, together, developed the *First Nations, Inuit and Métis Action Plan on*

Cancer Control which included four strategic areas of focus:

- Community-based health human resource skills and capacity, and community awareness
- Culturally responsive resources and services
- Access to programs and services in remote and rural communities
- Patient identification systems (Canadian Partnership Against Cancer, 2011).

This narrative literature review identifies several areas in information management and cancer screening that need attention to effectively improve cancer screening participation rates and associated health outcomes in First Nation, Inuit, and Métis populations. Cancer screening program development needs to be inclusive of those receiving the screening; barriers and facilitators to screening are cancer-specific and provide valuable information for improving cancer screening. Information is available to markedly improve cancer screening uptake within First Nation, Inuit, and Métis people.

Key Words: Canada, Cancer, Cervical, Colorectal, Breast, Indigenous, Review, Screening.

He mihi - Acknowledgements: We acknowledge the contributions provided by each First Nation, Inuit, and Métis community informing this work. We acknowledge that this is their combined knowledge and is the reason for this review. The Partnership was looking for a review of cancer screening amongst First Nations, Inuit and Metis and could only find reviews inclusive of many Indigenous peoples from around the world. These reviews provided information that was often too global in order to be applicable within the First Nations, Inuit and Métis cancer control strategy, a national strategy created by First Nation, Inuit and Métis. In order to address the needs identified in the First Nations, Inuit and Métis cancer control strategy a review of cancer screening literature specific to Canada was required.

Introduction

Information regarding First Nations, Inuit, and Métis Peoples' health in Canada is limited (Wilson & Young, 2008) yet is critical to cancer control within Indigenous populations (Sarfati & Robson, 2015). Screening participation information is also limited, with limited information demonstrating a gap in health outcomes (Withrow, Pole, Nishri, Tjepkema, & Marrett, 2017). Internationally, breast cancer screening participation rates among Indigenous populations range from 33% to 83%, with participation rates for cervical and colorectal cancer screening also varying widely between Indigenous populations (Kolahdooz, Jang, Corriveau, Gotay, Johnston, & Sharma, 2014). The leading causes of death amongst First Nation, Inuit, and Métis are increasingly those cancers that are detectable in cancer screening programs (Moore, Antoni, Colquhoun, Healy, Elison-Loschmann, Potter, Garvey, & Bray, 2015). For instance, mortality rates due to the combined cancers of the uterus (including cervix), ovary and adnexa (fallopian tube, ovaries, and supporting tissues) have been found to be almost twice as high among adult Métis females as among non-Aboriginal females aged 25 years and over (Tjepkema, Wilkins, Sénécal, Guimond, & Penny, 2009).

Cancer screening can help prevent cancer or detect cancer or precancerous indicators at an

early stage, when it is still highly treatable, thus leading to reductions in cancer mortality (Loud & Murphy, 2017) and improving health outcomes. Cancer screening techniques vary for cervical, colorectal, and breast cancer. Cervical cancer screening is conducted by administering a Pap test, or a self-administered HPV test. Colorectal cancer screening is conducted by administering a guaiac fecal occult blood test (gFOBT) or a fecal immunochemical test (FIT or iFOBT) within a clinical setting or self-administered. Breast cancer screening is conducted by mammography in a clinic or mobile setting. The Canadian Task Force on Preventive Health Care develops and disseminates evidence-based national guidelines for each of the organised cancer screening programs. Provincial and territorial implementation of these guidelines varies across the country depending on the regional needs and priorities.

The available evidence, though limited, indicates that participation of First Nations, Inuit, and Métis in organised cancer screening programs is lower than for non-Indigenous people in Canada (Band, Gallagher, Threlfall, Hislop, Deschamps, & Smith, 1992). Recent evidence captured in this review suggests that there has been limited change in uptake. This gap was identified in the First Nations, Inuit and Métis Action Plan on Cancer Control (Canadian Partnership Against Cancer, 2011), which states that there is a need for organised cancer screening programs which are culturally safe; relevant to the worldviews of First Nations, Inuit, and Métis; and respectful of the practical needs of First Nations, Inuit, and Métis. In order to inform the response to this need, a literature review was conducted with the aim of identifying breast, cervical, and colorectal cancer screening participation rates; barriers and facilitators to participation and programs/initiatives aimed at improving screening participation.

Throughout this document, the terms First Nations, Inuit, and Métis are used to describe the three Indigenous populations in Canada. Whenever possible, First Nations and/or Inuit and/or Métis are referred to specifically, in keeping with the data source. The term Indigenous is used to describe international Indigenous peoples, with population-derived terms used where possible. The term Aboriginal

remains as to reflect the original use in referenced materials.

Methods

This narrative review identified relevant literature in five databases (see Table 1) and manual searches of manuscripts related to screening amongst Indigenous populations. Manual searches were conducted by reviewing international manuscripts references for First Nations, Inuit or Métis specific content. Agencies that work with First Nations, Inuit, and Métis to improve health and health information were also included in the search. By expanding the literature search with manual searches and

collaborator data, we were able to make this review more robust, in an area of research that is normally lacking information (Wilson & Young, 2008).

When searching databases, the criteria included English language articles published between 1990 and September 2016. Population-specific parameters for the search included First Nation (FN), Inuit (I), and Métis (M) together and individually, as well as Aboriginal and Indigenous. Disease-specific terminology was used alongside searching for First Nations, Inuit, and Métis in Canada including; cancer, screening, cervical, breast, and colorectal (see Table 1).

Table 1. Search engines and search terms used to identify literature.

Search Engines	PubMed Google Scholar	JSTOR VHL Search Portal	Science Direct
Search Terms	FN/I/M AND cancer AND screening	Aboriginal AND cancer AND screening NOT Australia	FN/I/M AND cancer AND screening AND cervical
	FN/I/M AND cancer AND screening AND lung	FN/I/M AND cancer AND screening AND breast	FN/I/M AND cancer AND screening AND colorectal
	Aboriginal AND cancer AND screening AND Australia	Indigenous AND cancer AND screening AND Australia	Aboriginal AND cancer AND screening AND New Zealand
	Indigenous AND cancer AND screening AND New Zealand	Maori AND cancer AND screening	

The manuscripts were sorted by relevance after reviewing the abstracts. Three reviewers rated the relevance of each manuscript specific to the search terms and aim of the literature review. Ratings were compared between reviewers, and relevant articles were reviewed in depth. Articles prior to 1990 and not written in English were excluded, articles that did not utilise original research to report screening rates or facilitators or barriers were also excluded. Screening rates of cancers other than breast, cervical, and colorectal; and other Indigenous populations were not included in this review. Other articles that were excluded were those reporting screening rates for Indigenous populations other than First Nations,

Inuit, and Métis. Manuscripts were also excluded if they did not report screening rates from original research or present information that was specific to cancer screening.

Results

In total, 108 manuscripts were identified using the search terms and search engines identified. After review of abstracts for relevance, rating, removal of duplicates, and full review of the identified manuscripts; 21 articles were included in the narrative literature review. Articles identified in the literature search were found to describe cervical, colorectal, and breast cancer

screening rates of Indigenous peoples; and, descriptions of health care interactions that identified barriers and facilitators to cancer screening. Descriptions of screening rates for each type of cancer were available for First Nations, Inuit, and Métis peoples in Canada. Table 2 indicates the studies identified in this literature search that were deemed relevant for the purposes of this review. Seven studies described screening rates in Canada (Cerigo, Coutlée, Franco, & Brassard, 2013; Elias et al., 2011; Kumar, 2006; McDonald & Trenholm,

2010; Sheppard et al., 2010; Tatemichi, Miedema, & Leighton, 2002; Withrow, Amartey, & Marrett, 2014). While 15 manuscripts (see Table 6) included discussion on facilitators and barriers to cancer screening (Ahmed, Shahid, Episkenew, 2015; Black, 2009; Cerigo, Coutlée, Franco, & Brassard, 2012; Cerigo et al., 2013; Decker, Demers, Kliewer, Musto, et al., 2015; Friedman & Hoffman-Goetz, 2007; Hislop et al., 1996; Kumar, 2006; Maar et al., 2013; Sheppard et al., 2010; Tatemichi et al., 2002; Withrow et al., 2014; Wood et al., 2014; Young, Kliewer, Blanchard, & Mayer, 2000; Zehbe et al., 2011).

Table 2. Original research on breast, cervical, and colorectal cancer screening rates, and original research on barriers and facilitators for cancer screening amongst First Nations, Inuit or Métis.

Author(s)	Manuscript Title	Journal Title	First Nation	Inuit	Métis
McDonald and Trenholm (2010)	Cancer-related health behaviors and health service use among Inuit and other residents of Canada's north	<i>Social Science & Medicine</i>	X	X	X
Decker, Demers, Kliewer, Biswanger, et al. (2015)	Pap test use and cervical cancer incidence in First Nations women living in Manitoba.	<i>Cancer Prevention Research</i>	X		
Cerigo et al. (2013)	Factors associated with cervical cancer screening uptake among Inuit women in Nunavik, Quebec, Canada.	<i>BMC Public Health</i>		X	
Withrow et al. (2014)	Cancer risk factors and screening in the off-reserve First Nations, Métis and non-Aboriginal populations of Ontario.	<i>Chronic Disease and Injuries in Canada</i>	X	X	
Elias et al. (2011)	The burden of cancer risk in Canada's indigenous population: A comparative study of known risks in a Canadian region.	<i>International Journal of General Medicine</i>	X		
Kumar (2006)	Aboriginal People's Survey, 2006: Screening for chronic diseases among Metis	<i>Statistics Canada.</i>			X

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Author(s)	Manuscript Title	Journal Title	First Nation	Inuit	Métis
Tatemichi et al., (2002)	Breast cancer screening: First Nations communities in New Brunswick.	<i>Canadian Family Physician</i>	X		
Sheppard et al. (2010)	Detection of later stage breast cancer in First Nations Women in Ontario, Canada.	<i>Canadian Journal of Public Health</i>	X		
Decker, Demers, Kliewer, Musto, et al. (2015)	Colorectal Cancer Screening in First Nations People Living in Manitoba.	<i>Cancer Epidemiology, Biomarkers & Prevention,</i>	X		
Zehbe et al. (2011)	Feasibility of self-sampling and human papillomavirus testing for cervical cancer screening in First Nation women from Northwest Ontario, Canada; a pilot study.	<i>BMJ Open</i>	X		
Maar et al. (2013)	A qualitative study of provider perspectives of structural barriers to cervical cancer screening among First Nations women.	<i>Womens Health Issues</i>	X		
Black (2009)	Cervical cancer screening strategies for Aboriginal women.	<i>Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health</i>	X	X	X
Hislop et al. (1996)	Cervical cytology screening: How can we improve rates among First Nations women in urban British Columbia.	<i>Canadian Family Physician,</i>	X		
Friedman and Hoffman-Goetz (2007)	Assessing cultural sensitivity of breast cancer information for older Aboriginal women.	<i>Journal of Cancer Education</i>	X	X	X
Wood et al. (2014)	Using community engagement to inform and implement a randomized controlled trial in the Anishinaabe cervical cancer screening study.	<i>Frontiers in Oncology</i>	X		
Young et al. (2000)	Monitoring disease burden and preventive behaviour with data linkage: Cervical cancer among Aboriginal people in Manitoba, Canada.	<i>American Journal of Public Health</i>	X	X	X

Screening Rates

Results indicate variation in screening participation between types of cancer screening, with rates for colorectal cancer (see Table 3) showing the lowest participation rates when crudely compared to cervical (see Table 4) and breast cancer screening (see Table 5). Where different methods of screening are available for a particular type of cancer, variation is seen in

participation rates associated with the different methods. This is most notable in colorectal cancer screening where multiple methods of screening can be employed. Fecal Occult Blood Test (FOBT) or Fecal Immunochemical Blood Test (FIT) methods of colorectal cancer screening had higher participation rates in most populations than flexible sigmoidoscopy or colonoscopy.

Table 3. Colorectal cancer screening rates with First Nation, Inuit or Métis, region, type of screening procedure, year of data and age range of population.

Author(s)	Place, People	Rate	Type of screen	Year of data, source	Sample
Decker, Demers, Kliewer, Musto, et al. (2015)	Manitoba, First Nations	13.4%	FOBT	2007-2008 Federal Register, MHPR, Medical Claims Data Base	50-74 years old
	Manitoba, First Nations	25.5%	FOBT, colonoscopy, and FS	2008	50-74 years old
	Manitoba, First Nations	12.8%	Colonoscopy, FS	2004-2008	50-74 years old
Withrow et al. (2014)	Ontario, First Nations ¹	28.5% Male 39.6% Female	FOBT	2007-2011 CCHS	50-74 years old
	Ontario, Métis	23.6% Male 22.4% Female	FOBT	2007-2011 CCHS	50-74 years old

Participation in cervical cancer screening (see Table 3) amongst First Nations, Inuit, and Métis is the most relatively stable participation rate when compared to colorectal and breast cancer screening. Participation in cervical cancer screening is similar between populations and places.

Facilitators to cancer screening research describing the facilitators to cancer screening participation occasionally utilised surveys

(Kumar, 2006; Sheppard et al., 2010; Young et al., 2000) but were most often described within qualitative research designs. The majority of the reviewed research is with First Nations in Eastern Canada (Cerigo et al., 2012; Elias et al., 2011; Friedman & Hoffman-Goetz, 2007; Maar et al., 2013; Sheppard et al., 2010; Steven et al., 2004; Tatemichi et al., 2002; Withrow et al., 2014; Wood et al., 2014; Zehbe et al., 2011; see Table 6).

¹ Off reserve First Nations

Table 4 Cervical Cancer Screening Rates with, First Nation, Inuit or Métis, region, type of screening procedure, year of data and age range of population.

Author(s)	Place, People	Rate	Type of screen	Year of data, source	Sample
McDonald and Trenholm (2010) ²	Inuit, Canada's North	52.5%	Pap last 12 months	2000-01 & 2004-05, CCHS ³	21-66 years old
	Métis, Canada's North	49.2%	Pap last 12 months	2000-01 & 2004-05, CCHS	21-66 years old
	First Nations, Canada's North	55.0%	Pap last 12 months	2000-01 & 2004-05, CCHS	21-66 years old
	Inuit, Canada's North	75.4%	Pap last 3 years	2000-01 & 2004-05, CCHS	21-66 years old
	Métis, Canada's North	80.2%	Pap last 3 years	2000-01 & 2004-05, CCHS	21-66 years old
	First Nations, Canada's North	80.6%	Pap last 3 years	2000-01 & 2004-05, CCHS	21-66 years old
Decker, Demers, Kliewer, Biswanger, et al. (2015)	First Nation, Manitoba	65.7% ⁴	Pap, last 3 years	2006-08, Federal registry, ⁵ MHPR ⁶ , MCR ⁷ , Hospital Abstract database, CervixCheck, MCD ⁸	18-69 years old
Cerigo et al. (2013)	Inuit, Nunavik	75.2%	Pap last 3 years	Cohort study	21-69 years old
Withrow et al. (2014)	Ontario, First Nations ⁹	76.8%	Pap last 3 years	2007-2011 CCHS	21-69 years old
	Ontario, Métis	72.3%	Pap last 3 years	2007-2011 CCHS	21-69 years old
Elias et al. (2011)	Manitoba, First Nations ¹⁰	74.1%	Pap last 3 years	MNFNRRHS ¹¹	20 years and older
	Manitoba, First Nations ¹²	76.7%	Pap last 3 years	CCHS	20 years and older
Kumar (2006)	Métis, Canada	67%	Pap last 2 years	APS ¹³	18-69 years old

² Not age adjusted³ Canadian Community Health Survey⁴ Women 18-69 yrs.⁵ Federal Indian Registry.⁶ Manitoba Health Population Registry.⁷ Manitoba Cancer Registry.⁸ Medical Claims Database.⁹ Off reserve First Nations.¹⁰ On-reserve.¹¹ Manitoba First Nations Regional Health Survey.¹² Off-reserve First Nations.¹³ Aboriginal Peoples Survey.

Table 5 Breast Cancer Screening Rates with, First Nation, Inuit or Métis, region, type of screening procedure, year of data and age range of population.

Author, Year	Place, People	Rate ¹⁴	Type of screen	Year of data, source	Sample
McDonald (2010) ¹⁵	Inuit, Canada's North	27.9%	Mammography last 2 years	2000-01 and 2004-05, CCHS	21-66 years old
	Métis, Canada's North	39.2%	Mammography last 2 years	2000-01 and 2004-05, CCHS	21-66 years old
	First Nations, Canada's North	41.1%	Mammography last 2 years	2000-01 and 2004-05, CCHS	21-66 years old
Tatemichi et al. (2002)	First Nations, New Brunswick Canada	65%	Mammography, last 2 years	Survey, administrative records	50-69 years old
Withrow et al. (2014)	Ontario, First Nations ¹⁶	59.7%	Mammography, last 2 years	2007-2011 CCHS	50-74 years old
	Ontario, Métis	59.2%	Mammography, last 2 years	2007-2011 CCHS	50-74 years old
Sheppard et al. (2010)	Ontario, First Nation	22%	Mammography, last 2 years	2000-2004 OCR ¹⁷	50-74 years old ¹⁸
Elias et al. (2011)	Manitoba, First Nations ¹⁹	62.8%	Within Past 5 years	MNFNRRHS ²⁰	50 years and older
	Manitoba, First Nations ²¹	86.0%	Within Past 5 years	CCHS	50 years and older
Kumar (2006)	Métis, Canada	57%	Mammography, Last 2 years	APS	50-69 years old

Research specifically with Métis people was very limited (Kumar, 2006). Most often Métis were included within larger research programs inclusive of First Nations (Withrow et al., 2014; McDonald & Trenholm, 2010) or amongst First Nations and Inuit (Ahmed et al., 2015; Friedman & Hoffman-Goetz, 2007; Young et al., 2000). There is only one study that is specific to the northern territories of Canada (McDonald &

Trenholm, 2010). Inuit people were not well represented within the reviewed research. Inuit specific research (Cerigo et al., 2012; Cerigo et al., 2013) was supplemented with research that was also simultaneously inclusive of First Nations and Métis (Ahmed et al., 2015; Friedman & Hoffman-Goetz, 2007; McDonald & Trenholm, 2010; Young et al., 2000).

¹⁴ Rates for specific populations differ between studies, this table is not for comparative purposes between studies it is only to illustrate the range of information available.

¹⁵ Not age adjusted rates.

¹⁶ Off reserve First Nations.

¹⁷ Ontario Cancer Registry.

¹⁸ Population was of those diagnosed with late stage breast cancer from 1995-2004.

¹⁹ On-reserve First Nation.

²⁰ Manitoba First Nations Regional Health Survey.

²¹ Off-reserve First Nations.

Table 6 Facilitators to cancer screening by screening type, region, First Nation, Inuit or Métis, and facilitator.

Author(s)	People, Place	Type of screen	Facilitator for person being screened	Facilitator for system doing screening
Zehbe et al. (2011)	First Nation Women, Ontario	Self-sampling, cervical cancer screening	Access to female health care provider	
Cerigo et al. (2013)	Inuit Women, Nunavik, Quebec	Cervical cancer screening	Education about cancer, cancer prevention and cancer screening	Health service planners and providers should be aware of potential barriers to Pap attendance, especially in the older age groups
Maar et al. (2013)	First Nation service providers, Northwest Ont.	Cervical cancer screening	Education about cancer, cancer prevention and/or, screening tests	Sustainable screening must resolve structural barriers, explore new ways of screening, and provide education for health care providers. Many of the structural barriers are rooted in colonial history
Black (2009)	Aboriginal Women, BC	Cervical Cancer Screening	Screening in remote communities, use technology, culturally appropriate education materials & campaigns about screening & HPV vaccine	Aboriginal health agencies work with health programs to design and carry out projects, flexible services.
Hislop et al. (1996)	First Nation Women, BC	Cervical Cancer Screening	Clear/good communication	Family physicians are an important source of information and motivation
Cerigo et al. (2012)	Inuit, Nunavik, Quebec	Cervical Cancer Screening	Women can collect their own cervicovaginal specimens	Dry storage and transport
Sheppard et al. (2010)	First Nations Women, Ontario	Breast Cancer Screening		Reminders during other medical visits
Withrow et al. (2014)	First Nations, Métis, Ontario	Colorectal Cancer Screening	Educational initiative on FOBT screening	
Friedman and Hoffman-Goetz (2007)	Aboriginal Women, Ontario	Breast Cancer Screening	Education about cancer	Culturally relevant education materials
Tatemichi et al. (2002)	First Nation Women, New Brunswick	Breast Cancer Screening	Family history of cancer	Advocating physician within community

Continued

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Author(s)	People, Place	Type of screen	Facilitator for person being screened	Facilitator for system doing screening
Wood et al., (2014)	First Nation, Northwest Ont.	Cervical Cancer Screening		Co-operatively design a screening program between community members and service providers
Young et al., (2000)	Aboriginal Women, Manitoba	Cervical Cancer Screening		Data linkages organised screening program with data collection
Ahmed et al., (2015)	Aboriginal, Canada	Cancer screening	Self-identification	Cancer surveillance research/ national surveillance data
Kumar (2006)	Métis, Canada	Cancer screening	Regular physician	

Barriers to cancer screening

Barriers to participation identified in this review included attitudes and beliefs about cancer; challenges within the health system; lack of trusting relationships with health care providers and health institutions; lack of knowledge or awareness about cancer and cancer screening; barriers associated with demographics and health determinants; and impacts of colonialism, discrimination and/or racism. Experiencing a screening procedure was associated with pain during the procedure itself and discomfort from being touched. Some reported feelings of embarrassment, shame, and anxiety while not being able to preserve modesty or feeling their privacy was not being protected (Ahmed et al., 2015; Cerigo et al., 2012; Deschamps et al., 1992; Steven et al., 2004). Past governmental assimilation policies associated with the legacy of colonialism, such as the residential school system, still contribute to the distrust held by some Indigenous people toward mainstream Canadian institutions, including the health care system (Ahmed et al., 2015; Maar et al., 2013;).

Limitations

Throughout this literature review, a few limitations were identified in the selected manuscripts. Limitations are not of the screening tests or the literature reviewed but limitations to inform this narrative review. For instance, some reports do not provide information on age adjusting for screening. This is critical for

establishing a baseline of cancer screening participation and especially important as some surveys within these manuscripts are based on a population of 15 years and older. Screening participation rates are normally only assessed amongst the population that meets specific guidelines, including a population that does not participate in screening would result in lower reported participation rates. Some manuscripts provide only the percentage of the population that requires screening within specific guidelines. Specific guidelines vary between different jurisdictions. Other articles do not provide screening guideline information, which may result in reported differences between research articles. As the research uses different parameters, comparisons are very crude and cannot be considered reliable. Although these manuscripts increase the knowledge of cancer screening, variations in reporting methods make conclusive statements about the First Nations, Inuit, and Métis experience suspect and should be confirmed by further research.

Discussion

Participation in organised screening programs for breast, colorectal, and cervical cancer screening has continued to be much lower among First Nations, Inuit, and Métis than in the general population. Reasons for this variation include connection to people and place; as described below, how data is collected and challenges with

access to established programs. However, there are many facilitators to consider that may improve screening participation.

People and place are intimately connected. While not always identified in the original research, where First Nations, Inuit, and Métis live is connected to their participation in cancer screening. Notable differences exist between First Nations in Manitoba (Decker, Demers, Kliewer, Musto, et al., 2015) and First Nations in Ontario (Withrow et al., 2014) participation rates in colorectal screening. Differences in breast cancer screening between regions are also notable ranging from over 65% participation rate amongst First Nations in New Brunswick (Tatemichi et al., 2002) and as low as 22% amongst First Nations in Ontario, (Sheppard et al., 2010).

A notable difference between research projects and the associated screening rates is how the information was collected. Those research articles utilising self-report surveys report higher rates of participation in cancer screening (Cerigo et al., 2013; Elias et al., 2011; McDonald & Trenholm, 2010; Tatemichi et al., 2002; Withrow et al., 2014). Meanwhile, those research articles that utilise administrative data to report on cancer screening report lower participation when crudely compared to survey data (Decker, Demers, Kliewer, Biswanger, et al., 2015; Decker, Demers, Kliewer, Musto, et al., 2015; Sheppard et al., 2010).

Information regarding screening participation rates can provide vital information about the effectiveness of screening programs. In order to improve participation rates, information regarding the lived experience of screening must also be considered (see Table 5). The table of facilitators describes the major findings within the literature reviewed specific to First Nations, Inuit, and Métis in Canada (see Table 6).

Even though research on cancer screening programs involving First Nations, Inuit, and Métis people is limited, the findings identified in this review are extensive and provide a comprehensive list of facilitators that will promote uptake of cancer screening programs. The most frequently identified facilitator is education with those requiring screening (Black, 2009; Cerigo et al., 2013; Friedman & Hoffman-

Goetz, , 2007; Maar et al., 2013; Withrow et al., 2014) and for those providing screening (Black, 2009; Cerigo et al., 2013; Friedman & Hoffman-Goetz, , 2007; Wood et al., 2014; Maar et al., 2013;). Research projects also identified that educational information on cancer screening was more successful when it was culturally relevant (Black, 2009; Friedman & Hoffman-Goetz, 2007).

Although some facilitators identified are specific to one type of screening, other facilitators apply to the entirety of screening programs. For instance, Indigenous people should play a role in developing a screening program (Black, 2009, Wood et al., 2014). Also, screening programs are more readily adopted if the program is integrated with other services First Nations, Inuit, and Métis people receive (Black, 2009; Hislop et al., 1996; Sheppard et al., 2010). In the development of screening programs, service providers should work with health care providers to deliver programs (Black, 2009; Cerigo et al., 2013; Wood et al., 2014; Sheppard et al., 2010; Tatemichi et al., 2002). Recording of screening program participation by First Nations, Inuit and Métis is also identified as a facilitator that needs to be considered through the entirety of a screening program (Ahmed et al., 2015; Young et al., 2000).

Novel ideas are also very informative for screening program facilitators and include research that identified mobile screening as a way to address geographic and travel related barriers (Decker, Demers, Kliewer, Musto, et al., 2015). Self-administered cervical cancer screening tests are a novel facilitator to improving cancer screening experience and participation that also addresses geographic and some health care provider barriers (Cerigo et al., 2012). Black (2009) also identifies having dedicated Pap screening days and offering drop-in appointments as facilitators to increasing cancer screening participation.

Improving access to flexible health services, such as bringing services to women who live in remote communities, offering drop-in appointments and using creative health technology for hard-to-reach populations, may increase the likelihood of participation in cancer screening (Black, 2009; Cerigo et al., 2012; Decker, Demers, Kliewer, Biswanger, et al., 2015). Increased access to

medical care, including screening, diagnosis and treatment, and medical insurance also promote cancer screening (Tatemichi et al., 2002).

Established relationships with a provider or clinic are more likely to lead to participation in screening (Maar et al., 2013; Hislop et al., 1996), as is including access to a female healthcare provider (Zehbe et al., 2011). Training and stability of staff can facilitate this sustainability (Hislop et al., 1996; Maar et al., 2013). It is important to improve the health providers' ability to provide clear and easily understandable information to the participants in screening, to encourage discussion, and explain procedures in simple language (Hislop et al., 1996).

There is a need for educational materials and services that reflect the lives of Indigenous peoples (Black, 2009). It is important to build partnerships in Indigenous communities to design and carry out projects of mutual concern and benefit, including projects related to cancer screening (Black, 2009). Screening participants would benefit from a better understanding of the importance of cancer prevention and cancer screening. Examples of successful educational initiatives include cancer screening awareness events and cross-cultural understanding initiatives (Black, 2009; Cerigo et al., 2012; Maar et al., 2013).

Transportation to and from remote areas for cancer screening appointments can be very difficult. When transportation services are made available to participants in screening, they may not be able to take the day off from work for a medical appointment, or they may not have accessible child care. In most communities, medical escorts or relatives are also not eligible for transportation to accompany participants in screening, especially older and very young ones (Maar et al., 2013).

Lack of access to a healthcare provider for Indigenous peoples is a barrier as providers play a key role in receiving and delivering test results, notifying the central registry of outcomes, and referral for follow-up testing when needed (Maar et al., 2013). High turnover of physicians in communities, often results in a lack of continuity of care (Deschamps et al., 1992). The lack of a system to recall participants in screening for

regular cancer screening as recommended by national screening guidelines (Maar et al., 2013), and monitoring screening participation of Indigenous peoples is challenging due to a lack of reliable Indigenous-specific data identifiers in cancer registries and cancer screening registries (Young et al., 2000).

Barriers related to the lack of services and educational resources tailored to Indigenous populations were identified, including those not available in a language that the participants in screening can understand (Ahmed et al., 2015). Participants in screening were hesitant to participate in services that they deemed to be culturally insensitive. A lack of education, both in terms of a patient's attendance at a formal school system and from the perspective of health literacy, negatively impacted cancer screening rates. Health literacy includes a participant's screening specific knowledge related to cancer prevention and screening, knowledge of how to use and access health services, and comfort level of navigating health services (Ahmed et al., 2015).

Studies suggested that older women have a lower compliance with time-appropriate Pap smear use (Cerigo et al., 2013). There are generational differences with respect to screening reluctance among Indigenous women. For example, younger women who are exposed to health education in schools, and are more informed about sexually transmitted disease prevention, are more open to accepting cervical cancer screening than their older counterparts in the community. Also, elderly are more reluctant to leave the community to go to a screening appointment for fear of being kept in hospitals far from their communities because of abnormalities that might be found in a Pap test (Maar et al., 2013).

Conclusion

Indigenous peoples are a large and diverse population. The lessons learned, and experiences of international Indigenous groups may inform or be reflective of the cancer screening experience of First Nations, Inuit or Métis. Although data is limited, existing literature indicates that First Nations, Inuit, and Métis participation in organised cancer screening programs in Canada is below that of non-Indigenous people in Canada. There is

considerable variation between types of cancer, methods of screening, and geographic location. The literature identifies barriers to screening participation as well as facilitators. These may provide information regarding how to design programs/initiatives to improve participation in screening. There are also stories of successful efforts to improve screening participation leading to areas with notably higher participation rates.

In order to improve First Nations, Inuit, and Métis participation in organised cancer screening, further research is required. An important first step is the collection of screening participation data for First Nations, Inuit, and Métis in all parts of Canada. Successful interventions then need to be identified and examined in order to explore the potential to apply lessons learned in other locations. For example, McDonald and Trenholm (2010) identified cervical cancer screening rates of 80% for First Nations, 75% for Inuit, and 80% for Métis in Canada's North. Further research should be conducted in order to identify how these screening rates were achieved, and whether the success can inform initiatives in other areas of Canada.

What is indicative in this review is that a concerted effort must be made to improve cancer screening data. To be effective, a national cancer strategy must have nationally comparative metrics.

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