

AT THE INTERFACE: *Indigenous health practitioners and evidence-based practice*

*Billie Joe Rogers, Kylee Swift, Kim van der Woerd, Monique Auger, Regine Halseth, Donna Atkinson, Sofia Vitalis, Sarah Wood, and Amber Bedard*

NATIONAL COLLABORATING CENTRE  
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CENTRE DE COLLABORATION NATIONALE  
DE LA SANTÉ AUTOCHTONE

SETTING THE CONTEXT

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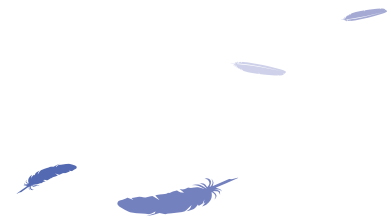
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For further information or to obtain additional copies, please contact:

National Collaborating Centre for Aboriginal Health (NCCAHA)  
3333 University Way  
Prince George, BC, V2N 4Z9  
Tel: 250 960 5250  
Fax: 250 960 5644  
Email: [nccah@unbc.ca](mailto:nccah@unbc.ca)  
Web: [nccah.ca](http://nccah.ca)

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# 1.0 INTRODUCTION

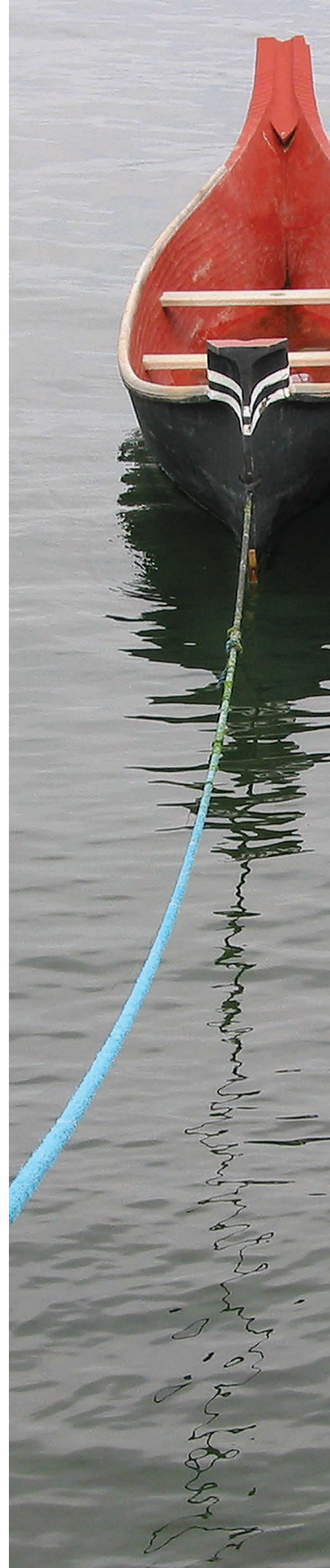
Indigenous<sup>1</sup> health practitioners in Canada face unique challenges with respect to implementing evidence-informed practice (EIP) and decision-making (EIDM) specifically when addressing the complex health needs of Indigenous patients. They must often walk in two worlds, simultaneously applying both Western and Indigenous knowledge and evidence in their practice in order to optimally support the health and well-being of their Indigenous patients. Currently, EIP is primarily conducted through a Western lens that adopts a biomedical perspective of health as simply the absence of disease without considering the broader social, historical, economic, political and environmental context (Synder & Wilson, 2015; Young et al., 2018), or the strengths embedded in Indigenous culture and ways of knowing<sup>2</sup> (Jude, 2016). This perspective contrasts with Indigenous models of health that are holistic, encompassing mental, physical, emotional, and spiritual dimensions of health and well-being (Greenwood, de Leeuw, & Lindsay, 2018). This can result in a health care system that is culturally unsafe for Indigenous people (Ghosh, Benoit, & Bourgeault, 2017; Lucero, 2011).

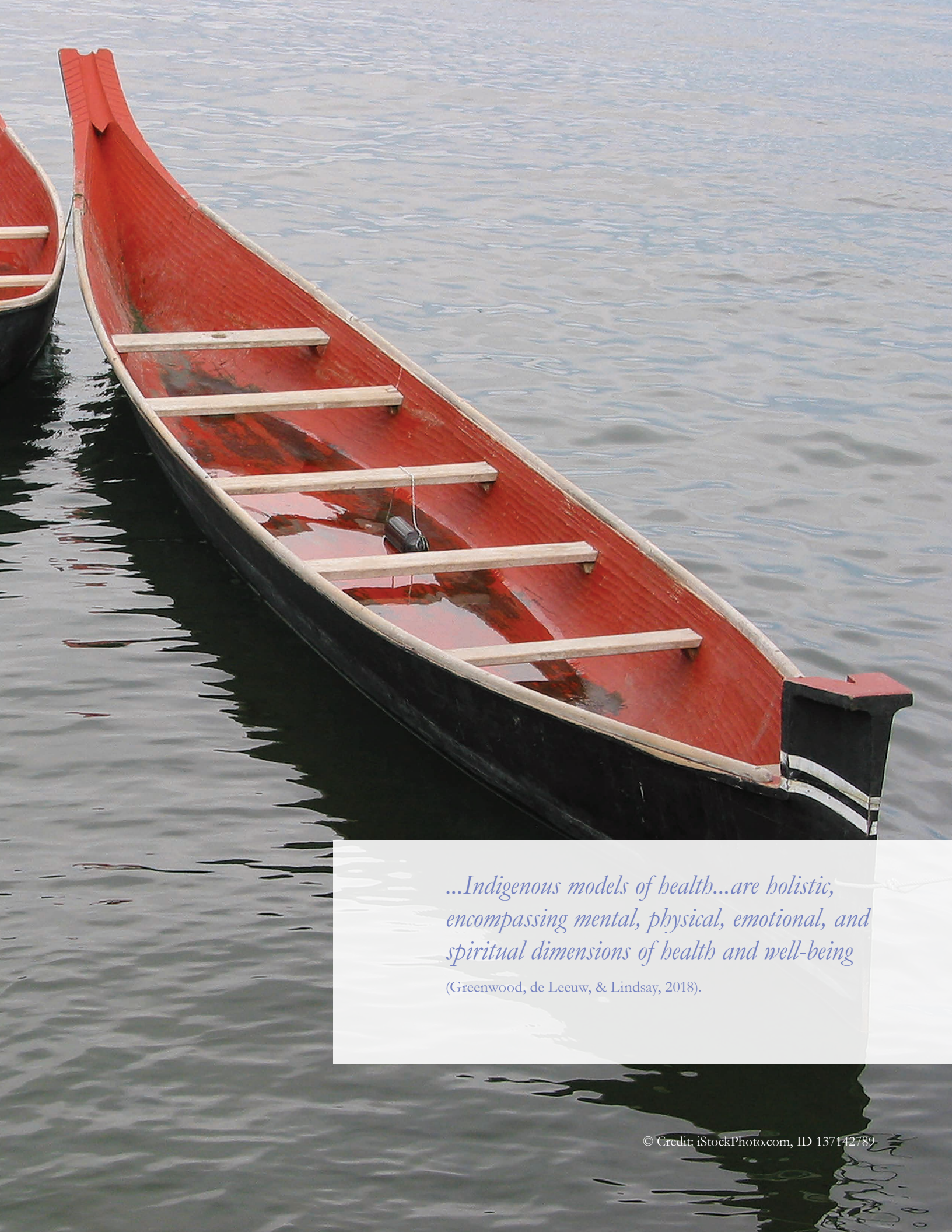
Recently there has been increased recognition of the importance of Indigenous knowledge to the health and wellness of Indigenous people and, as a result, increased efforts to integrate Indigenous and Western knowledge into health care practice and policy (Battiste, 2002; Hall, Dell, Fornssler, Hopkins, & Mushquash, 2015; Martin, 2012; Fiedeldey-Van Dijk, et al., 2017; Rowan, et al., 2014; Sasakamoose, Bellegarde, Sutherland, Pete, & McKay-McNabb, 2017). Yet there are significant gaps in research regarding Indigenous health practitioner knowledge and evidence needs, barriers and supports, and on blending Indigenous and Western knowledge in a health care setting. This paper seeks to understand what constitutes evidence, how evidence is accessed, and how traditional knowledge is currently being integrated into health practice among Indigenous health practitioners.

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<sup>1</sup> The term 'Indigenous' or 'Indigenous peoples' are used throughout this paper to refer inclusively to the original inhabitants of Canada and their descendants, including First Nations, Inuit, and Métis peoples as defined in Section 35 of the Canadian Constitution of 1982. The terms 'Aboriginal' or 'Aboriginal peoples' are used when reflected in the literature under discussion. Whenever possible, culturally specific names are used.

<sup>2</sup> The terms "Indigenous knowledge", "Traditional knowledge", and "Indigenous ways of knowing" are used interchangeably. They can be defined as the "network of knowledges, beliefs, and traditions intended to preserve, communicate, and contextualize Indigenous relationships with culture and landscape over time... Indigenous knowledges are conveyed formally and informally among kin groups and communities through social encounters, oral traditions, ritual practices, and other activities." (Bruchac, 2014, p.1)





*...Indigenous models of health...are holistic,  
encompassing mental, physical, emotional, and  
spiritual dimensions of health and well-being*

(Greenwood, de Leeuw, & Lindsay, 2018).

## 2.0 METHODS



The study utilized a mixed-methods approach to data collection involving a literature review and quantitative and qualitative data derived from semi-structured interviews with key informants and an online survey. The literature review drew on peer- and non-peer-reviewed research published between 1995 and 2017 from the following databases: Medline PubMed, Humanities and Social Science Abstracts, ERIC (EBSCO), and Google Scholars. Combinations of the following search terms were used: evidence-based practice, evidence, health, health care, wellness, medicine, knowledge, knowledge translation, traditional, Indigenous, Aboriginal, and decolonizing methodologies. The literature review helped inform the development of key informant interview questions and the online survey.

Quantitative data was primarily derived from an online survey. In March 2018, the National Collaborating Centre for Aboriginal Health (NCCAHA) published and promoted a call for Indigenous health practitioners to participate in the online survey via social media. Of the 68 individuals who responded to the survey, 66 consented to participate in the research project. Participants were asked questions regarding their access to Western and Indigenous knowledges and use of traditional Indigenous knowledges in their own health care practice. They were also asked to identify existing gaps in their knowledge base and beliefs regarding the harmonization of Western and Indigenous knowledges within their own practice. Individuals who participated in this survey are hereafter referred to as ‘survey participants.’

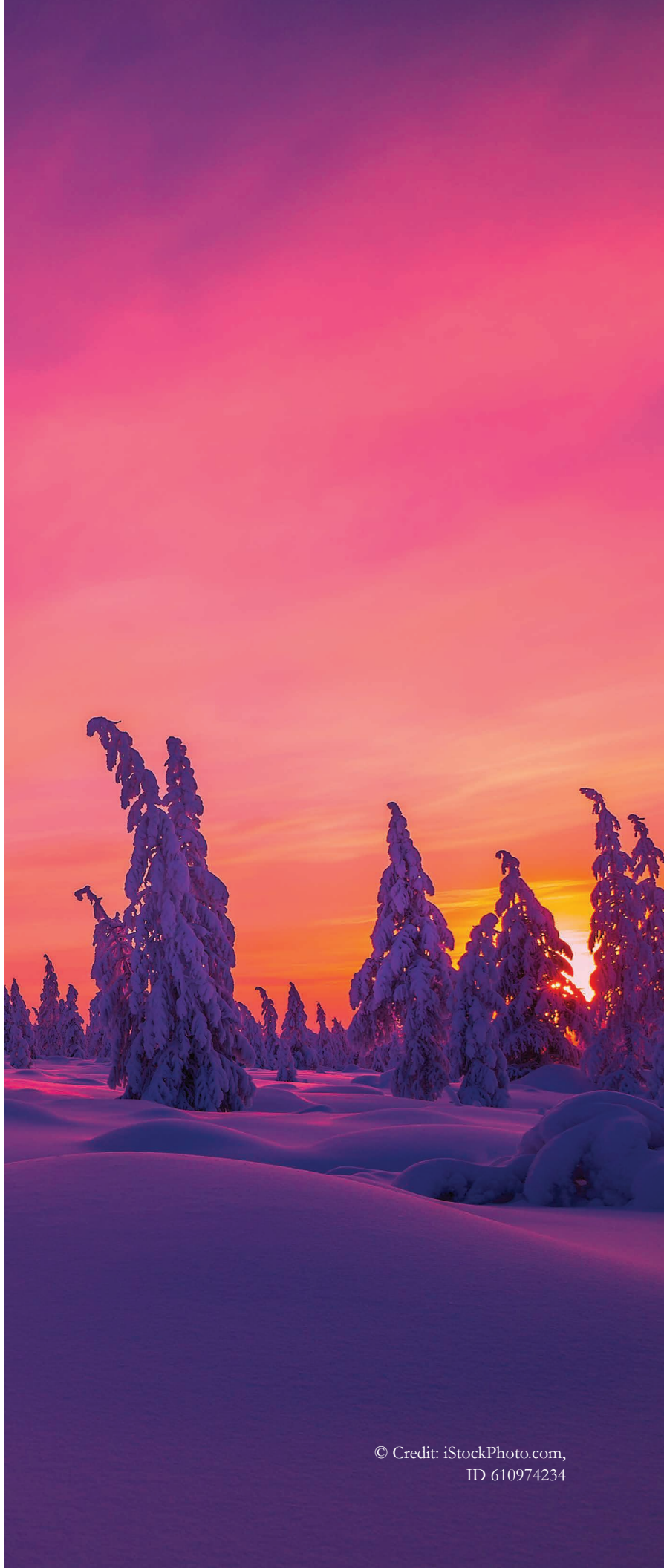
Qualitative data was primarily derived from key informant interviews conducted with eight Indigenous health professionals, identified through the NCCAHA’s contacts. These participants included Indigenous physicians, students, nurses, and midwives. The participants described their roles as multi-faceted, noting they often wore “multiple hats,” including consulting, working in government, teaching (e.g., medical students, community members interested in research), leading research projects, and practicing (e.g., primary health care, outreach, surgery, public health). The interviews were, on average, 50 minutes in length. They were recorded using a live transcription method,<sup>3</sup> with written notes taken throughout the interview. These transcriptions were returned to participants using Hightail, a password protected file transfer system, to provide key

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<sup>3</sup> Live transcription refers to the practice of typing interview notes verbatim during interviews. Participants are then given the opportunity to review the transcript and make corrections.

informants with an opportunity to verify the accuracy of the transcript. Individuals who participated in key informant interviews are hereafter referred to as ‘interview participants.’

This study received ethics approval from the University of Northern British Columbia’s Research Ethics Board in December 2017, and conforms to the Tri-Council’s policy on ethical research involving First Nations, Inuit and Métis peoples of Canada (CIHR, NSERC, & SSHRC, 2014). All participants were advised that their participation was voluntary and that they could withdraw their participation from the interviews or surveys at any time. They were also informed that their responses were confidential and their data would be used in an aggregate way. The interviews were transcribed, and transcripts were shared with the participants for their validation and revisions. This practice honours the ownership of the words that are shared by each participant while also increasing the transparency of the data collection process and improving the validity of the data (First Nations Centre, 2007).





*Traditionally, Indigenous knowledge was conveyed orally, symbolically, or through experience, and was “embedded in the cumulative experience and teachings of Indigenous people”*

(Battiste, 2002, p. 2).



# 3.0 CONTEXTUALIZING INDIGENOUS KNOWLEDGE IN EVIDENCE-BASED PRACTICE



The barriers that health practitioners experience with regard to accessing Western knowledge and evidence, and applying it to their practice, have been well documented. They include lack of time, organizational support, professional development opportunities, and accessible resources (Brown, Wickline, Ecoff, & Glaser, 2009). In addition to the barriers experienced by all health practitioners, Indigenous health practitioners face unique challenges related to accessing and applying Indigenous and Western knowledges and evidence into their practice. Research specific to Indigenous health practitioners' knowledge and evidence needs and barriers is lacking. This literature review focuses on the knowledge gaps for Indigenous health practitioners and the barriers they experience in accessing and applying Indigenous knowledges into their practice.

## 3.1 Indigenous Knowledge and the Impact of Colonization

Indigenous people in Canada have diverse and complex systems of knowledge that have historically been guided by Elders and

knowledge keepers, and used to inform the holistic health and well-being of communities (Bartlett, Marshall, & Marshall, 2012; Ermine, Sinclair, & Browne, 2005; Obomsawin, 2007). Indigenous knowledge is unique to each community as it has developed and evolved over time within a specific and localized context through lived experiences, observations, holistic investigative and problem-solving processes (Battiste, 2002; Ellison, 2014; Martin Hill, 2003; Tagalik, 2018). Traditionally, Indigenous knowledge was conveyed orally, symbolically, or through experience, and was “embedded in the cumulative experience and teachings of Indigenous people” (Battiste, 2002, p. 2). By its very nature, Indigenous knowledge is dynamic: “[r]espect for diversity of thought [is] inherent to Indigenous sciences and philosophies, since this is what allows one’s own perspectives and experiences to respond to changes and fluctuations in the world” (Martin, 2012, p. 28).

In contrast, Western knowledge is built on the concept of positivism, which places value on knowledge gathered empirically through scientific inquiry and assumes

that there is a single truth to be discovered (Braun, Browne, Ka’opua, Kim, & Mokuau, 2014; Martin, 2012; University of Ottawa, 2009). Evidence gathered by other means is viewed as “inconclusive and ideological” (Martin, 2012, p. 25). Colonial policies and practices, such as the residential school system, sought to eradicate Indigenous knowledge (Battiste, 2002; Lucero, 2011; Martin Hill 2003). This cognitive imperialism privileged Western knowledge and methodologies above other types of knowledge and successfully reinforced the idea that Western knowledge and methodologies are the most legitimate (Battiste, 2002; Martin, 2012; Walker, Whitener, Trupin, & Migliarini, 2015). As a result, Indigenous knowledge is largely absent from Canadian research, policy and practice because its methodologies do not fit within the positivist paradigm (Braun et al., 2014; Dunn, 2014; Martin, 2012).

Indigenous people’s complex history with research is directly related to the privileging of Western knowledge over Indigenous knowledge. Indigenous people are the most studied populations in the world, but research has primarily

been conducted from a Western lens and, until recently, has rarely brought any benefit to Indigenous communities (Braun et al., 2014; Chilisa, 2012; Estey, Kmetz, & Reading, 2008; Smith, 1999). Research on Indigenous people has historically been conducted without ethics, where Indigenous people “have not been provided with clear information about research projects that concerned them, have been excluded from the research process, and have been forced to participate in research projects by government agents and academics” (Marsh, Cote-Meek, Toulouse, Najavits, & Young, 2015, p. 2). These exploitive research practices have resulted in the distortion of Indigenous knowledge through a Western lens, and a general distrust of research in Indigenous communities (Marsh et al., 2015).

### 3.2 Indigenous Knowledge Needs in Evidence-Based Medicine and Practice

This section identifies Indigenous knowledge needs as they relate to health care and evidence-based medicine (EBM) and practice (EBP). In general, there is a need for more research regarding Indigenous-specific EBM to better integrate Indigenous knowledge into EBP, and to recognize that Indigenous health must be understood within the specific context of each Indigenous person. It is important to recognize and acknowledge that research and practices based solely on a Western worldview are limited in their ability to address the complex challenges faced by many Indigenous people (Battiste, 2002; Martin, 2012).



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Currently, EPB is “the primary approach to knowledge uptake for professional practice” (Kirkham, Baumbusch, Schultz, & Anderson, 2007, p. 26). Best medical practices are determined both through empirical study, where effects can be observed, measured, and tested, and through expertise from experienced practitioners with the goal of increasing the effectiveness and efficiency of treatment (Dunn, 2014; Kirkham et al, 2007). Ideally, EBP integrates all forms of evidence and knowledge (MacDermid & Graham, 2009); however, a limitation of EBM is that research and practice are primarily conducted through a Western lens, which often does not take into account context, traditions, or Indigenous ways of knowing (Jude, 2016; Kirkham et al., 2007).

The relationship between Indigenous practitioners and EPB is understudied; however, there is a clear need for Indigenous-specific

EBM, as mainstream evidence “is not easily applied to Indigenous populations” (Jude, 2016, p. 45). For example, randomized control trials have been considered the gold standard for evaluating the effectiveness of health interventions despite the fact that results are often not generalizable to the larger population, and certainly not generalizable to the specific contexts of each Indigenous community (Ellison, 2014; Saini & Quinn, 2013). The fact that EBM is based on a Western worldview limits the ability to understand and address health from an Indigenous perspective (Battiste, 2002). There is a need for health care to consider a more holistic approach to health and wellness that focuses more on effectiveness rather than efficiency (Bartlett et al., 2012; Battiste, 2002; Gone, 2009; Ermine, 2000).

Related to this is the need to acknowledge that a Western health

care model can result in Indigenous people being denied the best care for their health and wellness (Lucero, 2011). Currently, EBP tends to privilege empirical research derived from Western methodologies over that developed through expertise and experience, which may inhibit Indigenous practitioners from using traditional Indigenous knowledges to provide the best care for their clients (Doane & Varcoe, 2008; Estabrooks, 1998; Kirkham et al., 2007, Lucero, 2011). The assumption that empirical research is more valid than other types of research disregards the value of Indigenous health and medical knowledge that has been “accumulated by trial and error over many centuries and in some cases millennia” (Obomsawin, 2007, p. 8). It also ignores the fact that colonial policies and practices continue to be detrimental to Indigenous health and well-being, and the critically important role that cultural renewal plays in improving Indigenous peoples’ mental, emotional, spiritual and physical well-being (Fiedeldey-Van Dijk, et al., 2017; Hall et al., 2015; Rowan et al., 2014; Sasakamoose et al., 2017).

There is also a need to consider how research is formed, and how biases are embedded within it and perpetuated by dominant research methods (Smith, 1999). In order to translate Indigenous knowledge into best medical practices, research methods need to be decolonized. There is a need for research to include broader definitions of evidence, such as “locally relevant information, experience, and culturally based information in addition to scientific research” (Davey et al., 2014, p. 317). Knowledge from Elders and knowledge keepers should be considered a legitimate source of evidence (Ermine et al., 2005). Additionally, there is a need to legitimize Indigenous research methodologies such as experiential learning (Marsh et al., 2015). Experiential learning can include “learning by observation and doing” and “learning through authentic experience” (Battiste, 2002, p. 15). Martin (2012) states that “a decolonized research agenda requires careful reflection on the role that colonization plays in the articulation of Indigenous

knowledges today and on how Indigenous knowledges are shaped by experiences of colonization” (p.29). It also requires addressing fundamental colonial power imbalances between Indigenous and Western ways of knowing (Hall et al., 2015; Sasakamoose et al., 2017).

Despite similarities related to a shared history of colonization, Indigenous people must be understood in the context of their unique culture, language, geography, politics, and social conditions (Battiste, 2002; Dunn, 2014; Estey et al., 2008). One challenge to EBP is that data on Indigenous peoples is often aggregated, which results in individual strengths and challenges of Indigenous communities being lost in the process (Braun et al., 2014). Furthermore, health practitioners may assume their Indigenous colleagues are able to competently translate Indigenous knowledge despite the fact that many Indigenous people have been disconnected from their culture and educated in the same Western institutions as their peers (Battiste, 2002). There are also major gaps in the availability and adequacy of existing health data that make it challenging for Indigenous peoples to measure determinants of health, access to health services, and the burden of illnesses, diseases, and health complications (Walker, Lovett, Kukutai, Jones, & Henry, 2017). Indigenous peoples must have control over health data to better track progress on indicators, address concerns about the way data is gathered, and ensure that the data can better inform health care policies and practices (Ibid.).

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WALK IN TWO WORLDS EPISTEMIC RACISM PATIENT NEEDS CULTURAL VALUE HEALING TRADITIONS

### 3.3 Blending Indigenous and Western Knowledge in the Health Care System

Indigenous knowledge has sustained the survival of Indigenous peoples and communities for centuries and remains integral to the health and well-being of Indigenous peoples (Gomes, Leon, & Brown, 2013; Greenwood, de Leeuw, & Lindsay, 2018). In order for Indigenous health practitioners to provide optimal care for their Indigenous clients, they need to be able to walk in two worlds and integrate both Indigenous and Western knowledge and evidence into their practice according to patient preferences and needs. There has been increasing recognition that Indigenous knowledge has value and should be integrated into health care research, policies, and practices. However, there continue to be a number of challenges that

inhibit its integration into the health care system (Battiste, 2002; Martin, 2012). This section discusses barriers to blending Indigenous and Western knowledge in the health care system, including epistemic and systemic racism, fear of commoditizing Indigenous knowledge, and a lack of time and resources.

Epistemic racism, that is the continued domination of one worldview over another, continues to prevail in health care research and practice, resulting in the privileging of biomedicine over Indigenous healing practices (Matthews, 2017). This type of racism is important because it (re) produces beliefs that Western culture is superior to others (Reading, 2013). Western science has been afforded ample time and resources to study Indigenous populations and construct them as inferior, primitive, and deficient (Reading,

2013). The ongoing dismissal of Indigenous knowledge has prevented any cross-cultural integration of knowledge (Quinn, 2011).

In the healthcare context, epistemic racism operates alongside systemic racism to ensure that Western biomedical knowledge is seen as more legitimate, which determines how limited health care resources are allocated. Indigenous healing practices and traditions, when permitted within provincial or federal health systems, are generally relegated to complementary or alternative status and subordinate to biomedical healthcare (Matthews, 2017). This has tangible impacts on both Indigenous patients and healthcare workers in terms of who is considered worthy of respect, who is compensated for their work, and by how much. For example, resources may be allocated for technological upgrades rather than



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## HEALTH CARE INTEGRATION KNOWLEDGE EVIDENCE CROSS-CULTURAL DECOLONIZED RESEARCH

building a community desired traditional healing space such as a sweat lodge (Matthews, 2017). Elders and traditional healers are devalued, which can lead to continued cultural erosion for Indigenous peoples.

The culture within clinical settings and at the management level can also be a barrier to integrating traditional knowledge into health care (Brownson, Fielding, & Maylahn, 2009). In health centres and hospitals, the control of core processes generally falls to professionals who are highly trained and autonomous, and as such, their “deeply ingrained patterns of beliefs and behaviours can impede their willingness to change [their practices]” (Barwick, Peters, & Boydell, 2009, p. 19). For example, leadership may not value Indigenous knowledge and therefore not support its integration into practice, or leadership may foster a culture

where staff are not encouraged or supported to evolve their practice. Characteristics of professionals and policy-makers, clinical teams, organizations, and leadership may also act as barriers to EBP (Grol & Wensing, 2004, p. S58). For example, in public health “intervention decisions are often based on perceived short-term opportunities, lacking systematic planning and review of the best evidence regarding effective approaches” (Brownson et al., 2009, p. 180).

Another barrier to blending Indigenous and Western knowledge in the health care system is the fear of commoditizing traditional knowledge (Martin Hill, 2003). Documenting Indigenous knowledge presents a risk of cultural appropriation and disrespect, as some traditions are considered sacred and not available to outsiders (Lucero, 2011). Being compelled

to document traditional practices for the purposes of EBP may lead to a breach in protocol. Breaching protocol and sharing sacred knowledge can lead to “traditional ceremonies being transformed into a commodity,” as well as erosion of traditional values and ways of being (Martin Hill, 2003, p. 15). Elders and traditional knowledge keepers can provide valuable expertise and knowledge that can aid health care practitioners in providing holistic and culturally safe care for Indigenous patients. It is important that ceremonial protocols are followed to demonstrate respect for those who are sharing their knowledge and show their knowledge is valued (Federation of Saskatchewan Indian Nations, n.d.).

Additionally, there are a number of barriers to blending Indigenous and Western EBP that are specific to health practitioners. Hutchinson

and Johnston (2004) note prominent issues related to time. For example, practitioners may lack time to read research and put new evidence into practice. Armstrong, Waters, Crockett and Keleher (2007) suggest that some practitioners may lack the skills needed to know how to use evidence in practice or have difficulties in interpreting the jargon in research reports. Additionally, practitioners may have doubts about their ability to implement changes (Grol & Wensing, 2004). In terms of willingness, staff and practitioners may not see the relevance of the new evidence for their practice, especially since implementing new practices is often expensive and time consuming (Armstrong et al., 2007). In addition, some practitioners, especially nurses, may lack the authority to implement changes or are not supported to do so (Hutchinson & Johnston, 2004). There may also be a lack of

evaluation data and doubt about the transferability of evidence into their specific context, which could affect willingness to read and implement new practices (Armstrong et al., 2007; Hutchinson & Johnston, 2004). Further, the negative legacy of research *on* Indigenous people, combined with numerous examples of imposed authoritative prescriptions for how to address specific health issues,<sup>4</sup> has created a sense of distrust for research and resistance to Western, clinical impositions within some Indigenous health settings, particularly within community-based settings (Smith, 1999). This can lead to a resistance to EBP, which is a considerable barrier to the uptake of research (Davey et al., 2014). Finally, there continues to be a lack of understanding and best practices on how to actually integrate traditional knowledges into the current system (Institute

of Health Economics, 2011). Some types of Indigenous knowledges may be more easily integrated than others. For example, there is little to no research on traditional medicine, which inhibits its integration into practice. While gaps in research and knowledge continue to act as barriers to integrating Indigenous knowledge into practice, there is increasing acknowledgement that integrating Indigenous and Western knowledge systems in practice is critical to effecting change within the Canadian health system and moving forward together in reconciliation, in accordance with the Truth and Reconciliation Commission's (2015) Calls to Action, which is driving additional research into best practices for how to do so (Chatwood et al., 2015; Hall et al., 2015; Saskamoose et al., 2017).

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<sup>4</sup> For example, the deeply traumatizing policy of forcibly removing Indigenous individuals suspected of having tuberculosis from their homes and communities into 'foreign' southern sanatoria contributed to the fear and distrust many Indigenous people have with respect to mainstream healthcare systems, which is a significant barrier to addressing the tuberculosis crisis in many Indigenous communities (Halseth & Odulaja, 2018).



### 3.4 Indigenous Methodologies and Wise Practices

Several Indigenous methodologies have been posited to potentially facilitate the blending of Indigenous and Western knowledge into the health care system, including the concept of ethical space, Two-Eyed seeing (Etuaptmuk<sup>5</sup>), and the multi-science perspective. Wise practices that are useful to consider when conducting research on Indigenous EBP and blending the two knowledge systems include respecting Indigenous knowledge, seeking guidance from Elders, and using Indigenous methodologies. The underlying theme of this section is the need to treat Indigenous people and the knowledge they hold with respect, and to partner with Indigenous people to develop health policies and practices that will be effective for Indigenous communities.

#### Indigenous Methodologies

##### **Ethical Space:**

Martin Hill (2003) articulates a need to create a space where Western and Indigenous medical practitioners can learn together. Within the field of health, there is “increasing recognition of the need for ‘multi-directional information exchange’, which allows the sharing of knowledge between researchers, practitioners and policy-makers” (Armstrong et al., 2007, p. 255). The concept of ethical space might provide a useful framework for dialogue regarding strengths and differences between Indigenous and Western knowledge and facilitate practitioners learning from each other. Ethical space is the concept of “a neutral zone between entities or cultures,” where individuals can engage in dialogue (Ermine, 2007, p. 202). This neutral space does not involve one world being subsumed by the other; rather, it is anchored by the “affirmation of human diversity created by philosophical

*...ethical space is a method for acknowledging differences between worldviews and finding ways to negotiate these differences in culturally sensitive ways.*

and cultural differences” (Ermine, 2007, p. 202). Ethical space fosters an environment where practitioners of Western and Indigenous medicine can come together as equals and have a dialogue on topics that impact the holistic health and well-being of Indigenous peoples (Ermine, 2007).

As argued by Sasakamoose and colleagues (2017), ethical space is a method for acknowledging differences between worldviews and finding ways to negotiate these differences in culturally sensitive ways. One aspect of this is considering ethical space as a ‘sacred space’ in which everyone entering it is committed to working towards Indigenous peoples’ health and well-being, and to doing this work through the “metaphysical guidance that comes from the spiritual interactions” (Ibid., p. 8). This is because spirituality is considered by Indigenous peoples as the ‘gateway’ to mental, physical and emotional domains of health, and thus engaging in ceremonies

<sup>5</sup> The term ‘Etuaptmuk’ is the Mi’kmaw term for “Two-Eyed Seeing”, a guiding principle for bringing together Indigenous and Western knowledge together and discussed below (Bartlett et al., 2012).



and prayer are considered central to overcoming negative emotions and moving towards healing and reconciliation (Sasakamoose, Scerbe, Wenaus, & Scandrett, 2016).

### **Etuaptmumk/Two-Eyed Seeing:**

Although the literature around EBP has yet to feature the “Etuaptmumk” framework, also known as Two-Eyed Seeing, this is a valuable perspective to consider (Hovey, Delormier, McComber, Levesque, & Martin, 2017, p. 1278). Two-Eyed Seeing (TES) was coined by Mi'kmaw Elder Albert Marshall and can be used to facilitate the bridging of Indigenous and Western knowledge. Marshall describes TES as “the gift of multiple perspective[s] treasured by many [A]boriginal peoples” and explains that TES considers the strengths of Western knowledge from one eye and Indigenous knowledge from the other, then bringing both eyes mindfully together for the benefit of all (Bartlett et al., 2012, p. 335). TES considers each perspective equally, and “values difference and contradiction over the integration or melding of diverse perspectives,” which results in a fuller picture of the world (Martin, 2012, p. 31). Nevertheless, TES also allows for the possibility of either harmonizing between both Western and Indigenous sciences or consciously choosing one lens over the other if it is more appropriate for the circumstances (Bartlett, Marshall, Marshall, & Iwama, 2015; Saskamoose et al., 2017).

In order for TES to be successful, practitioners must first acknowledge that each worldview has value, and “engage in a co-learning journey” (Bartlett et al., 2012, p.331). TES also requires us to engage in reflexivity, continually challenging our deeply rooted beliefs and assumptions in the face of new ideas and experiences, incorporating spiritual and emotional dimensions of human understanding, not just physical and social dimensions; and questioning the underlying structures that serve to perpetuate the issues being researched (Martin, 2012). However, when using Etuaptmumk in research, the lens through which the researcher is looking must be clearly articulated as this lens affects the interpretation of successes and challenges related to research (Rowett, 2018). TES can be an effective means of considering Indigenous and Western EBP in a health care setting, and may also be an effective means of addressing personal and professional biases that impact health care for Indigenous people (Hovey et al., 2017; Marsh et al., 2015).

### **Multi-science:**

While Two-Eyed Seeing is the dominant model, there are other concepts that may be of use for integrating Indigenous and Western knowledge. In the context of science, Ogawa (1995) proposes the idea of multi-science, instead of multiculturalism in science. While multiculturalism is accepted in education, Western science is still privileged; by adopting a multi-



science perspective, Western modern science can be seen as just one of many sciences (Ogawa, 1995, p. 584). A multi-science perspective takes into account not only Western science (a collective perception of reality authorized by the scientific community), but also community science (a collective perception of reality shared by a community) and personal science (an individual's unique perception of reality) (Ogawa, 1995). In this concept, the various scientific perspectives need not be weighed equally, but must all be respected (Ogawa, 1995). This concept can be seen as one method for integrating Indigenous EBP into medical education institutions.

### Wise Research Practices

Several considerations are required for conducting research on Indigenous EBP and on blending Indigenous and Western knowledge in health practice. Given the historical context of Indigenous peoples and research, all research involving Indigenous peoples and Indigenous knowledge should be conducted according to the four R's: respect, relevance, reciprocity and responsibility (Kirkness & Barnhardt, 1991). Indigenous knowledge is integral to the health and well-being of Indigenous peoples and must be considered as equally valuable as Western knowledge (Gomes et al., 2013; Martin, 2012). Elders, as the "gatekeepers of Indigenous wisdom, knowledge, and history," must be involved in any Indigenous

research (Marsh et al., 2015, p. 5) and provide guidance in any efforts to blend Indigenous and Western knowledge systems (Gomes et al., 2013). Finally, using decolonizing research methodologies is an important component of conducting Indigenous research (Hall et al., 2015; Kovach, 2010; Lucero, 2011; Sasakamoose et al., 2017; Wilson, 2008). Research and knowledge sharing should be "led, designed, controlled, and reported" by Indigenous people (Braun et al., p. 124), and the research process should be inclusive of "peoples' views, feelings, and experiences with nature, culture, and spirit" (Marsh et al., 2015, p. 3). Furthermore, it is important that researchers reflect on how Indigenous and Western knowledge are interpreted, and how structures continue to perpetuate bias against Indigenous knowledge (Ermine et al., 2005; Martin, 2012).







## 4.0 STUDY RESULTS



This section summarizes findings from an online survey and key informant interviews that sought to gather feedback from Indigenous health practitioners regarding the blending of traditional and Western knowledge in a health care setting. Specifically, participants were asked to identify their perceptions regarding what constitutes evidence, how they access traditional and Western knowledge, and any gaps in knowledge, evidence, barriers, supports, and wise practices for blending Western and Indigenous knowledge systems.

### 4.1 Evidence-Based Practice

This section identifies what constitutes evidence in public health and how Indigenous health practitioners view evidence-based practice (EBP). Data for this section was derived from key informant interviews.

Interview participants defined both Indigenous (n=5) and Western (n=5) EBP as evidence, but perceived that the health care system considers Western EBP to be superior to Indigenous EBP. For example, interview participants stated that evidence in public health is defined by Western research and dissemination methods, such as randomized control trials, population-based statistics, and published findings. However, they also identified Indigenous research methods as constituting evidence within public health, including experiential learning, story telling, and learning from Elders and communities. One participant cautioned that it is important to treat both Indigenous and Western knowledge systems as equal when blending them together.

*We have to be careful to not subordinate Indigenous knowledge to Western knowledge. We have to look at how we're gathering evidence and whether it's consistent with the underlying philosophies of the people you're working with or the phenomena you're working with. In particular, if you're exploring notions around research as ceremony and vice versa, or [a] wellness intervention that is dealing with land-based healing, it does not seem appropriate to apply Likert scales. We have to come to understand what happened from the people working in the space, and you have to translate the knowledge gained into morsels that Western systems can understand.*

Interview participants were asked to define “evidence-based practice”. Most mentioned that evidence-based practice means traditional methods of gathering evidence (n = 5), specifically identifying the spiritual component of Indigenous knowledge gathering. Several interview participants stated that evidence-based practice comes from a blend of Western and Indigenous knowledge gathering. Interview participants stated that focusing only on Western forms of medicine in the medical education system is limiting, and that those who are setting standards for what constitutes “evidence” are often disconnected from communities. One participant noted the difficulty in linking all practice to evidence derived from research given that many practices seem to be “common sense.”

*Medicine and science are young fields of study and Indigenous knowledge is much more ancient knowledge systems and deal with the more difficult and intangible things, such as spiritual health and wellness. A lot of that, you have to look at the individual lived experience as well as the Elders and knowledge keepers they're working with, and healers.*

*I am not diminishing what we know, but whenever I go home and listen to the people that speak at home, it blows me away for what they are saying. They have evidence.*

When asked how their definition of “evidence-based practice” compares to that of their colleagues, interview participants reported that Western knowledge is perceived to be superior to Indigenous knowledge in the health care system. Related to this, interview

participants spoke of frustrations regarding the need to legitimize traditional methods of gathering evidence and the lack of value placed on Indigenous knowledge in the mainstream medical system. Several interview participants stated that as Indigenous health practitioners, they valued anecdotal evidence shared by patients and other knowledge holders more than their non-Indigenous colleagues.

*I think that as an Indigenous physician, I'm more understanding of the individual and need for autonomy and self-determination and bringing in different aspects of health and wellness.*

*Evidence is partly based in the privileging of non-Indigenous evidence. It is an assumption that Western evidence is superior to Indigenous evidence, and Indigenous knowledge is second-class and second rate, second to their actions, recommendations and interventions. Evidence is not a scientific fact; it is a privileged interaction between populations and healthcare workers. Evidence is not a thing – it is a process.*

## 4.2 Accessing Traditional and Western Knowledge

There are differences in how Indigenous and Western knowledge and evidence are presented and acquired. This section aims to identify Indigenous health practitioners' preferred formats and locations for accessing Indigenous and Western knowledge. Survey participants indicated they access Indigenous and Western knowledge by many of the same means;

however, they tend to have more diverse methods for accessing Indigenous knowledge and prefer to access this knowledge through more personal means. Data for this section was gathered via the online survey.

Survey participants were asked what their preferred format for accessing Western knowledge and evidence is and how they access it. They indicated that their preferred format for accessing Western knowledge and evidence was via the Internet (n = 18) and through published literature (n = 17), such as journal articles, books, and other scholarly works. Survey participants also frequently mentioned conferences (n = 7) and training opportunities (n = 5), such as workshops and seminars, as their preferred format for accessing Western knowledge. The majority of survey participants reported that they go to the Internet (n = 21), published literature (n = 13), or databases (n = 12), such as PubMed, to access Western knowledge and evidence. Survey participants also mentioned the following specific places they go to access Western knowledge and evidence:

- ✓ Universities
- ✓ Conferences
- ✓ Training
- ✓ Work place
- ✓ Libraries
- ✓ Conversations
- ✓ Documentaries
- ✓ E-mails
- ✓ Radio
- ✓ Podcasts

Survey participants were asked what their preferred format for accessing traditional knowledge and evidence is and where they go to access it. They most frequently identified Elders and knowledge keepers as their preferred format (n = 11), and also where they go (n = 18) to access traditional knowledge and evidence. A number of survey participants reported they preferred to access traditional knowledge and evidence through more personal means, such as conversation and story telling (n = 12) (i.e. talking to people with lived

experience), and identified the community (n = 12) as the place they go to access it. Several survey participants also mentioned the Internet as their preferred format (n = 9) (i.e. webinars, websites, twitter) for accessing traditional knowledge and evidence, as well as where they go to access it (n = 12). Survey participants identified the following preferred formats and access points for traditional knowledge and evidence:

### Preferred Format for Accessing Knowledge

- ✓ *Elders and knowledge keepers*
- ✓ *Conversation and storytelling*
- ✓ *Internet (i.e. webinars, websites, twitter)*
- ✓ *Research (i.e. literature reviews, data analysis)*
- ✓ *Published literature (i.e. journal articles, books)*
- ✓ *Indigenous organizations*
- ✓ *Conferences*
- ✓ *Training (i.e. workshops, seminars)*
- ✓ *Ceremonies and traditional gatherings*
- ✓ *From the community*
- ✓ *Experiential knowledge*
- ✓ *Through relationship building*
- ✓ *Radio and podcasts*
- ✓ *Documentaries*

### Where Knowledge is Accessed

- ✓ *Elders and knowledge keepers*
- ✓ *The community*
- ✓ *Internet*
- ✓ *National Collaborating Centre for Aboriginal Health (NCCAH)*
- ✓ *Canadian Aboriginal AIDS Network (CAAN)*
- ✓ *Public Health Agency of Canada (PHAC)*
- ✓ *Scholarly articles*
- ✓ *Scientific research*
- ✓ *Indigenous researchers*
- ✓ *Colleagues*
- ✓ *Conversations*
- ✓ *Storytelling*
- ✓ *Ceremonies*
- ✓ *Traditional gatherings*
- ✓ *Conferences*
- ✓ *Museums*



### 4.3 Traditional Knowledge in Health Care Practice

Indigenous health practitioners must often walk in two worlds in order to best serve their Indigenous clients. This section sought to understand the extent to which Indigenous health practitioners use traditional knowledge in their health care practice and what types of traditional knowledge they may incorporate into their practice. The majority of participants reported that they use traditional knowledge in their practice. Data for this section was obtained from both key informant interviews and online surveys.

Survey participants were asked whether they currently use traditional knowledge in their health practice and how they use it. Of those who responded to this question, the majority of survey participants indicated they used traditional knowledge in their health practice (n = 25), with some participants qualifying their responses with statements such as, “when patients request this” and

“not as much as I would like.” Only two survey participants indicated they did not currently use traditional knowledge in their health practice.

When asked to elaborate on how they used traditional knowledge in their practice, survey participants indicated they shared knowledge and listened (n = 12) to clients, family, community, and colleagues, and incorporated traditional teachings (n = 12) into their practice, such as the Seven Sacred teachings and the medicine wheel. Several survey participants also reported including traditional medicine or ceremonies into their practice, while a number of others stated they supported culture and cultural competency in their practice. Other ways that survey participants reported using traditional knowledge in their practice included using traditional foods and prayer, following traditional protocols, involving Elders and community, and ensuring a holistic perspective.

Interview participants were asked to describe the extent to which they use Indigenous knowledge in their

practice. Several of the interview participants responded by stating they take a holistic approach to health care. Interview participants also mentioned they incorporate Indigenous knowledge into their practice by resisting colonialism and systemic oppression in the health care system, and by being mindful to create a welcoming environment for Indigenous patients. One participant noted that much of their traditional knowledge was lost due to the impacts of colonialism and they had to learn Indigenous knowledge from other First Nations individuals as a result.

*As an Indigenous person, you cannot separate yourself from the knowledge. You cannot separate yourself from practice.*

*I was trained as a Western physician. My family is not traditional, so what I've picked up, I've learned along the way. I've used it to make sense of what's happening with kids, whether it's behavioural issues or mental health or otherwise.*

## 4.4 Knowledge and Evidence Needs of Indigenous Health Practitioners

Indigenous health practitioners have unique knowledge and evidence needs. This section focuses on these needs, the tensions that exist between Western and Indigenous knowledge, and the blending of the two knowledge systems into their practice.

Survey participants were asked about Western and traditional knowledge and evidence they felt they needed or was lacking in their current practice. When asked what Western knowledge or evidence they felt they needed or lacked, survey participants most frequently identified the need for more data or research (n = 6) in areas such as traditional medicine use, blending Indigenous and

Western medicine in health care practice, and research specific to Indigenous populations. The next most frequently mentioned response was that there was no Western knowledge or evidence lacking in their current practice (n = 4).

When asked what traditional knowledge and evidence they felt they needed and lacked in current practice, survey participants most frequently mentioned the need for increased support for (n = 5), and increased access to (n = 5), traditional knowledge. Survey participants reported they would like more research and training opportunities with regard to using traditional medicine. Specific areas that survey participants would like more research on included how Indigenous knowledge can be applied in a medical setting and

research that examines indicators of wellness. Survey participants also identified the need to articulate best practices in blending traditional and Western knowledge systems to ensure that one knowledge system does not subvert the other. Other traditional knowledge and evidence areas mentioned as lacking in current practice include:

- ✓ *Elder involvement*
- ✓ *Access to traditional knowledge specific to local Indigenous people*
- ✓ *How to blend Western and Indigenous knowledge systems*
- ✓ *Support for use of traditional medicine*
- ✓ *Ceremony*
- ✓ *Cultural competency and safety training*



In addition to identifying gaps in knowledge or research, survey participants spoke of the need for health practitioners to use more decolonized methodologies and to better integrate Indigenous and Western knowledge in the health care system. Survey participants indicated there needs to be more research that is Indigenous-led and conducted in a manner that is strength-based and culturally respectful. Survey participants also identified the need for: more advocacy work with regard to incorporating Indigenous knowledge into the health care system, increased cultural safety in health care settings, health practitioners to consider intersectionality in their practice, and more medical students to be trained in Indigenous communities.

*We started out 20 years ago using mainstream knowledge and evidence and have shifted to traditional knowledge wherever possible. It is important to us that our clients are offered the choice.*

Interview participants were asked to identify what tensions needed to be reconciled between Western and Indigenous knowledge to inform their health care practice. They most frequently mentioned the need for support from decision makers regarding the value of Indigenous knowledge in the health care system, including in the medical education system. They also mentioned the need for more research on traditional health care approaches, increasing the number of Indigenous health practitioners, including patients in decision-making, and addressing attitudes that continue to delegitimize the value of Indigenous knowledge.

*It's really helpful to have those that understand that these practices can work alongside one another. To have support for that idea from leadership, so that you don't feel like you're isolated in doing this and advocating for this on your own. It requires more space and time as well. It means building relationships with traditional knowledge keepers, elders, spiritual advisors, and making sure that they are supported and compensated, and that requires support from leadership because it is about leadership.*







Survey participants were asked whether they felt that Western and traditional knowledge can be blended or applied concurrently within their practice. Of the survey participants who responded to this question, the majority indicated that the two knowledge systems could be blended or applied concurrently (n = 25), while only five survey participants indicated they could not. When asked to elaborate on why or why not, survey participants most frequently mentioned that health care practice would be strengthened if the two systems were combined (n = 6). Some participants reported that they expect the medical system will eventually transition over time to combine the two knowledge systems. However, several participants stated that a number of needs would have to be met before this could occur. For example, survey participants identified the need for Indigenous-led care, respect for Indigenous knowledge, and cultural sensitivity, as well as a need to determine best practices for integrating the two knowledge systems before Western and traditional knowledge can be effectively blended in the health care system.

*It is worth noting that Western approaches tend to exist in what is described culturally as mouse medicine. This approach focuses intently at the micro level of awareness whilst the Indigenous approach tends to be more focused on the macro level or eagle medicine approach. Seeing the whole vs silos.*

*The folks I work with live a dual life of being Indigenous and living in a Western culture. Many discuss their own struggles with trying to navigate the middle ground between these worlds. Using aspects of both in therapy [can] help folks navigate the process of building bridges between these worlds.*



## 4.5 Barriers and Supports to Blending Indigenous and Western Knowledge in Health Care Practice

This section aims to enhance understanding of the barriers and supports to blending Indigenous and Western knowledge systems in health care practice. Specifically, it draws on data from the key informant interviews about whether the environment they worked in influenced their use of Indigenous knowledge, and what the barriers and supports were in blending the two knowledge systems. Their work environment was found to influence how EBP was used, functioning as either a barrier or a support in blending the two knowledge systems.

Interview participants were asked whether the environment in which they practice influences the way they use evidence. This question sought to understand whether Indigenous health practitioners perceived their work places to be supportive or unsupportive of blending Indigenous and Western

knowledge systems. The majority of interview participants ( $n = 5$ ) indicated their work environment influenced the ways in which they used evidence, stating that many health care environments were not conducive to blending Indigenous knowledge into practice because of racism from colleagues, Indigenous knowledge systems not being seen as valid, as well as expectations that practitioners must work as efficiently as possible. These factors can limit the ability of practitioners to integrate traditional approaches into their practice.

Interview participants were asked about what factors acted as supports to the integration of Indigenous and Western knowledge in a health care setting. When asked what factors in their environment supported the integration of Indigenous and Western evidence in their health care practice, interview participants identified taking a holistic approach to health care, understanding and valuing multiple perspectives, the power of storytelling techniques, and the openness of particular clinical settings (i.e.

patients were more open in an Indigenous clinic than a hospital). One participant emphasized the importance of respecting different knowledge systems.

Interview participants were then asked about the factors that acted as barriers to the integration of Indigenous and Western knowledge. They identified individual, systemic, and institutional barriers to integrating Indigenous and Western forms of evidence in their health practice. Individual barriers included a fear of being judged by colleagues and the personal exhaustion of being a lone advocate for the integration of Indigenous knowledge into the health care system. Several participants identified systemic barriers, including a lack of respect for Indigenous knowledge in the health care system and the role of systemic racism and health care colonialism in delegitimizing traditional medicine and Indigenous knowledge. Participants also mentioned institutional barriers such as institutions not being supportive of traditional medical practices and the lack of space within Western

medical practice for traditional approaches (i.e. relationship building). Some participants also expressed concern regarding the potential for exploitation and suppression of Indigenous knowledge in the health care system.

*I still think they have to get over a lot of healthcare providers' stereotypes about Indigenous people that are ingrained in our society. Indigenous health in my family was seen as something unworthy, as bad, as witchcraft and that it shouldn't be passed on. My own grandfather, he knew medicines; he thought it was negative and wanted to be a good Christian family, so he didn't pass it on, and that was the mentality. All of our ceremonies were illegal [and] lots of things had to be hidden.*

*Hardest thing to overcome: we are meant to be doing the journey together equally... both are supposed to be valid. The feeling isn't that [Indigenous knowledge] is equal, it's that it's tolerated. And they say, "Oh that's nice but Western is the real medicine." There is still a lot of attitude to get over.*

## Wise Practices in Blending Indigenous and Western Knowledge in Health Care Practice

Key informants were also asked about wise practices and strategies for blending Indigenous and Western knowledge systems. They identified a number of methods that worked well for them, including the importance of building relationships with Elders, patients, and local knowledge keepers, and using a Two-Eyed Seeing approach to integrate the two knowledge systems. Interview participants also mentioned the value of sharing stories and learning from personal experience. Other methods that facilitated integrating Indigenous-informed evidence into practice included having buy-in from senior leadership, being engaged with the community, and creating an inclusive environment.

Interview participants were asked if they were aware of any other wise practices in applying Indigenous-informed evidence into their practice and decision-making. They shared the following strategies:

- ✓ *Implementing a culturally responsive framework*
- ✓ *Seeking guidance from the community around trauma informed care and cultural safety*
- ✓ *Learning through experience*
- ✓ *Providing access to traditional health care*
- ✓ *Evaluating systems and approaches in order to continually improve and learn*
- ✓ *Considering both traditional and Western medical options for patients*
- ✓ *Gathering evidence through methodologies accepted by the scientific community that also fit within traditional research methods (i.e. qualitative data collection)*

*We always talk about Indigenous knowledge and knowing, but I always like to bring in [an] example setting as a part of how we know, do, and think. When I was growing up, we weren't sat down by the old ones, we weren't lectured at; we were told stories and legends, and we witnessed a lot of life by how people lived their lives.... We lose that because we always talk about it, but don't act it out. We don't put weight on it as a way of enacting knowledge.*



*Both the literature and research participants identified a need to consider evidence gathered through traditional research methods as valid, including knowledge from Elders, experiential learning (i.e. experience of clients), and spiritual knowledge.*



## 5.0 DISCUSSION



Evidence-based medicine (EBM) in public health is predominantly determined through research and practice conducted through a Western lens, while Indigenous knowledge and evidence is either excluded from EBM or dismissed as lacking sufficient evidence (Jude, 2016; Kirkham et al., 2007; Quinn, 2011). Western knowledge inherently lacks inclusivity as it is built on the premise that the only legitimate way to acquire knowledge is by gathering empirical evidence that is verified by scientific and mathematical testing (Dunn, 2014). This contributes to a prevalent attitude that anything that falls outside of the Western knowledge framework is inconclusive or ideological (Martin, 2012). This stems from epistemic racism, one of the many impacts of colonialism, where Western knowledge is privileged over Indigenous knowledge (Matthews, 2017). In the Canadian health care and education systems, and in the scientific community, Western knowledge is treated as the most legitimate form of knowledge (Ermine, 2000; Reading, 2013). This is problematic in the healthcare context where epistemic racism and systemic racism work together to delegitimize Indigenous research and evidence, which impacts resource allocation and access to culturally appropriate care (Matthews, 2017).

A number of Indigenous health practitioner needs were identified in both the literature and by research participants. In order to work towards reconciliation in the health care system, Indigenous knowledge and evidence must be recognized as legitimate and integral to the health and well-being of Indigenous people (Gomes et al., 2013; Matthews, 2017). Both the literature and research participants identified a need to consider evidence gathered through traditional research methods as valid, including knowledge from Elders, experiential learning (i.e. experience of clients), and spiritual knowledge. The literature and research findings also identified a need for changes to how research is conducted, specifically the need for disaggregated data on Indigenous populations and use of decolonizing methodologies to ensure that Indigenous research is led and interpreted by Indigenous people (Braun et al, 2014). Finally, the literature and research findings identified a need for increased support from leaders and decision makers in health care to support the integration of Indigenous knowledge into evidence and practice, including more support to develop best practices to integrate the two knowledge systems.

Barriers and tensions to reconciling Indigenous and Western knowledge frameworks in the health care system were identified in both the literature and in the research findings. One of the most prevalent barriers identified in both the literature and findings was related to the lack of respect for and value placed on Indigenous knowledge. According to the literature, many practitioners' express reservations about Indigenous rights to self-determination with regard to health, as this may conflict with or lack support from evidence-based practices (Kowal & Paradies, 2005). Research participants expressed frustration at the effort needed to try to legitimize Indigenous knowledge and the lack of value placed on its use in the mainstream medical system. Participants also indicated

that the environment they worked in impacted whether they were able to integrate Indigenous knowledge into their practice, specifically identifying challenges related to racism from colleagues, Indigenous knowledge and evidence not perceived as legitimate, and the Western approach to medicine not allowing space for Indigenous approaches (i.e. focus on efficiency). Additional barriers identified in the literature included a fear of commoditizing Indigenous knowledge and logistical issues such as lack of time, training, and access to research (Davey et al., 2014; Martin Hill, 2003).

Supports to blending traditional knowledge and Indigenous ways of knowing were identified in both the literature and in the research findings. The main theme that

emerged from both the literature and research participants was the need to respect the legitimacy of Indigenous knowledge and validity of evidence gathered via traditional methods. Indigenous methodologies that might facilitate blending the two knowledge systems in a health care setting include the concept of ethical space, Two-Eyed Seeing, and the use of decolonizing methodologies. TES and the use of decolonizing methodologies were also mentioned by research participants as methods for reconciling Indigenous and Western knowledge in the health care system and legitimizing Indigenous knowledge. Another key finding identified by both research participants and in the literature was the importance of valuing the knowledge and experience of Elders, and involving them in the





design and delivery of health care policies and practices. Additional supports and wise practices included increasing support and resources for Indigenous knowledge, implementing a culturally responsive framework, seeking guidance from the Indigenous communities that you are working with, and fostering support from leaders and decision-makers.

Despite the challenges associated with integrating Indigenous knowledge into the health care system, the majority of research participants reported they do use traditional knowledge in their health care practice. Much of the integration of traditional knowledge stemmed from Indigenous practitioners' approaches to health care, with many participants

reporting they took a holistic approach, valued experiential knowledge, and incorporated traditional teachings such as the medicine wheel into their practice. The research participants reported little difference in their methods for accessing traditional and Western knowledge, beyond the fact that participants appear to have more diverse avenues for accessing traditional knowledge and prefer to access this knowledge directly from Elders, through storytelling, and from the community. This suggests that although colonial policies and practices have worked to suppress Indigenous knowledge, traditional teachings, much like Indigenous people, are resilient. Findings suggest that the integration and blending of Indigenous and Western knowledge in the health care

system can be facilitated by leaders and decision-makers prioritizing this integration, by the research community accepting traditional evidence as valuable and valid, and by integrating Indigenous knowledge and approaches to health care into health education curriculum.



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