

Running head: BIRTH TRAUMA TRAINING DEVELOPMENT AND EVALUATION

Recognizing and Responding to Birth Trauma: The Development and Pilot Evaluation of a Brief
Online Training Intervention for Canadian Healthcare Providers

By

Shayna Kianne Pierce

A thesis submitted to the Faculty of Graduate and Postdoctoral Studies of

The University of Manitoba

In partial fulfillment of the requirements of the degree of

DOCTOR OF PHILOSOPHY

Department of Psychology

University of Manitoba

Winnipeg, MB

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Abstract

Background: An estimated 4.7% of females develop childbirth-related posttraumatic stress disorder (CB-PTSD), increasing to 16 – 19% among those who experience birth trauma. Females are 2.5 times more likely to develop CB-PTSD when they feel unsupported and not included in decision-making during labour and delivery. Unlike other perinatal psychopathology, CB-PTSD risk can be reduced through improved care experiences. However, non-mental health providers lack training in trauma-informed care (TIC) in perinatal contexts. **Aim:** Using a sequential multi-phase design, this three-part dissertation aimed to address gaps in Canadian providers' training related to TIC for secondary prevention of birth trauma and CB-PTSD. **Study 1:** A mixed-methods cross-sectional online survey ($N = 100$) examined providers' training needs. Findings revealed that providers desired practical evidence-based information tailored to birth trauma and perinatal care contexts. Providers preferred interactive, multimodal, and case-based learning formats. Online, asynchronous, self-paced delivery was optimal to reduce barriers such as limited time and personal trauma histories. An evidence-based, needs-informed training was then developed based on Study 1 findings. **Study 2:** An open feasibility pilot ($N = 31$) evaluated the feasibility, acceptability, appropriateness, and effectiveness of the training among physicians, nurses, and midwives in hospital-based perinatal care settings. *The Birth Trauma Training Program* was feasible, acceptable, and appropriate. It demonstrated preliminary improvements in providers' knowledge, perceived ability, and care provision related to recognizing and responding to birth trauma using TIC principles. **Conclusions:** This dissertation provides evidence that a brief, needs-informed, asynchronous training program may improve perinatal providers' trauma-informed competencies and support early behaviour change, offering a promising and scalable approach to strengthening secondary prevention of birth trauma and CB-

PTSD. Further research is needed to evaluate long-term outcomes with a larger sample and incorporate the perspectives of additional stakeholders to support system-level implementation.

Keywords: Traumatic birth experiences; childbirth-related posttraumatic stress disorder; trauma-informed care; health professional training; program development; program evaluation

Acknowledgements

Completing this dissertation feels less like reaching an endpoint and more like honouring a longstanding commitment to women's stories, women's health, and the pursuit of meaningful change. For more than a decade, I have been committed to improving reproductive and perinatal health care. Through this work, I have been privileged to learn from women navigating perinatal health challenges, as well as from the healthcare providers striving to support them. Their experiences have reinforced my belief that compassionate, patient-centred care depends not only on listening to and supporting patients, but also on equipping providers with the knowledge, skills, and support they need to care for themselves and others. This dissertation grew from that conviction. While it represents the culmination of years of study and research, it is also one small contribution to a much larger effort to improve care for women and families affected by birth trauma while supporting the well-being of the healthcare providers who care for them.

I am profoundly grateful to my co-advisors, whose leadership, innovation, and commitment to improving maternal health exemplify the kind of compassionate inquiry that first drew me to this field. As brilliant, driven women, you have modelled what it means to lead with strength, creativity, and purpose. Working alongside you has been one of the greatest privileges of my training. Thank you for your guidance, your trust, and the space you created for me and this work to grow.

To my committee members, I am honoured to have been supported by such an extraordinary group of thoughtful and accomplished women. Thank you for challenging me, sharpening this work, and demonstrating the power of women supporting women in academic and clinical spaces. Your mentorship has shaped not only this dissertation but also the researcher and clinician I am becoming.

To the healthcare providers, advocates, researchers, and participants whose experiences informed this work, thank you for sharing your perspectives, your expertise, and, in many cases, deeply personal stories. Your courage and commitment to improving care are reflected throughout these pages. This dissertation is stronger because of your contributions, and I hope it reflects the importance of the issues you entrusted me to explore.

To my friends and family, even when this milestone felt distant, your support remained steady. Thank you for celebrating the successes, both large and small, and for reminding me to pause and appreciate them. Your encouragement helped me appreciate not only where I was going, but also how far I had come.

Above all, this dissertation has strengthened my belief in the power of community. It is shaped by a remarkable group of women, as leaders, mentors, colleagues, healthcare providers, participants, friends, and loved ones, whose intelligence, compassion, advocacy, and determination continue to inspire me. You have shown me what is possible when women support one another, amplify one another's voices, and work collectively toward change.

It has been an honour to contribute to that collective effort. I hope this work, in some small way, contributes to a future in which women and families affected by birth trauma are met with greater understanding, respect, and care, and in which healthcare providers are supported in the challenging and deeply meaningful work of caring for them.

Funding

This work was generously supported by the Canadian Institutes of Health Research (CIHR) Doctoral Research Award [grant number 193464], the Women's Health Research Foundation of Canada Graduate Scholarship, and the Partnering for Research Innovation in Mental Health Through eHealth Excellence (PRIME) research theme Trainee Grant Award.

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Chapter 1: General Introduction

Preamble

Overall, 30-50% of pregnant people have traumatic childbirth experiences (O'Donovan et al., 2014), broadly understood as birth experiences where the health of the mother or infant was perceived to be threatened, or a serious threat to life or injury or death occurred (Greenfield et al., 2016; Vignato et al., 2017). Among some of the most common examples of traumatic birth experiences are (a) births where medical interventions perceived as unexpected were required, (b) when the birthing person perceived that they were not adequately informed or lost control during birth, and (c) when serious injury or loss of life for mom or baby occurred. Such traumatic experiences have been described by females¹ as devastating, leaving many with intense feelings of grief, anger, sadness, guilt and shame. Following traumatic birth experiences, many females also experience self-blame with the sense that they were betrayed by their body (Fenech & Thomson, 2014; McKenzie-McHarg et al., 2015; Nilsson, 2014). The psychological impacts of traumatic birth experiences are pervasive, with 4.7% of females in community samples developing childbirth-related PTSD (CB-PTSD) 1–6 months postpartum (Dekel et al., 2017; Heyne et al., 2022; Yildiz et al., 2017). In high-risk samples, including females with histories of psychopathology or trauma, and adverse obstetric factors such as pregnancy-related health conditions and fear of childbirth, the prevalence of CB-PTSD increases to 16–19% (Grekin & O'Hara, 2014; Heyne et al., 2022; Yildiz et al., 2017). Notably, systematic reviews and meta-analyses have found distress, pain, medical complications, and interactions with healthcare

¹ The term females is used within this work in alignment with the Canadian Institute for Health Research's sex and gender definitions. The term female refers to the physical and physiological features of humans, including reproductive anatomy. Given the focus of this work being on childbirth, the term females is used to represent people who have varying expressions and attributes in relation to reproductive anatomy that are required for childbirth, though may identify with a gender other than woman.

providers as the strongest factors associated with developing CB-PTSD (Grekin & O'Hara, 2014; Heyne et al., 2022). CB-PTSD has numerous adverse consequences for the health and wellbeing of females, their infant(s), partners, family, and their communities (Ayers, Claypool, et al., 2006; Keren & Tyano, 2019). As such, preventing the development or worsening of CB-PTSD postpartum and in subsequent pregnancies is crucial.

Concerningly, despite having up to 25 contacts with the health care system throughout pregnancy and the first year postpartum, only 15% of females receive access to evidence-based mental health care (Bowen et al., 2012). Further, provider-patient interactions during prenatal and postnatal appointments can have significant impacts on mental health. Females are 2.5 times more likely to develop CB-PTSD when they perceive a lack of support, recognition, and communication from their providers about their health and intervention needs during delivery (Elmir et al., 2010; Ford & Ayers, 2011; Gokhale et al., 2020; Tham et al., 2010). Improving prevention and timely access to mental health services for CB-PTSD requires providers to receive training in symptom recognition, appropriate treatment options, and principles of trauma-informed care (Dekel et al., 2023). However, of a sample of 435 Canadian providers involved in perinatal (pregnancy and up to one year postpartum) care, 87% reported that they lacked a standard screening process to ensure early detection and intervention of distress, and 57% reported that they lacked training in perinatal mental health broadly (Hicks et al., 2022). This dissertation aimed to address this gap by developing and piloting an online training intervention to improve Canadian physicians', nurses', and midwives' ability to recognize birth trauma and CB-PTSD symptoms and respond through a trauma-informed approach and appropriate referrals.

Overview of Dissertation. To achieve this aim, this dissertation followed a sequential multi-phase design in which each study informed the next stage of the research process (see

Figure 1). The stages align with the first five steps of program development and implementation science: (1) identify knowledge gaps and unmet training needs 2) define goals through building a program logic model and action map, (3) develop content through evidence-based information and consulting content experts to inform how best to meet content priorities, and (4) plan implementation by consulting knowledge translation experts to inform how best to meet format and delivery preferences, (5) pilot, evaluate, and iterate the training program (Goldstein et al., 2024; Powers et al., 2024; Stewart et al., 2024)

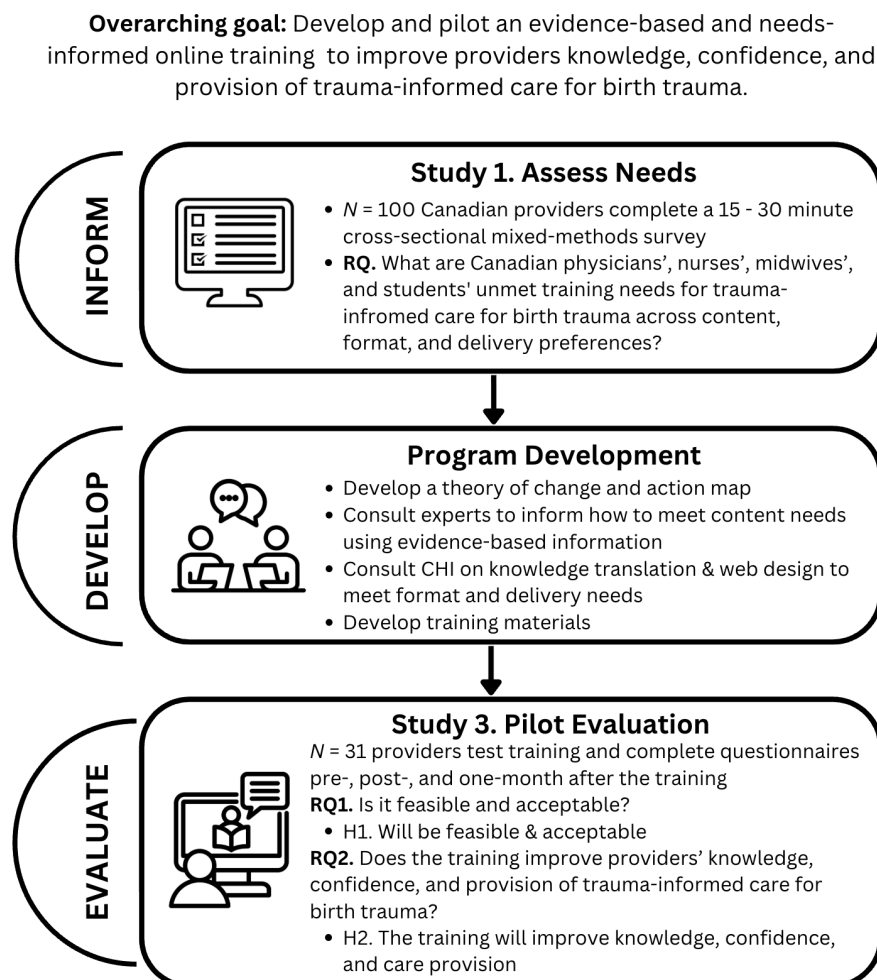
First, I provide a general introduction to the definition of traumatic birth experiences, their impact on patients and providers, CB-PTSD, and the need for providers to receive trauma-informed care training to prevent birth trauma and CB-PTSD. In Chapter 2, I review Study 1, in which I used a convergent parallel mixed-methods approach and a cross-sectional online survey to examine the training needs of physicians, nurses, and midwives in recognizing and responding to birth trauma using a trauma-informed approach. In Chapter 3, I detail how Study 1 findings informed the development of the evidence-based training grounded in providers' unmet needs. In Chapter 4, I review Study 2 where I employed an open feasibility pilot trial to (a) assess the feasibility and acceptability of the training, (b) gather preliminary evidence for the effectiveness of the training in improving providers knowledge and confidence in providing trauma-informed care to facilitate secondary prevention of birth trauma and CB-PTSD, and (c) gather feedback to inform further refinements to the training. Finally, in Chapter 5, I present a general discussion exploring the clinical practice and policy implications of this work.

Positionality. I acknowledge the privilege associated with my position as a young, White, Canadian woman in post-secondary education, shaped by a society that approaches childbirth through a Western medicalized lens. The research team similarly consisted of Canadian women

with post-secondary education, most with personal experience in Western medicalized birth settings. While I have not personally experienced birth trauma, I have witnessed its impacts both in my personal life and through my work as a provider in maternity and neonatal intensive care (NICU). This context is important to consider throughout the research process, as our experiences may influence how we perceive the value of this work, the training we believe providers need, and the information we prioritize. Our perspectives may differ from those of participating providers, and those working in non-Western medicalized settings, highlighting the importance of acknowledging our positionality.

Figure 1

Overview of Study Objectives and Methodology



Traumatic Birth Experiences

The term ‘trauma’ can be understood from a variety of lenses, such as cultural, religious, and medical. This dissertation focuses on the medical lens, given the commonality of medicalized birthing practices in Canada. The Diagnostic and Statistical Manual Fifth Edition Text Revision (DSM-5-TR) defines a traumatic event as an event involving perceived, actual, or witnessed threat of physical harm or death (American Psychiatric Association, 2022). Examples of traumatic events include, though are not limited to, natural disasters, injury, interpersonal violence (sexual, physical, and emotional abuse), war, and medical trauma. A person may be exposed to one or several traumatic events throughout their lifespan. A more comprehensive definition of trauma is provided by the Substance Abuse and Mental Health Services Administration (SAMHSA). This definition states, “individual trauma results from an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life-threatening and that has lasting adverse effects on the individual’s functioning and mental, physical, social, emotional, or spiritual wellbeing” (SAMHSA, 2014, p. 7). They summarize their definition, noting that trauma can be understood as three parts: the event, the person’s experience of that event, and the aftereffects.

In the context of childbirth, a traumatic birth experience is defined through a medical lens as, “*the emergence of a baby from its mother in a way that involves events or care that cause deep distress or psychological disturbance, which may or may not involve physical injury, but results in psychological distress of an enduring nature*” (Greenfield et al., 2016, p. 265). Some health care providers perceive a birth as traumatic when there are unexpected medical complications for the mother or baby, when either the mother or baby loses their life, or when obstetric violence occurs (Shorey & Wong, 2022). Importantly, the level of experience of the

healthcare provider impacts whether a birth is perceived as traumatic or not. More experienced obstetricians and midwives tend to be more desensitized to medical complications than trainees or early career providers, given their breadth of exposure (Beck & Gable, 2012; Thompson et al., 2019; D. Wu et al., 2017; Yanti et al., 2015). Moreover, health care providers' perception of when a birth is traumatic may differ from birthing people's perceptions.

Labour and delivery are perceived by birthing people as traumatic for several reasons, broadly classified under three categories. First, birth can be considered traumatic when medical complications occur that pose a threat of serious injury or life to the mother or baby. Examples of traumatic experiences involving the danger of severe injury or threat to life for the mother include cardiac arrest, postpartum hemorrhage, or manual removal of the placenta (El Founti Khsim et al., 2022). Examples of medical complications centring around the infant that can be perceived as traumatic include fetal distress, premature birth, congenital anomalies, or perinatal loss (miscarriage, stillbirth, or infant death; Cîmpian et al., 2025; Watson et al., 2021).

Second, labour and delivery can be considered traumatic when the birthing person perceives that there is a threat of serious injury to their or their baby's life. This may occur when more medical intervention than anticipated or culturally appropriate is required, or when interventions are delivered without the person feeling fully informed about why or how. This may also occur when a birthing person fears complications from medical interventions (Ayers, Claypool, et al., 2006). Notably, the literature has captured that this can be true even in medically common interventions such as the use of forceps or vacuum extraction (10-15% of births in Canada), and cesarean sections (approximately 34% of births in Canada; Beck, 2004; Canadian Institute for Health Information, 2026; Yildiz et al., 2017).

Third, childbirth can be considered traumatic when the birthing person feels

dehumanized, powerless, or stripped of their dignity or autonomy throughout the process (Beck & Watson, 2008; Vesel & Nickasch, 2015). Within the literature, birthing people have explained that they felt dehumanized or stripped of dignity when healthcare providers failed to communicate information about their or their infant's health status or about procedures being implemented during labour or delivery (Elmir et al., 2010; Reed et al., 2017). Phenomenological research has shown that not being told about procedures being implemented by healthcare providers in real time results in fear and scary misinterpretations of what is happening (Beck, 2004). Females' lived experiences, as captured in the extant literature, illustrate that when they do not feel informed, respected, autonomous, and supported throughout childbirth, they are more likely to perceive a difficult childbirth as a traumatic event. Importantly, each birthing person's experience and perception of their experience is unique, as is their capacity to cope with exposure to trauma. In the absence of information and support from their health providers that each person deems adequate, females may misinterpret things occurring in the room, such as the use of unfamiliar tools or providers' comments, lack of comments, or facial reactions as signs that events are life-threatening (Ayers, Claypool, et al., 2006; Beck, 2004; Beck & Watson, 2008; Vesel & Nickasch, 2015). It is integral for health providers to recognize that the commonality of interventions does not mean that the experience cannot be perceived as traumatic for a birthing person. Also, psychological, neurobiological, and social theory behind the development of PTSD illustrates that not all people who experience trauma exposure will develop PTSD (Nijdam & Wittmann, 2022). These complexities warrant training to help providers recognize and respond to CB-PTSD.

Childbirth-Related Posttraumatic Stress Disorder

After birth, 4.7% of females in the general postpartum population and 16–19% in high-

risk samples develop CB-PTSD within 6 months (Grekin & O'Hara, 2014; Heyne et al., 2022; Yildiz et al., 2017). Cumulatively, this prevalence has been found across birth traumas, including after emergency procedures such as a cesarean (Horsch et al., 2017), premature birth (Horsch et al., 2015, 2016), and perinatal loss (Horsch et al., 2015, 2016). The prevalence of PTSD is higher among equity-deserving groups due to disproportionate exposure to traumatic events, obstetric complications, inadequate communication, discrimination, and poorer-quality maternity care (Dekel et al., 2017; Thomas et al., 2021). For example, a study involving 1,577 pregnant or postpartum women found that the prevalence of PTSD was four times higher among African American females than other females (Seng et al., 2011). Additionally, CB-PTSD symptoms are more prevalent among females who gave birth during the COVID-19 pandemic than those who did not, which is theorized to link to experiences such as depersonalizing care and lack of visitation (Mayopoulos et al., 2021).

Diagnostic Criteria for PTSD

PTSD is characterized in the DSM-5-TR by the presence of the following criteria: exposure to a traumatic event, symptoms of intrusions, avoidance, negative alterations in mood and cognition, and hyperreactivity or hyperarousal (American Psychiatric Association, 2022).

Exposure to Birth Trauma. Criterion A refers to one or more exposures to actual or perceived threat of serious injury, sexual violence, and death, in one of the following ways: directly, witnessed, learning about a traumatic event occurring to a close family member or friend, and vicariously. As outlined previously, this definition aligns with traumatic births.

Intrusion Symptoms. Following exposure to a traumatic birth, people with PTSD experience Criterion B symptoms, where the person relives the traumatic event through unwanted flashbacks or nightmares that cause prolonged distress and physiological reactions

(American Psychiatric Association, 2022). In the context of CB-PTSD, this may look like unwanted flashbacks or nightmares of specific moments in labour and delivery. Postpartum females face particular difficulties with unavoidable triggers to intrusion symptoms, such as physical sensations that are part of their body healing from labour and delivery or having to attend the same or similar medical settings as part of their postnatal care (Ayers et al., 2006).

Avoidance. Given the distress caused by intrusion symptoms, many females will engage in avoidance. Criterion C characterizes persistent avoidance of external reminders (e.g., people, places, conversations, activities, objects, situations) of the traumatic event or their thoughts, memories, or feelings regarding the event as a symptom (American Psychiatric Association, 2022). In the context of CB-PTSD, females may avoid their social relationships, returning to medical appointments, their doctor, or the hospital in which they gave birth (Ayers et al., 2016). Females may also struggle to engage with their infant postpartum (Ayers et al., 2006).

Negative Mood or Cognitions. Criterion D captures how those experiencing PTSD need to experience at least two demonstrations of negative alterations to their thoughts or moods following the event. Negative alterations in mood may include losing interest in previously enjoyed activities, feeling detached from others, or experiencing persistent challenging emotions, including guilt, shame, fear, and anger. Such emotions align with the experiences captured by those experiencing CB-PTSD (Beck, 2004). Negative alterations in thoughts can be classified as negative beliefs about themselves, others, or the world. They can also be classified as alterations in memory of the traumatic event, such as misattributing blame or being unable to remember important aspects of the traumatic event. Following birth trauma, some females experience difficulties understanding how and why such events happened to them (Ayers et al., 2016). For example, some females describe feeling as though they must have done something to cause what

happened to them, even when the evidence does not suggest this.

Hypervigilance and Hyperreactivity. Criterion E refers to struggling with at least two symptoms that demonstrate a change in the person's reactivity or arousal, such as hypervigilance, increased irritability or anger, self-destructive behaviour, exaggerated startle response, difficulty concentrating, and problems with sleep. Some females may also struggle with hypervigilance in caring for their baby, out of fear that something bad may happen if they are not on high alert (Ayers et al., 2016). For example, some females may exhibit hypervigilance by sacrificing their sleep so that they can check on their baby several times throughout the night and prevent something bad from happening.

The remainder of the diagnostic criteria for PTSD outlines that the symptoms under Criteria B – E need to occur for more than one month and cause significant distress and interference in daily living. Ensuring that providers understand the nuances in how PTSD symptoms present in females following traumatic birth experiences compared to in the general population is critical to mitigating the adverse impacts of undiagnosed and untreated CB-PTSD.

Impact of Childbirth-Related Posttraumatic Stress Disorder

The impact of traumatic birth experiences is pervasive, with 72% of females with CB-PTSD developing comorbid postpartum depression (Ayers et al., 2016; Yildiz et al., 2017) and 23% struggling with suicidal ideation (Dekel et al., 2017). To cope with symptoms of CB-PTSD, many females will engage in health-risk behaviours such as overeating or binge eating, smoking, and substance abuse (Morland et al., 2007). Further, females who experience birth trauma have reported higher hazardous alcohol use than postpartum females who did not experience birth trauma (Doherty & Hunt, 2023). Some mothers with CB-PTSD report struggling to bond with their infant (Dekel et al., 2019). Females experiencing CB-PTSD also report more distress in

their relationship with their partner postpartum than females who do not have CB-PTSD (Delicate et al., 2018; Garthus-Niegel et al., 2018). Given these adverse consequences for females and their families, understanding risk and protective factors is critical to prevent worsening or developing CB-PTSD and CB-PTSS.

Risk Factors for CB-PTSD

Systematic reviews and meta-analyses have categorized risk factors for birth trauma according to the diathesis-stress model, which theorizes that psychological conditions develop due to a combination of diathesis factors (i.e., pre-existing vulnerabilities) and stressors (i.e., environmental triggers; Ayers et al., 2016). The model contextualizes how diathesis and stress factors increase a person's risk of developing a psychological condition. In the context of birth trauma and CB-PTSD, risk factors have been categorized in accordance with the diathesis-stress model into diathesis factors before, during, and after pregnancy and labour and delivery (Dekel et al., 2017; El Founti Khsim et al., 2022; Grekin & O'Hara, 2014; Heyne et al., 2022). Antenatal risk factors include maternal depression in pregnancy, fear of childbirth, complications in pregnancy, and maternal history of psychological problems and PTSD. Risk factors during labour and delivery include the person's perception of their birth experience, needing more medical intervention than expected, dissociation, and perceiving a lack of support from their care providers or social network. Risk factors postpartum include symptoms of psychological conditions that are comorbid with PTSD, namely depression, high stress, and limited coping. Importantly, researchers have highlighted that, unlike other perinatal mental health conditions, there is great potential to prevent CB-PTSD, as many of the risk factors are related to environmental stressors caused by the care females receive during their birth experience.

International Recommendations for Addressing Birth Trauma

In 2024, an international group of experts in birth trauma and CB-PTSD developed an international consensus bundle of recommendations for practice, policy, and research (Ayers et al., 2024). Concerning practice, the recommendations highlighted that integrating the principles of trauma-informed care across all training programs and maternity care services must be mandatory. There is a lack of research demonstrating the inclusion of trauma-informed care for birth trauma and evaluating the effectiveness of this training in Canadian curricula for medical providers involved in maternity care (DeAndrade et al., 2025; Long et al., 2022). This remains true despite policy recommendations within the consensus bundle stating that such training should be made mandatory with a focus on secondary prevention, namely early detection of birth trauma and access to treatment to prevent CB-PTSD (Ayers et al., 2024).

Recognizing Birth Trauma

Fifty percent of people with perinatal mental health concerns are not diagnosed (Byatt et al., 2019), and only 15% of perinatal people with mental health concerns receive appropriate mental health treatment referrals (Bowen et al., 2012). Recognition of birth trauma and CB-PTSD begins with understanding what constitutes birth trauma and the risk factors, signs, and symptoms that serve as indicators of patients needing support. However, providers in Canada lack training in perinatal mental health broadly, and birth trauma specifically, to support their recognition, with providers sharing that they wait for patients to initiate conversations about their birth experience (Hicks et al., 2022). This passive approach has been described in previous literature as a barrier to detection and access to treatment (Delicate et al., 2020) and risks leaving females feeling invalidated and unsupported. While screening tools have been suggested as one way to support medical providers in identifying those who may need additional mental health support, a survey assessing 435 providers' experiences of providing care for perinatal

populations found that 87% do not screen for perinatal mental health broadly, let alone for birth trauma (Hicks et al., 2022). This remains true despite experts globally recommending that birth-experience evaluation be included in screening to identify opportunities to improve care and support secondary prevention (Ayers et al., 2024). Secondary prevention focuses on early detection and timely access to prevent worsening mental health and recurrence. Screening has been regarded in the literature relating to birth trauma as an important practice of care, when trauma-informed and culturally appropriate, as many trauma survivors will not spontaneously disclose their birth trauma experience or related mental health impacts out of fear, helplessness, and shame (Gelaye et al., 2017). Screening can be facilitated using brief, well-validated measures that assess the presence of PTSD symptoms, such as the well-established Posttraumatic Stress Disorder Checklist for the DSM-5 (Blevins et al., 2015; Bovin et al., 2016) or newly developed City Birth Trauma Scale (Ayers et al., 2018). These screening tools are most appropriate at the first prenatal appointment or early in the postpartum period, as part of a general discussion with the birthing person about their birth experience and wellbeing after labour and delivery (NICE, 2020). Alongside training in recognizing birth trauma, training in trauma-informed care is critical to effective secondary prevention of mental health sequelae following birth trauma (Ayers et al., 2024; Hall et al., 2021). However, providers have described several barriers to responding to birth trauma using a trauma-informed approach.

Responding to Birth Trauma Through Trauma-Informed Care

In the context of working with traumatic birth experiences, a lack of training has been identified by Canadian providers as a barrier to providing trauma-informed care, with providers saying that they feel helpless and fear re-traumatizing birthing people or experiencing vicarious trauma (Mota et al., n.d.). This worry is not unfounded, with 14% of labour-and-delivery nurses

experiencing moderate-to-severe vicarious trauma after supporting birthing people through traumatic birth experiences (Beck & Gable, 2012). Vicarious trauma, defined as trauma experienced indirectly through witnessing and engaging empathetically with patients who experience trauma, can inhibit providers' ability to support females, which in turn increases their risk of CB-PTSD, perpetuating a vicious cycle (World Health Organization, 2013). As such, ensuring that providers have knowledge and skills in trauma-informed care specific to traumatic birth experiences is critical. However, such training is lacking across Canada.

Further, providers report that their appointments are not long enough to cover maternal mental health as part of 'usual care' (Mosqueda et al., 2013; Pierce et al., 2023; Twohig et al., 2016). Providers globally have repeatedly reported a lack of training in how to recognize perinatal mental health concerns, respond to them in session, and know which referral options are most appropriate (Austin et al., 2018; Borglin et al., 2015; De Vries et al., 2020; NHS England, 2015; Pierce, 2023; Twohig et al., 2016). Despite increasing recognition of the psychological impacts of childbirth, perinatal providers receive limited formal training in responding to birth trauma using a trauma-informed approach. Indeed, a survey of perinatal providers in Canada ($N = 435$) found that 57% lacked training in perinatal mental health broadly, let alone in birth trauma or CB-PTSD (Hicks et al., 2022). This is concerning, as the extant literature has highlighted the need for training in trauma-informed care tailored to the nuances of obstetric care settings and experiences (Ayers et al., 2024; Isobel, 2023). CB-PTSD, unlike other perinatal mental health concerns, is largely preventable through improving patient-provider interactions and trauma-informed care provision (Ayers et al., 2024). Given the important role healthcare providers play in shaping childbirth experiences, addressing gaps in provider education represents a critical step toward improving trauma-informed perinatal care.

Chapter 2: Understanding the Unmet Training Needs of Canadian Nurses, Midwives, and Physicians in Recognizing and Responding to Birth Trauma

Introduction

Birth trauma has gained increasing recognition around the world, in part because of its commonality and significant impacts on family wellbeing (Thomson et al., 2021). Most recent estimates suggest that 50% of females perceive their birth as traumatic and experience well-founded fear regarding the possibility of significant medical intervention and risk to both themselves and their babies (O'Donovan et al., 2014). Of those who perceive their birth as traumatic, 4.7% of the general population and 16 – 19% of groups deemed high-risk develop clinically significant posttraumatic stress following childbirth, known as CB-PTSD (Feeley et al., 2011; Grekin & O'Hara, 2014; Heyne et al., 2022; Ryding et al., 2003; Shaw et al., 2013; Yildiz et al., 2017). CB-PTSD has numerous adverse consequences for females' psychological health (Ayers et al., 2016; Yildiz et al., 2017), their infants' development (Van Sielegheem et al., 2022), and families' wellbeing (Garthus-Niegel et al., 2018). Thus, preventing CB-PTSD is critical to protecting patient and family wellbeing. Providers' interactions with patients during pregnancy, labour, and postpartum can significantly shape their likelihood of developing CB-PTSD, with females having 2.5 times higher odds of developing CB-PTSD postpartum if they felt a lack of support, recognition, or communication from their providers than if they did not (Elmir et al., 2010; Ford & Ayers, 2011; Gokhale et al., 2020; Tham et al., 2010). As such, ensuring providers have access to evidence-based training to help them recognize birth trauma and respond using a trauma-informed approach to connect them to appropriate resources is key (Thomson et al., 2021). However, such training for non-mental health providers who interact with patients during pregnancy, labour and delivery, and the postpartum period is lacking in Canada.

Training in Childbirth-Related Posttraumatic Stress Disorder in Canada

Research and clinical practice guidelines emphasize the importance of all perinatal providers recognizing and responding to common perinatal mental health concerns (Dekel et al., 2023; Hall et al., 2021). However, few countries internationally provide even minimal pre-registration training, and none offer post-registration training (Thomson et al., 2021), prompting calls for nationally recognized, multidisciplinary training in secondary prevention (Ayers et al., 2024; Thomson et al., 2021). A 2023 policy brief developed by a team of perinatal experts, informed by a rapid-review-based environmental scan and consultations with 25 training experts, highlighted gaps in perinatal mental health training in the Canadian context (O. Scobie, personal communication, December 7, 2023). Across the limited training opportunities in Canada, training tends to prioritize anxiety and depression with limited attention to birth trauma and CB-PTSD. It remains largely focused on treatment provision for mental health professionals rather than equipping frontline providers with skills for early identification and referral. In addition, training opportunities are time- and cost- intensive, creating barriers to uptake. One study showed that only 46% of interdisciplinary providers (physicians, nurses, midwives, mental health professionals, doulas, allied health professionals) receive training in perinatal mental health (Hicks et al., 2022). Collectively, these limitations contribute to a persistent gap in providers' preparedness to recognize and respond to birth trauma.

Recommendations emerging from this work align with international guidance emphasizing the need for accessible, multidisciplinary training to support early identification and intervention (Ayers et al., 2024; Hall et al., 2021; Viveiros & Darling, 2019). Strengthening providers' mental health literacy has been shown to improve symptom recognition, reduce stigma, and support appropriate care pathways, with even brief training producing meaningful

gains in knowledge, attitudes, and behaviours (Liang et al., 2020; Sharma et al., 2016; Wang et al., 2022). Given the trauma-related nature of CB-PTSD, integrating trauma-informed care is a critical component of such training (Hall et al., 2021).

The Centre for Disease Control and Prevention and SAMHSA have developed the most widely recognized definition of trauma-informed health care (Centre for Disease Control and Prevention, 2020; Substance Abuse and Mental Health Services Administration, 2014).

SAMHSA defines trauma-informed health care services as ones that meet the four fundamental assumptions of a trauma-informed approach, known as the Four R's: realize, recognize, respond, and resist re-traumatization (SAMHSA, 2014). Trauma-informed care emphasizes realizing the widespread impact of trauma, recognizing its signs and symptoms, and responding using six principles to promote safety, trust, and prevent re-traumatization (See Table 1 for definition of principles; Centre for Disease Control and Prevention, 2020; SAMHSA, 2014).

Evidence suggests that training in trauma-informed care enhances provider sensitivity, strengthens patient-provider relationships, and reduces mental health consequences of trauma (Chin et al., 2024; Montgomery et al., 2015). Further, training in trauma-informed care increases providers' awareness of trauma and their knowledge and confidence in providing trauma-informed care and results in actual behaviour change (Chin et al., 2024). While training in trauma-informed care has multiple benefits to patient-provider interactions, researchers have highlighted that general training in trauma-informed care often leaves gaps in understanding the nuances of recognizing and responding to birth trauma (Isobel, 2023). As such, ensuring providers have access to needs-informed training covering trauma-informed care and mental health literacy for birth trauma is critical to prepare providers better to identify symptoms, initiate supportive conversations, and facilitate access to appropriate care (Thomson et al., 2021).

Table 1*Six Principles of Trauma-Informed Care*

Principle	Description
Safety	Create a physical and psychological sense of safety within the health care setting and within the patient-provider relationship.
Trustworthiness and Transparency	Build trust by being transparent with interpretations of the patient's circumstances and their treatment options.
Peer Support	Include ways for people with lived experiences to connect as a means of further fostering safety, trust and hope.
Collaboration and Mutuality	Approach treatment planning as a collaborative process with patients to reduce the power difference.
Empowerment, Voice, and Choice	Identify patients' strengths and empower them to be active members of their care.
Cultural, Historical, and Gender Issues	Recognize the diversity of patients and consider diversity in all aspects of care provision.

Present Study*Objective*

This novel study employed a mixed-methods cross-sectional online survey to examine the training needs of physicians, nurses, and midwives in employing trauma-informed care to prevent birth trauma and CB-PTSD. The findings of this research stand to inform the development of a program that addresses Canadian providers' lack of training and equips them to prevent birth trauma and CB-PTSD.

Study 1 Research Question

What are the training needs of physicians, nurses, midwives, and students in these fields involved in perinatal care in trauma-informed care for birth trauma across content, format, and delivery? Given the exploratory nature of this question, no formal hypotheses were made.

Methods

A convergent parallel design was followed using a cross-sectional mixed-methods online survey to understand health professionals' training needs in trauma-informed care for birth

trauma and CB-PTSD. Assessed training needs included content, format, and delivery.

Participants

Inclusionary criteria were providers who: (1) were at least 18 years old; (2) worked as a physician (obstetrician-gynecologists, neonatologists, family doctors, pediatrician), nurse (labour and delivery, postpartum, or public health practitioner), midwife, or resident/student of these professions providing healthcare during labour and delivery to birthing people who may have had traumatic birth experiences; (3) were fluent in English; and (4) had Internet access. Providers were ineligible if they (1) did not identify as an included profession; (2) were in a mental health profession; (3) were not fluent in English; or (4) did not have access to the Internet.

Providers were recruited by advertising the study through relevant professional organizations, associations, and societies (See Appendix A for a list). In planning recruitment, the Canadian Perinatal Mental Health Collaborative (CPMHC) and Canadian Neonatal Network were considered the primary recruitment sources, as two main national networks of interdisciplinary perinatal providers. The Canadian Neonatal Network determined its membership based on the number of sites, whereas the CPMHC tracks the number of individual providers. As such, sample size was calculated based on CPMHC membership. The CPMHC listserv contained 723 interdisciplinary perinatal providers, of which 383 are physicians, nurses, and midwives. Best practice literature for conducting needs assessment surveys suggests a minimum 20% response rate is sufficient, though targeting above 40% would be considered excellent (Wu et al., 2022). As such, the target sample for Study 1 was $N = 77\text{--}153$. Recruitment was further aided through snowball sampling.

Procedure

Ethics approval was obtained from the University of Manitoba Research Ethics Board

before beginning this work. After receiving ethics approval, a recruitment poster advertising the study and containing the REDCap survey link was sent out through the recruitment sources detailed in the participants section above (Harris et al., 2009, 2019). The survey began with an informed consent form. Those who provided informed consent were directed to answer items assessing their demographic and background information to contextualize the findings. They then completed a needs assessment survey that asked what their training needs are across (a) content priorities (e.g., definition of birth trauma, causes, risk factors, symptoms, appropriate responses, six principles of trauma-informed care), (b) format preferences (e.g., written modules, audio, video, infographics), and (c) access needs (e.g., desired length of time to complete, barriers and motivators to them completing the training and any accessibility concerns). The survey contained a CAPTCHA feature and safeguard questions to help prevent bots (non-human responses). After completing the survey, participants were asked if they would like to be entered in a random draw for one of four \$25 electronic gift cards. If so, they were directed to a survey link separate from their prior responses to maintain anonymity, where they were asked to provide their name and email. All Study 1 materials and questionnaires are in Appendix A.

Measures

Demographics and Background

Assessed demographics included gender, age, ethnicity, whether they identify as a minority, their working status, education, and income. Background information specific to their profession included their current profession, how long they have been in their field, the setting and geographical location in which they work, and their past training experiences in CB-PTSD (e.g., have they had any training experiences; if so, what types; was the training provided or sought; length of prior training; and what topics concerning CB-PTSD were covered). Providers

were also asked open-ended questions about what facilitated or prevented them from seeking training. Providers were also asked closed-ended and open-ended questions about whether they had personal experience with birth trauma, why they were interested in receiving this training, and how they believe it would impact their care provision.

Needs Assessment

Providers completed an 11-item mixed methods questionnaire adapted from a previously developed needs assessment measure developed in the Health Information and Exchange Laboratory to assess information needs and preferences in the perinatal period (Pierce et al., 2023). Adaptations were made to the wording of items to refer to providers and their training needs concerning CB-PTSD. They identified the content relevant to birth trauma, mental health literacy, and trauma-informed perinatal care that they felt was most important to cover within the training. Topics included defining birth trauma, CB-PTSD symptoms and risk factors, appropriate treatment options, and the six principles of trauma-informed care. Providers were also asked how much information they wanted to receive on each content area and in what format, such as written modules, audio lectures, or videos. Items also asked whether they would like the training delivered in one sitting or broken into sections. Finally, providers identified what would enable them to use the training (e.g., how much time they could dedicate) and what would get in the way. The mixed-methods format allowed opportunities to enrich our understanding of training needs. An ‘other’ option was included in items assessing content, format, and delivery needs to assess needs that may not be captured in quantitative questions. The questionnaire ended with an item to assess for careful responding.

Analyses

Quantitative Analysis

Quantitative survey data were analyzed using R Statistical Software (R Core Team, 2024). Before conducting descriptive analyses, data were cleaned using Meade and Craig's (2012) data-cleaning steps. Data were determined to be missing at random by employing Little's Missing Completely at Random (MCAR) test ($\chi^2(346) = 363, p = .259$). Pairwise deletion was determined unnecessary as 1–4% of data were missing across variables (Dong & Peng, 2013). Next, data were inspected visually for response bias, such as neutral or extreme responding and acquiescence. Following cleaning the data, descriptive analyses identified providers' content, format, and delivery training needs. Additionally, Likert scale data on categorical variables within the demographics and needs assessment measure were handled by determining the sample percentage that endorsed each response option. Demographic data were gathered to contextualize the findings. This was particularly important to determine possible differences in training needs based on providers' demographic and occupational backgrounds. Descriptive analyses were used to characterize whose perspectives were and were not captured within the study. Finally, within the Needs Assessment measure, categorical variables were analyzed by determining the percentage of those who endorsed each response.

Qualitative Analysis

Open-ended responses that enriched understanding of 'other' training content, format, or delivery needs were analyzed using a conventional content analysis approach (Hsieh & Shannon, 2005). Conventional content analysis allows researchers to identify themes and report the number of cases behind resulting themes based on the data rather than preconceived understandings from existing literature or theory. This approach was considered most appropriate given the lack of prior research in this area to guide understanding of Canadian providers' content, format, and CB-PTSD training needs, and its systematic approach to determining

content themes and how to prioritize themes based on the frequency with which specific content was mentioned (Hsieh & Shannon, 2005).

In line with the Content Analytic Approach, data were analyzed throughout data collection following a systematic approach. The analytic process began by considering an observation (i.e., Physicians, nurses, midwives, and students involved in perinatal care across Canada lack the training to improve their CB-PTSD mental health literacy). The observations informed research questions (i.e., What are providers' training needs in trauma-informed care and CB-PTSD mental health literacy across content, format, and delivery?). The identified research questions were then explored by coding each line of data as it was being collected while staying as close to the data as possible. Initial codes often involved a few words that captured the main point of each sentence written by every participant. Where possible, initial codes used participants' language to ensure code credibility. Initial codes were then collapsed into main themes and subthemes, capturing larger chunks of data across participants. Within each main theme and subtheme, similarities and differences were captured in the results. The number of participants endorsing content under each main theme and subtheme was also tracked to elucidate priorities among unmet training needs (Hsieh & Shannon, 2005). The outlined coding process was led by me, with a master's-level research assistant also coding data.

Rigour. Rigorous results from the qualitative analysis were ensured based on Tracy's Big-Tent Criteria for Excellent Qualitative Research (Tracy, 2010). Tracy's "big-tent" criteria outline how rigorous results require richness, sincerity, and credibility. Richness was achieved by asking multiple open-ended questions to encourage participants to explain their thinking and experiences, allowing for meaningful interpretation. Sincere results were achieved by having each coder reflect on their personal experiences and how they may influence their interpretation

of the data. Further, sincerity in the results was achieved by keeping a detailed log of all decisions made throughout the study regarding study design and having each coder keep a coding journal to track all coding decisions and challenges (Creswell & Creswell, 2024; Tracy, 2010). This created an audit trail that we discussed during weekly team meetings. Weekly team meetings allowed each coder to discuss any uncertainties or challenges they experienced in the coding process and supported a collaborative approach to determining solutions. Final solutions were identified by reaching a unanimous decision among all coders on how best to proceed. Further, weekly team meetings required each coder to continuously reflect on inherent bias in the coding process and mitigate it by reviewing coding decisions from multiple coders' perspectives. Credibility, or the soundness and trustworthiness of the research, was achieved by ensuring that the data analysis and results writing captured the richness of the data by highlighting nuances in participants' experiences.

Mixed-Methods

The convergent parallel design for data collection, analysis, and interpretation was considered most appropriate to allow quantitative and qualitative data to be simultaneously collected, analyzed rigorously using separate approaches, and interpreted together. Quantitative questions and findings were used to gather feedback on evidence-based ideas for what content, format, and delivery model should be included in this type of training. Qualitative items allowed providers to share their unique experiences and perspectives on their content, format, and access needs. Taken together, these findings inform requirements for evidence-based, needs-informed training. Findings were integrated using a narrative approach (Fetters et al., 2013).

Results

The results inform providers' a) demographics and background and b) training content,

format, and delivery preferences. Supplementary quotes supporting the results are in Appendix B, Table 1.

Demographics

A total of 146 providers enrolled in the Study. Forty-six providers were excluded because they did not complete the survey ($n = 31$), were identified as excluded professions ($n = 8$: dietitian, occupational therapist, physiotherapist, birth doula, psychiatric nurse), or endorsed that they did not respond carefully ($n = 7$). The final sample size was $N = 100$ providers, within the desired range of $N = 77$ – 153 . Most of the sample identified as women (91.00%). The average age was 37.15 years ($SD = 8.81$), ranging from 20–63 years. The largest proportion identified as white (72.00%), followed by indigenous (7.00%), East Asian (5.00%), and Southeast Asian (4.00%). Regarding education, most had a bachelor's degree (40.40%) or a professional degree (38.38%). Most were employed full-time (77.72%) and worked in-person (63.33%), in a hospital (78.57%) located in urban areas (86.73%). Figure 2 illustrates a geographical distribution of participating providers. See Table 2 for demographic information.

Professional Experience and Prior Training

Of the sample, 41.41% were nurses, 44.44% were physicians or residents, and 14.14% were midwives or midwifery students. Concerning prior training (see Table 3), most providers (80.00%) had not received formal training in birth trauma and CB-PTSD from sources such as their training program or professional organization. Of the providers (9.00%) who received formal training in birth trauma and CB-PTSD, 66.67% said the training covered symptoms and helpful treatments for CB-PTSD, and most accessed this training through Postpartum Support International (33.33%) or during residency (22.22%). Some endorsed accessing information on this topic through informal sources, such as personal readings, general trauma-informed care

resources, and consultation with other providers.

Figure 2

Distribution of Participating Study 1 Providers Across Canada



Table 2

Demographics Table

Demographic Variable	<i>n</i> (frequency)
Age (years)	$M = 37.15$, $SD = 8.81$, $Range = 20-63$
Gender	
Woman	$n = 91$ (91.00%)
Man	$n = 8$ (8.00%)
Biological sex	
Female	$n = 92$ (92.00%)
Male	$n = 8$ (8.00%)
Race	
White	$n = 81$ (72.00%)
Indigenous	$n = 7$ (7.00%)
East Asian	$n = 6$ (6.00%)
South Asian	$n = 4$ (4.00%)
Black	$n = 1$ (1.00%)

Southeast Asian	$n = 4$ (4.00%)
Middle Eastern	$n = 2$ (2.00%)
Latin American	$n = 1$ (1.00%)
Profession	
Nurse	$n = 41$ (41.41%)
Midwife	$n = 9$ (9.09%)
Neonatologist	$n = 13$ (13.13%)
Family Doctor	$n = 6$ (6.06%)
Pediatrician	$n = 8$ (8.08%)
Midwife Student	$n = 5$ (5.05%)
OBGYN Resident	$n = 15$ (15.15%)
OBGYN	$n = 2$ (2.02%)
Length of time in Profession (years)	$M = 10.72$, $SD = 8.42$, $Range = 0-43$
Education Level	
Bachelor's Degree	$n = 40$ (40.40%)
Professional Degree	$n = 38$ (38.38%)
Master's	$n = 10$ (10.10%)
PhD	$n = 6$ (6.06%)
College/Technical Degree	$n = 5$ (5.05%)
Employment Status	
Full Time	$n = 72$ (72.73%)
Part Time	$n = 20$ (20.20%)
On leave	$n = 4$ (4.04%)
Not Employed	$n = 2$ (2.02%)
Urban or Rural Work Setting	
Urban	$n = 85$ (86.73%)
Rural	$n = 11$ (11.22%)
Work Setting	
Hospital	$n = 77$ (78.57%)
Community	$n = 11$ (11.22%)
Private	$n = 2$ (2.04%)

Note. $N = 100$

Personal Experience with Birth Trauma and Vicarious Birth Trauma

Among participants, 30% endorsed having experienced birth trauma in their personal life as the birthing or non-birthing parent, the majority of whom had not received therapy related to their personal experience with birth trauma (85.42%). Importantly, over half of the providers (60.20%) endorsed experiencing vicarious birth trauma from their work.

Table 3

Previous Training Experience

Variable	<i>n</i> (%)
Formal Training in Birth Trauma	
Yes	9 (9.00)
No	80 (80.00)
Unsure	11 (11.00)
Barriers to Accessing Formal Training	
Not enough time	64 (64.00)
Not provided in my education/residency	42 (42.00)
Too costly	60 (60.00)
Unsure where to access	69 (69.00)
Unsure of the benefits	6 (6.00)
Not interested	0
Do not believe that I need training	0
Other	5 (5.00)
Facilitators to Accessing Formal Training	
Believe the training would help my patients	89 (89.00)
Considered Continuing Education (CE)	83 (83.00)
Generally interested	76 (76.00)
Low cost or free	74 (74.00)
Referred by professional organization	41 (41.00)
Referred by colleagues	38 (38.00)
Other	6 (6.00)
Informal Training in Birth Trauma	
Professional Readings	63 (63.00)
Podcasts	0
Consultation	33 (33.00)
Resources in Trauma-Informed Care	52 (52.00)
Other	3 (3.00)

Note. *N* = 100.

Why are you Interested in Receiving This Training?

When asked why providers were interested in receiving this training, most endorsed professional and personal reasons (52.53%). Eighty-one providers expanded upon why they were interested, with their responses being captured under three main themes: 1) professional reasons, 2) “supportive to all involved,” and 3) personal reasons.

Professional Reasons. Multiple providers described being interested in the training because it covers an underserved topic relevant to their work (*n* = 8). Many providers also wrote about how they were interested because they wanted to improve the quality of care (*n* = 37).

Specifically, providers mentioned wanting to know what to watch for, screening tools and resources, and how to help patients process and heal. One provider wrote,

“Working in the NICU, part of our discharge teaching checklist is to touch on postpartum depression and PTSD related to the family's birth and NICU stay, though we don't receive any formal or informal training on what exactly to say to the families when it is discussed. Regardless of the length of their stay with us, obviously it is traumatic to be separated from your baby and be worried for their health, and I think being mindful of it from the time of admission - talking about the effects of stress and trauma and giving them supports throughout their admission is important, and we should have the training to do so (ID 114).”

Several providers shared that they were interested in the training because they wanted to prevent birth trauma ($n = 15$), mitigate the impacts of birth trauma, and educate all involved to prevent misinformation ($n = 3$). Some providers also shared that they were interested in this training because they hoped it would help them to foster better relationships between patients and providers ($n = 4$). Characterizations of better relationships included more trust and partnership between patients and providers.

Supportive to all Involved. Some providers shared that they were interested in receiving this training because they believed it would support all involved, including patients, their families, and providers ($n = 27$). One provider wrote,

“I want to be able to provide education to patients and fellow staff members about birth trauma and how to help staff that have been through a traumatic experience as well as the patients that they are caring for. We are seriously lacking in caring for moms after a traumatic birth. The expectation is that they will just get over it and move on, but that is

absolutely not the case, we need better/more training in how to provide the best care possible for patients (ID 136).”

Personal Reasons. Finally, multiple providers explained personal reasons for wanting to receive this training. Some providers shared that they were interested because their knowledge of birth trauma helped them to move through their own trauma experiences ($n = 7$). One provider wrote,

“I work with the pregnant and birthing population both in community and in hospital. Unfortunately, I see traumatic birthing experiences too often and understand the effects that it has long-term and on future birthing experiences for the birthing person and their families. Recently, I experienced my own traumatic birthing experience, and therefore, lived through unanswered questions, guilt and ongoing concerns for future pregnancies and possibly birthing again (ID 41).”

How do you Think Training Would Impact Your Care Provision?

Seventy-seven providers wrote how they believed a training in recognizing and responding to birth trauma would impact their care provision. Their responses were captured under three main themes: 1) What I know, 2) What I do and who with, and 3) Better outcomes.

What I Know. Some providers described how they believed a training in recognizing and responding to birth trauma would impact *what they know* about the topic generally ($n = 14$). Specifically, providers mentioned that it would improve their ability to recognize birth trauma early ($n = 11$), have the tools and language to discuss it with patients ($n = 22$), and know where to refer them for support. One provider wrote

“I think having a greater awareness would help me distinguish between a parent who is adapting to NICU and one who might be having more trouble. Care can be tailored to

their specific situation and referrals made if needed. NICU experience is not a one-size-fits-all (ID 74)!"

What I do and Who With. Multiple providers described how they believed the training would impact *what they do* with patients and *whom they do it with*. Some providers shared that, after taking the training, they would assist with trauma, identify support, and reduce barriers to accessing support to strengthen the parent-child relationship ($n = 8$). Some also mentioned that they would help to prevent birth trauma by preparing patients ($n = 4$). One provider wrote,

“As care providers, we are doing a disservice to patients who experience birth trauma when we ourselves do not have the knowledge and education on what to recognize and how to help them move forward. As nurses, we know mental health is a huge part of birth trauma, and just caring for the physical health is not enough (we could do a lot better with this part too). Being aware of birth trauma, we should change the way we are providing prenatal and labour care as well, preparing the patients for what is to come and all the options that are available to them. Women's health is often overlooked, and this is an area where there can be massive improvements (ID 136).”

Further, two providers specified that they would work to address birth trauma by using the knowledge they gain in training to advocate for better recognition and response to birth trauma at an institutional and policy level. A few providers also shared that who they address birth trauma with would be impacted by taking this type of training. Specifically, these providers shared how what they do would need to be interprofessional, with one provider writing, “Physicians, midwives and nurses all need to be aware of the impact we make, and all play a role in informed choice and education. We need to have open dialogue and work together (ID 6).”

Better Outcomes. Most providers detailed how they believed this type of training would

improve their ability to provide safer, trauma-informed care ($n = 27$). In doing so, many believed that the training would improve outcomes for both parents and infants, as they would be better able to mitigate the impact of birth trauma ($n = 14$). One provider wrote,

“Providing care through a trauma-informed lens benefits the birthing person, their support person and the staff who care for them. It’s helpful to be aware of what they may be experiencing and how to support them using language and interventions in ways that feel “safe enough” and have skills to help them cope if they become dysregulated. This knowledge also offers insight into why someone may react in a certain way (ID 79).”

Additionally, multiple providers shared that they believed this type of training would improve their relationships with patients by helping them to build trust and stronger bonds with patients ($n = 14$). Finally, many also spoke to how the training would make them feel more comfortable and confident ($n = 6$), with one writing that they believed it would “alleviate anxiety around this topic from lack of training (ID 7).”

Training Content Preferences

To inform the content providers would prefer to include in the training, providers were asked about their knowledge gaps in recognizing and responding to birth trauma, how important they felt certain topics were to include in the training, and how much information they wanted on various topics.

What Knowledge Gaps do you Have Regarding Birth Trauma and CB-PTSD?

Providers’ knowledge gaps were captured under four main themes, each with multiple subthemes: (1) Understanding Birth Trauma with subthemes of what is birth trauma, what is CB-PTSD, and the impacts; (2) Recognizing Birth Trauma with subthemes of how to recognize and assess birth trauma; (3) Responding to Birth Trauma with subthemes of how to respond to

patients, referrals, and how to respond to colleagues; and (4) Preventing Birth Trauma with subthemes of how to prevent birth trauma and reduce its impacts. Table 4 illustrates the main themes, related subthemes, supporting quotes for each subtheme, and the number of providers that endorsed each subtheme. Overall, the counts per main theme indicated that providers wanted the most content on how to respond to birth trauma, a generally equal amount of information on understanding and recognizing birth trauma, and minimal information on prevention.

Table 4

Main and Subthemes Capturing Providers Knowledge Gaps for Birth Trauma and CB-PTSD

Main Theme 1: Understanding Birth Trauma and CB-PTSD (<i>n</i> = 21)		
<i>Subtheme</i>	<i>Examples/Quotes</i>	<i>Count</i>
What is Birth Trauma?	Definition	9
	Differences in perception for providers and patients	1
	Reasons why birth trauma occurs	1
What is CB-PTSD?	Definition	1
	Prevalence	1
Impacts of Birth Trauma and CB-PTSD	To patients (parents and infants)	3
	To colleagues and trainees	1
	Impact of contexts (NICU, trauma histories, previous birth trauma in subsequent pregnancies)	4
Main Theme 2: Recognizing Birth Trauma and CB-PTSD (<i>n</i> = 25)		
How to recognize birth trauma	Presentations	11
	Signs and Symptoms	4
	Risk factors	1
How to assess for birth trauma	Protocols or tools to screen for birth trauma or CB-PTSD	9
Main Theme 3: How to Respond to Birth Trauma and CB-PTSD (<i>n</i> = 63)		
How to respond to patients	How to debrief with patient with little time	25
	Trauma-informed frameworks to guide care	8
	What our role is	1
Referrals	Where to refer	21
	When to refer	3
	How to support continuity of care	2
How to respond to colleagues	How to debrief with colleagues	1
	How to change organizational culture and perceptions around birth trauma	1
	Who can providers talk to outside of colleagues	1

Main Theme 4: Preventing Birth Trauma and CB-PTSD ($n = 6$)		
How to prevent birth trauma	Can we prevent birth trauma or better prepare patients?	3
How to reduce impact	Reduce impact of birth trauma on patients and providers	3

Note. Count refers to the number of providers who endorsed each subtheme.

Understanding Birth Trauma. Several providers identified a general lack of training and knowledge related to birth trauma ($n = 21$). Providers identified wanting to know how birth trauma is defined ($n = 9$). One provider described wanting to understand how patients' and providers' perceptions of birth trauma can differ ($n = 1$). Another described wanting to know reasons why birth trauma occurs ($n = 1$). Four providers also identified wanting to understand birth trauma within specific contexts, including in Neonatal Intensive Care, in subsequent pregnancies, and in cases where the female has a history of trauma. Providers also identified wanting to understand what CB-PTSD is and its prevalence ($n = 2$). Broadly, providers also identified wanting to learn about the impact of birth trauma and CB-PTSD over time on patients and their infants ($n = 4$) as well as on their colleagues and trainees ($n = 1$). One provider's response captured many of these subthemes, stating

"As a NICU nurse clinician, it is easy to forget that birth trauma is not a normal experience, since most of the families we see will have experienced it (even if "just" a preterm delivery and nothing else traumatic about it). I think being sensitized to and aware of the risks for these families is very important and can impact how we interact with them. I think in NICU training we talk a lot about care for the baby but not a lot about caring for the parents, especially in this birth trauma/child-birth related PTS. I don't even think we talk a lot about their increased risk for PTSD or PTSS related to NICU admission. Anyway - definitely a lot of knowledge gaps in NICU, where we have a big potential for intervention or referring to necessary help (ID 74)!"

Recognizing Birth Trauma. Several providers stated they lacked knowledge on how birth trauma presents and how to recognize it early ($n = 25$). Additionally, providers ($n = 9$) described not knowing how to assess for birth trauma and not having a process or tool to help them do so. One provider stated,

“I think there is a lack of understanding on the part of health care providers on how birth trauma can present and also the fact that the birthing person or their infant's life does not need to be threatened for the individual to experience it as traumatic and demonstrate a trauma response. I received very little training on perinatal mental health issues and posttraumatic stress in midwifery school (ID 17).”

Responding to Birth Trauma. Several providers described having a lack of knowledge in how to respond to birth trauma ($n = 63$). Providers described lacking knowledge in how to debrief with little time and in a way that would not retraumatize people ($n = 25$). Providers also described not having a trauma-informed framework to guide care ($n = 8$). One provider wanted to understand what their role in recognizing and responding to birth trauma is as non-mental health providers. Many providers also identified not knowing where ($n = 21$) and when ($n = 3$) to refer people for appropriate mental health referral options, and how to support continuity of care ($n = 2$). One provider spoke to this, stating

“I also have very few resources to offer once I have identified that they've likely experienced birth trauma. We receive no formal training and need to seek it out. I've been taught to pass it off to other people, but the population I work with already experience barriers in accessing care and having that skillset would be a tremendous asset to providing comprehensive wholistic care (ID 53).”

Three providers also identified not knowing how to respond to colleagues who are

experiencing vicarious birth trauma, including how to debrief, shift organizational perspectives on birth trauma, and help providers get support. Relatedly, one provider stated,

“As an RN, it is easier to leave work at work. In other words, I have witnessed or experienced birth trauma, debriefed it with coworkers and then put it aside when I go home from work. There are probably elements of my mental health impacted by it, but I learned to compartmentalize it. We need to learn to acknowledge it and not let the same patterns keep happening to other patients/clients (ID 6).”

Preventing Birth Trauma. Finally, providers also identified knowledge gaps in how to prevent birth trauma and the impacts on both patients and providers ($n = 6$). One provider wrote,

“I work in Labour and Delivery, including obstetrical triage. Often the source of the trauma is the labour and birth, mitigating the trauma and processing the immediate experience are part of my care for patients, but I would like to work with patients during the time following the birth to help with this processing. In addition, I would like to work with patients before the birth to help them better understand the process of birth, to gain knowledge, and its associated power, to better prepare them for this journey (ID 48).”

What Content Would You Like Covered in the Training?

Providers were also asked how important they felt 18 possible topics were to include in the training. Over half of this sample of providers endorsed all 18 topics regarding how to recognize and respond to birth trauma as very important or critical to include within the training. The highest proportion of providers indicated that the following topics were critical to include: trauma-informed care for birth trauma, equity and diversity concerns related to traumatic birth experiences, case examples demonstrating how CB-PTSD presents, protective factors, screening processes and tools, and diagnostic criteria for CB-PTSD.

Table 5 shows the percentage of providers who endorsed each topic as very important or critical to include in the training, from the highest proportion endorsing the topic as critical or very important to the lowest. No topics were rated as moderately important by the majority of providers and therefore warranting discussion with the dissertation committee to inform the potential pros (e.g., address a missing gap in the training) and cons (e.g., extends the length of the training beyond what providers identified as feasible) of including that topic within the training. No topics were rated as somewhat important or not at all important by the majority of providers, suggesting providers felt all suggested topics should be included.

Additionally, providers were asked an open-ended question about whether there was any other information they thought would be helpful to include in the training. While most said no or did not respond, some providers described additional topics. Seven providers mentioned wanting information on how to support people experiencing birth trauma in different contexts, including those who have experienced systemic racism, intergenerational trauma, birth trauma in a previous pregnancy, and NICU admission. Additionally, six providers mentioned wanting to know more general information regarding birth trauma, including the prevalence, global perspectives, how often providers cause birth trauma, and the impacts of birth trauma. Five providers wrote about wanting to know how certain factors influence birth trauma, including comorbidities, sleep, social health, pain, and drug use. One provider wanted information about actions providers can take to not cause birth trauma. Finally, six providers wanted to know additional information regarding responding to birth trauma, including navigating systems and available resources, the importance of believing patients' subjective experience, and medication safety with birth trauma.

How Much Information Would You Like for Each Topic?

Most providers wanted a moderate amount of information across most topics (13/18 topics; see Table 5). A moderate amount of information was defined as what could be covered in a one-page fact sheet. A lot of information, defined as the equivalent of two pages of detailed information, was desired by the majority of providers on trauma-informed care for birth trauma, case examples demonstrating how CB-PTSD presents, and equity and diversity in the context of traumatic birth experiences. Finally, minimal information about the definition of birth trauma and the effective referral options was desired by most providers. Minimal information was defined as key points or a summary paragraph.

Table 5

Training Content Preferences and Amount of Information Wanted Per Topic

Training topic	% who indicated this is critical or very important to cover	Amount of information preferred by majority	% who endorsed this amount of information
Trauma-informed care	94.00	A lot	37.00
Case examples	89.00	A lot	34.69
Types of birth trauma	88.89	Moderate	39.39
Protective factors	86.87	Moderate	35.00
Risk factors	83.00	Moderate	37.00
Equity and diversity	82.00	A lot	35.00
Definition of birth trauma	81.00	Minimal	52.00
Screening	79.00	Moderate	37.00
Self-help options	79.00	Moderate	50.00
Vicarious trauma	77.78	Moderate	36.00
Effectiveness of tx options	72.73	Minimal	37.00
Diagnostic criteria	71.00	Moderate	48.49
Psychological tx	70.00	Moderate	45.00
Provider's experience	69.70	Moderate	38.00
Advantages and disadvantages of tx options	69.39	Moderate	41.00
Combination of tx	62.63	Moderate	40.00
Pharmacological tx	53.00	Moderate	46.00

What occurs during psych tx	53.00	Moderate	38.00
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Note. Tx = treatment. *N* = 100.

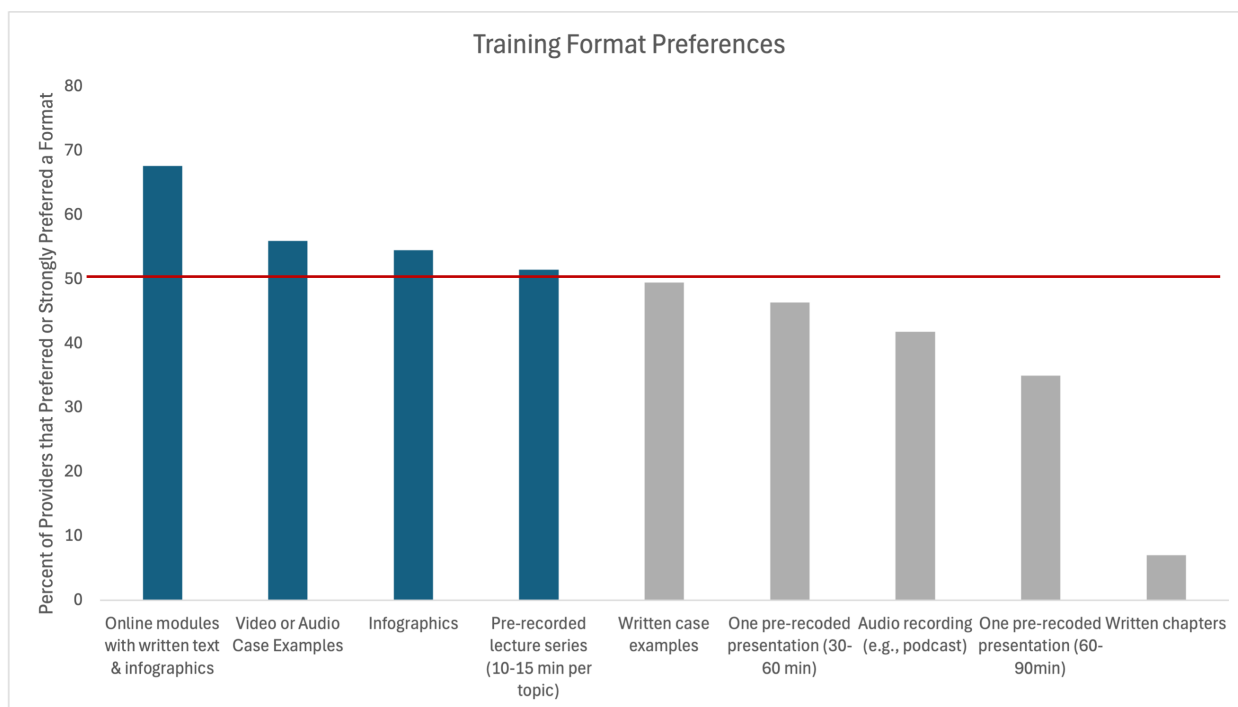
Training Format Preferences

In addition to content, providers were asked six questions to inform the training's format and features and to ensure it is engaging, user-friendly, and feasible. These questions covered which features would make the training engaging or not engaging, which formats they would find helpful for acquiring the knowledge in this training, and the minimum and maximum time they would spend completing it.

Four of the included formats were preferred or strongly preferred by over 50% of the sample: online modules with written text and infographics, video or audio case examples, infographics, and pre-recorded lectures that are 10-15 minutes per topic (see Figure 3). Of the options for presenting the training in a pre-recorded format, providers most preferred a lecture series of 10-15 minutes per topic (51.51%) or one pre-recorded presentation of 30-60 minutes (46.39%). Providers did not prefer a pre-recorded presentation that was 60-90 minutes long. For case examples, more providers preferred written case examples (39.39%) than audio- or video-recorded case examples (23.00%). Finally, when given the option of written chapters, the largest proportion of providers did not prefer this option (37.38%).

Figure 3

Training Format Preferences



Note. $N = 99$. Blue indicates formats that should be included as more than 50% of providers preferred the format. Grey indicates formats where less than 50% preferred and therefore did not need to be included in the training.

In addition to the eight predetermined format options, providers were asked whether they had any additional format suggestions that would be helpful if they were receiving this training. While most providers wrote a response indicating that they did not have additional format suggestions or left this item blank (64%), responses for additional format options were captured under two main themes: (1) interaction, and (2) additional formats. Many providers indicated wanting the training to be interactive ($n = 24$). Subthemes related to interactive formats included having an option for an in-person class or workshop with a group, such as academic half-day or residency education sessions. Some providers also suggested having a live webinar. Other providers wrote about wanting the option for a follow-up question-and-answer or virtual discussion session after completing the online training. One provider mentioned wanting guest speakers on the topic. Finally, providers' responses were also captured under the main theme of wanting additional formats ($n = 10$), including a knowledge test at the end of sections, practice

scenarios, resources for peer-led workshops, posters or handouts for patients, and a workbook to accompany the online training. Providers also indicated that a variety of formats was important for engagement.

What Features Would Make the Training Engaging?

Providers' responses to what would make the training engaging were captured under four main themes: (1) Pacing, (2) Multiple Formats, (3) Summaries, and (4) Interaction with Others. Seventeen providers mentioned features related to the pacing of the training that would make it engaging, including being able to complete the training at their own pace, saving and returning to where you left off, ensuring that the modules were broken into subtopics, ensuring that topics were brief and short, and providing the estimated time it would take to complete each component of the training. Forty-eight providers wrote about the importance of multiple formats and learning methods to keep the training engaging. Eleven providers felt the content would be engaging if a workbook accompanied the online content, along with practice tips, summaries at the end of each module, and supports for providers that the training content may trigger. Additionally, seven providers wrote that summarizing lived experiences or patient stories would make the training engaging. Finally, 13 providers offered suggestions captured under the main theme of interacting with others during or after the training to promote engagement. Suggested interactions with other providers included live workshops, group discussion, offering the option to receive this training in person, and offering a drop-in question period for those who have completed the training.

What Features Would Make the Training Not Engaging?

Providers' responses to what would make the training not engaging were captured under four main themes: (1) Only one format, (2) Theoretical application versus application-based, (3)

Pacing, and (4) Presenter style. Forty-two providers identified that the training would not be engaging if it involved a lot of reading or only one format ($n = 7$). Some providers wrote about how the training would not be engaging if it was too didactic and theoretical rather than focused on practical application ($n = 8$). Relatedly, providers shared that content that was only applicable to one practice, rather than interdisciplinary or too medicalized, would not be engaging ($n = 4$). Many providers also identified that the pacing of the training would impact how engaging it is. Specifically, training that is too long (e.g., greater than 90 minutes or taking multiple weeks; $n = 15$) or presented in one module that is not well divided or summarized ($n = 3$) would not be engaging. Finally, some providers shared that if the training were audio-recorded or involved a presenter, a monotone, falsely positive, or monotonous presenter would make the training not engaging ($n = 5$).

Minimum and Maximum Time to Complete Training

Providers were asked what the maximum and minimum amount of time they felt the training should take to complete. Responses indicated that the average maximum amount of time providers felt the training should take to complete was $M = 5.73$ hours, $SD = 11.37$. The range was 0.17 – 100, with 2 outliers, one who said 100 hours and one who said 48 hours. Given these outliers, the median time was used to indicate the maximum amount of time most providers felt the training should take, which was 3 hours. Responses for the minimum amount of time in hours that the training should take to complete showed an average of $M = 2.97$, $SD = 6.94$. The range was 0.02 – 48 hours. However, there were 3 outliers: one who said 48 hours, one who said 32 hours and one who said 24 hours. Given these outliers, which would affect the mean and range, the median was used to indicate the minimum amount of time providers felt the training should take to complete, which was 1 hour.

Training Access

Finally, providers were asked five questions to inform how this training should be made accessible to them. Providers were asked two closed-ended and two open-ended questions about what would motivate them to complete the training and what would get in the way of completing it. Providers were also asked whether any accessibility considerations should be considered to support them in accessing the training.

Barriers to Access

Of the barriers to accessing training in recognizing and responding to birth trauma and CB-PTSD, not knowing where to access the training ($n = 69$), not having enough time to complete the training ($n = 64$), training being too costly ($n = 60$), and not having the training provided in their education/residency ($n = 42$) were the most endorsed barriers. In open-ended responses, providers listed several barriers to them completing the training that are captured under the main themes of (1) Resources, including a) time, and b) cost; (2) Advertisement of the training including a) having to find it themselves, b) not being well advertised, and c) not being sure how to attend; (3) The training design including a) the format, and b) the content; and (4) Lack of recognition for taking the training a) by supervisors, b) with an incentive, or c) as part of their continuing education.

Resources. Regarding resources, providers described a lack of time and financial coverage as barriers to completing the program. Time was the main barrier to completing the training ($n = 58$), including the training taking too long to complete ($n = 44$), not having enough time within their work schedule to take training ($n = 7$), and not having the flexibility within their schedule to accommodate taking a training at one specific time ($n = 5$). Regarding cost, providers ($n = 27$) described training costs, lack of paid education time to complete the training, lack of

time off to complete the training, and insufficient personal time to complete the training as cost-related barriers.

Training Advertisement. Some providers wrote about how having to find training on their own would be a barrier to them accessing and completing the training ($n = 8$). Further, a few providers identified that not being informed of the training, or the training not being advertised, would be barriers to completing the training. Providers also reported that not knowing how to attend the training, having to travel to access it, or only being able to access it in person were barriers to accessing the training.

Training Format. Regarding format, the training being too long with too many modules, not easy to follow, not interactive, and requiring too much homework were aspects of the format that would pose barriers to providers completing the training ($n = 12$). Concerning content, providers identified that content not addressing cultural differences, being too oversimplified, focusing primarily on natural births as a solution to birth trauma, or being too theoretical and not evidence-based would pose a barrier to completing the training ($n = 5$).

Lack of Recognition. Finally, providers wrote that not receiving recognition for completing the training would be a barrier to completing it ($n = 4$). Recognition included not having support from their manager to complete it, not being provided an incentive to complete it, and not counting it toward accreditation or continuing education.

Motivators to Access

Providers were also asked about their motivators for completing training in this content area. Of the motivators assessed, believing that the training would help their patients ($n = 89$), the training being considered toward continuing education requirements ($n = 83$), their general interest in the training ($n = 76$), and the training being free or low in cost ($n = 74$) were the most

endorsed. In open-ended responses, providers listed several motivators to them completing the training that are captured under the main themes of 1) Internal motivators with subthemes of a) knowing they could make a difference, b) being interested in the topic, and c) being involved in planning the training; 2) External motivators with subthemes of receiving a) recognition, b) incentives, and c) support; and 3) Training Design with subthemes of a) applicable content, b) interactive formats, and c) flexible access.

Internal Motivators. Some providers identified intrinsic motivators for them accessing and completing the training. This included knowing that, by taking the training, they can make a direct difference and provide better care ($n = 10$). Others described their own interest in the topic as motivating them to complete the training ($n = 7$). One person also said they would be motivated to complete the training if they helped plan it ($n = 1$).

External Motivators. Providers identified receiving recognition ($n = 19$), incentives ($n = 28$), or support ($n = 7$) as external motivators for completing the training. Recognition was described as coming from passing quizzes and knowing that their department or profession would recognize their completion of the training through continuing education credit. Some providers said that incentives to complete the training, such as covering the cost or offering “freebies,” would motivate them. Additionally, some described how receiving support from their colleagues and department educators would motivate them.

Training Design. Some providers described how the training design would motivate them to complete the training, specifically the content being relevant to practice ($n = 5$), materials being presented in multiple ways ($n = 7$), and having flexible access to the program ($n = 29$). Providers said that content relevant to practice and real-life cases would motivate them to complete the material. Providers said that being able to interact with the content and other

providers, as well as having tangible takeaways, would make the training engaging, and that flexibility in when, where, and how they complete the training would motivate them to do so. Providers also expressed wanting the flexibility to complete the training at their own pace and in short sessions to accommodate busy workloads. Further, providers wanted flexibility in when they could complete the training, including during and outside work hours, and where they could access it, including from home or through their education organization's Learning Management System or a trusted professional organization.

Accessibility

Providers' explanations of accessibility concerns that should be considered in developing this training were captured under two main themes: (1) Difficulty Focusing, and (2) Inclusivity. Three providers shared that they have difficulty focusing during trainings. They noted that having content presented in multiple ways, dynamic speakers for any included audio, and application-based rather than theoretical content would improve their focus. Seven providers shared that ensuring the training was inclusive through inclusive language, using closed captioning for those with auditory impairments, limiting mandatory writing sections for those with chronic pain, and allowing self-pacing were important to accessibility.

Discussion

This study engaged 100 physicians, nurses, and midwives across Canada in a cross-sectional online needs assessment survey to assess their unmet training needs in recognizing and responding to birth trauma. The findings make an important contribution to the extant literature by elucidating content, format, and access priorities that should foreground training in trauma-informed care for birth trauma and CB-PTSD.

Knowledge Gaps and Desired Content

Providers' responses in expressing their unmet training content needs in this area covered four main themes: 1) Recognizing birth trauma and CB-PTSD, 2) Responding to birth trauma and CB-PTSD, 3) Understanding birth trauma and CB-PTSD, and 4) Preventing birth trauma and CB-PTSD. The four main themes of knowledge gaps expressed by providers were consistent with the best-practice framework outlining how individuals can implement trauma-informed care within clinical settings, the 4R's of Trauma-Informed Care (SAMHAS, 2014). The 4R's capture that individuals can effectively address trauma by realizing what trauma is and its widespread impacts, recognizing the signs and symptoms of trauma, responding using trauma-informed care principles, and resisting re-traumatization by preventing further harm. Implementing the 4R's within hospital-based settings has been found to improve patients' perception of their care and their providers' responsiveness and competence, an important protective factor against CB-PTSD (Grossman et al., 2021; Raja et al., 2015). The extant literature on the benefits of implementing the 4R's, paired with this study's findings on providers' knowledge gaps, suggests that training content should be grounded in the 4R's of trauma-informed care.

The findings also showed that providers preferred a 'moderate' amount of information on most of these topics, suggesting they want key information on each topic. Information on implementing trauma-informed care, case examples, and equity and diversity in the context of birth trauma and CB-PTSD were the only topics that providers expressed wanting 'a lot' of information about. Importantly, knowledge-to-action research suggests that translating knowledge into behaviour requires both knowledge and confidence (Lucero & Chen, 2020). Providers desire for interactive formats supports improving providers knowledge, confidence, and care provision by addressing their lack of training.

Providers' Training Format Preferences

The findings of the present study revealed that perinatal providers preferred to receive content on recognizing and responding to birth trauma and CB-PTSD through multiple interactive modalities. Providers' responses reflected a preference for a mix of formats, including online modules with written text and infographics, with audio/video case examples preferred by the highest proportion of providers. Further, written responses identified four main themes of what would make the training engaging for them: being able to complete the training at their own pace, content presented in multiple formats, access to content summaries, and the ability to interact with the materials and others. Providers' responses also reflected four main themes of what would make the training not engaging for them: content presented in only one format, content that was theoretical rather than practical, not being able to complete the training at their own pace, and a non-engaging presentation style. These findings are supported by research evaluating online training programs in trauma-informed care generally, which have demonstrated that providers attribute their improved knowledge and confidence following a trauma-informed care training to interactive features and practical tools (Powers et al., 2024), along with concise case examples with opportunities to practice applying knowledge to scenarios and receive feedback (Pauls et al., 2024; Precin et al., 2025). Additionally, short online modules with opportunities for self-assessment have been found to improve both knowledge and confidence in providers' ability to apply knowledge (Stewart et al., 2024). The congruence between the extant literature and findings within the present study suggests that training in recognizing and responding to birth trauma should be online, interactive, and offer opportunities to apply knowledge to scenarios and assess knowledge. Beyond these features, the findings elucidated accessibility needs to support providers in receiving training.

Providers' Training Access Preferences

Providers’ responses elucidated barriers to them completing a training program in trauma-informed care for birth trauma. Barriers and facilitators conveyed were captured at the individual and organizational levels, similar to prior research on barriers and facilitators to providers completing continuing education (Chen et al., 2025; Wolderslund et al., 2023). Further, ensuring that a developed training meets a breadth of accessibility needs is critical to ensuring all providers can access this critical information. The findings of the present study indicate that developed training in this area should consider varying learning styles, levels of prior knowledge, pacing needs for those with trauma histories, and accessible formats (e.g., closed captioning, adjustable font sizes, multiple formats) in their design. Ensuring that providers have the resources to complete training (i.e., time, financial coverage, easy and flexible access) and recognition for completing the training (i.e., supported by their management, counting toward continuing education requirements) is key to ensuring that providers can access critical learning to support secondary prevention of birth trauma. While knowledge and confidence drive short-term changes in providers’ care, lasting behaviour change beyond six months requires organizational-level changes, including management support and recognition for completing training (Faisal-E-Alam et al., 2025).

Consolidated Training Recommendations

Providers' training content, format, and access preferences inform recommendations to consider when developing needs-informed training to address their lack of training in recognizing and responding to birth trauma. Recommendations are consolidated in Table 6.

Table 6

Recommendations for Developing Training in Recognizing and Responding to Birth Trauma

Domain	Key Recommendations	Supporting Findings
Training	Prioritize practical content focused on	Highest-priority topics included

Content	trauma-informed care, case examples, birth trauma types, protective/risk factors, and equity/diversity. Use moderate depth overall, with concise foundational definitions and in-depth applied examples.	trauma-informed care (94%), case examples (89%), birth trauma types (89%), protective factors (87%), and equity/diversity (82%). Participants preferred “moderate” information for most topics, but “a lot” for trauma-informed care and case examples.
Clinical Application	Emphasize application-based learning through case scenarios, interdisciplinary examples, and actionable strategies rather than highly theoretical or overly medicalized approaches.	Participants identified practice scenarios and case examples as highly engaging, while overly theoretical and single-discipline approaches were unengaging.
Training Format	Use a multimodal structure combining self-paced online modules with optional live interaction opportunities. Include written text, infographics, short, prerecorded lectures (10–15 min/topic), audio/video case examples.	Participants consistently emphasized the importance of “variety of formats,” flexible online access, and opportunities for interaction and discussion.
Engagement Features	Incorporate summaries, knowledge checks, discussion opportunities, and interactive practice exercises throughout training. Use dynamic presenters and break content into shorter sections.	Engaging features: self-paced delivery, summaries, multiple formats, and live discussion opportunities. Long (>90 min), poorly divided modules reduced engagement.
Training Length	Design training to be concise and modular, ideally completed within approximately 1-3 hours total, divided into shorter segments.	Preferred training duration averaged 2.97–5.73 hours. Participants expressed concerns about trainings that were too lengthy.
Accessibility & Inclusivity	Ensure flexible and inclusive access through closed captioning, self-paced participation, reduced mandatory writing, and accessible language.	Participants highlighted accessibility needs related to chronic pain, trauma backgrounds, attention, and language inclusivity.
Access & Implementation	Reduce barriers by offering low-cost or employer-supported access, clear advertising, continuing education credit, and supervisor recognition or incentives.	Barriers: lack of time, cost, poor advertising, and limited recognition. Motivators: incentives, continuing education, relevance, and organizational support.
Sustainability & Support	Provide supplemental resources such as workbooks, patient handouts and posters, peer-led workshops, and follow-up Q&A or consultation opportunities.	Participants requested practical resources and opportunities for ongoing engagement after training completion.

Limitations and Future Directions

The findings of this work should be considered within the context of their limitations. First, while efforts were made to recruit providers from all provinces and territories within Canada, the resulting sample did not include representation from Newfoundland, Prince Edward Island, or the three Canadian Territories. As such, the unique needs and preferences of providers in these provinces may not be captured in the current findings, and future studies should recruit providers from these locations. Second, the study design relied on recruitment through professional organizations and on providers completing an online survey. Providers who do not frequently engage with the professional organizations used as recruitment sources in this study, or who live and work in locations with limited Internet access, may not be captured. As such, future studies should consider alternative recruitment strategies, such as through hospital management, to capture the voices of those who may not be actively involved with professional organizations. Third, only three types of providers (physicians, nurses, and midwives) were included because the initial training focused on perinatal providers who work in the labour and delivery unit. However, there is a breadth of additional perinatal providers who work with people who may have experienced birth trauma during their pregnancy or postpartum. Future studies should assess unmet training needs and determine whether unique needs should be considered in future program development and evaluation. Further, the study did not determine similarities and differences in training needs across professions, or between students/residents and professionals, though these may elicit important nuances to consider in developing such training. Finally, unmet training needs were assessed only from the perspectives of providers within the current study. However, assessing the perspectives of additional invested parties such as patients who have experienced birth trauma and managers or educators within relevant hospital units may

inform additional content that should be considered within future program development studies.

Next Steps

This study is the first to assess the unmet training needs of Canadian physicians, nurses, and midwives to support them in recognizing and responding to birth trauma. The findings will inform the development of an action map and program logic model to guide the development of an evidence-based training program grounded in providers' expressed needs. As such, the findings in this study stand to address a critical gap in Canadian perinatal providers' education and improve the early detection and access to supports for birth trauma.

Chapter 3: The Development of the Birth Trauma Training Program: A Brief Online Training Program for Canadian Physicians, Nurses, and Midwives

Informed by consolidated recommendations in Study 1, this chapter outlines the following stages of developing *The Birth Trauma Training Program*: (2) defining goals through building a program logic model and action map, (3) developing content through gathering evidence-based information and consulting content experts to inform how best to meet providers' content preferences, and (4) planning implementation by consulting knowledge translation experts to inform how best to meet format and delivery preferences.

Logic Model

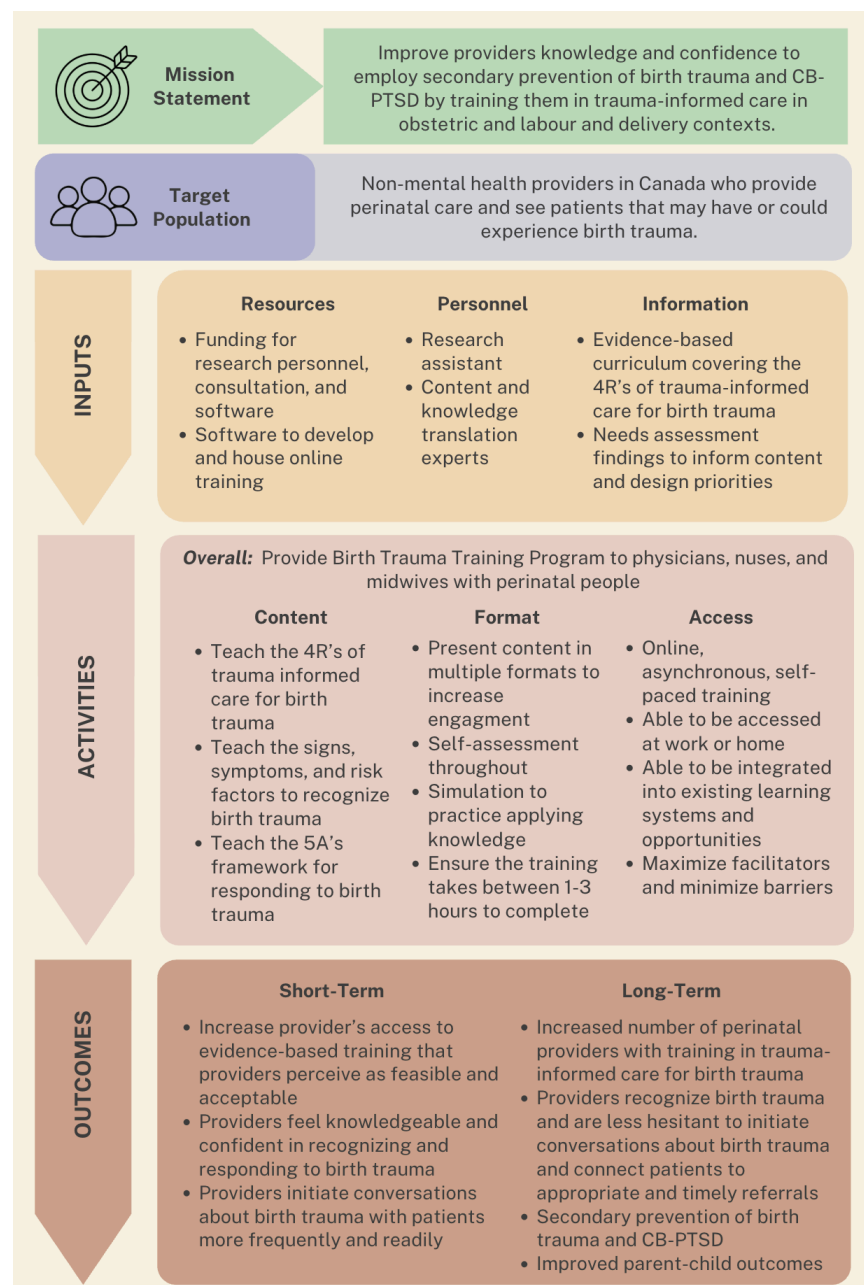
A logic model visually represents a Theory of Change, or in this context, a theory of how the training will result in the desired change of improving physicians, nurses, and midwives knowledge and confidence in recognizing and responding to birth trauma (Alkin & Vo, 2018; Harries et al., 2014; Mertens & Hesse-Biber, 2013; Walker et al., 2025; W.K. Kellogg Foundation, 2017). A Logic Model captures a program's inputs (resources), activities (actions), outputs (immediate products), and outcomes (impacts or change), as seen in Figure 4.

Training tailored to the needs of non-mental health providers was determined to be most appropriate, as medical providers present during labour and delivery serve as the gatekeepers to timely detection and access to appropriate care following birth trauma (Khan, 2015; Tait & Heron, 2010). For training to be evidence-based, it needed to be grounded within the 4R's of trauma-informed care (SAMHSA, 2014). Further, knowledge-to-action literature has shown that changing providers' confidence in applying knowledge requires applying that knowledge (Petzold et al., 2010). As such, the training topics were planned to be presented in multiple formats that promote application through case examples, knowledge checks, self-reflection

prompts, and case simulations. Informed by providers' preferences, the training was designed to be self-guided, take 1–3 hours, and be accessible online via a platform that could be integrated into existing learning management systems. The evidence-based content and design of this program targeted both short-term and long-term training outcomes.

Figure 4

Birth Trauma Training Program Logic Model



Action Map

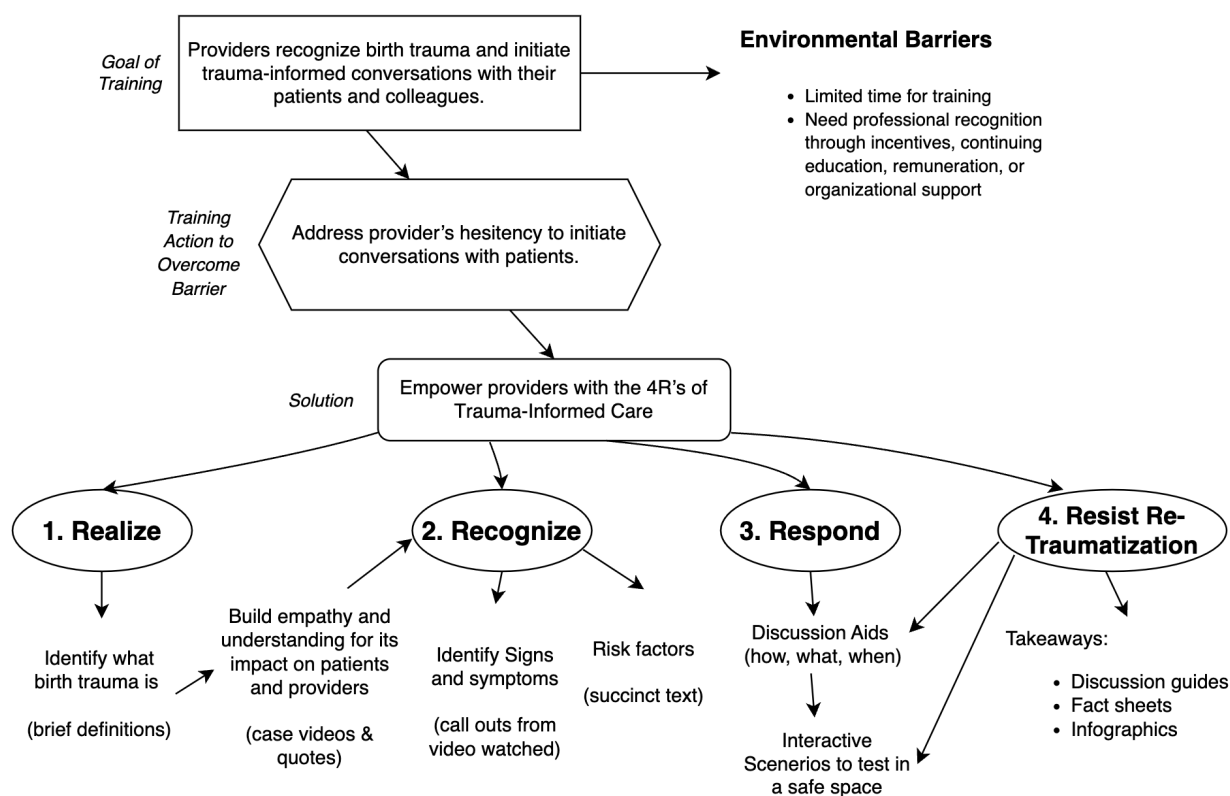
Beyond the Logic Model, training implementation research highlights that an action map can also be developed during the early stages of program development to guide how a program will be developed and delivered to meet the goals identified within the Logic Model (Moore, 2012). The development of an action model, in addition to the program Logic Model, followed the recommendations of the consulted knowledge translation expert from the Centre of Healthcare Innovation (CHI). In line with research on how to develop a program action map, the following questions were considered and captured within the action map: (1) What is the problem? How would we know whether the problem is solved? (2) What do people need to do, and why are they not doing it? (3) How can we help them practice what they need to do? (4) What information must they have to complete the practice survey? The answers to these questions are then visually represented as an action map.

First, this training aims to address the provider-defined problem that they are not asking patients about birth trauma due to their perceived lack of training and uncertainty around what to ask and how to respond within a brief interaction. If solved, interdisciplinary providers would recognize when birth trauma may have occurred and initiate trauma-informed conversations to help connect patients to appropriate resources. Providers are not currently recognizing and responding to birth trauma due to a lack of training, fear of perpetuating harm by saying the wrong thing, and environmental barriers such as training not being provided through their education or organization, cost of training, and lack of remuneration for training. To achieve the program goal, training would need to address these barriers by teaching the 4R's of trauma-informed care, providing opportunities for providers to practice applying their knowledge to reduce fear and increase confidence, and considering environmental barriers in future

sustainability studies. Providers' content and format preferences were linked to inform the actions needed to help providers learn and practice how to recognize and respond to birth trauma. To improve their knowledge of what birth trauma is and its impacts, it was determined that real-world stories would need to be presented. To build their knowledge of how to recognize and respond to birth trauma, content would need to be presented in multiple formats and through an interactive case example, allowing providers to practice and build their confidence. Finally, to help providers resist re-traumatization, it was determined that fact sheets and takeaway exercises should be developed to help providers remember the knowledge gained, how to implement it, and continue their learning. The resulting action map is shown in Figure 5.

Figure 5

Action Map for the Birth Trauma Training Program



Content Development

The Birth Trauma Training Program content was developed through an iterative process. First, content preferences were distilled from the needs assessment and aligned with the extant literature on birth trauma prevalence and presentations, patient experiences of birth trauma, and what should be covered in training for providers in the 4R's of Trauma-Informed Care. Within the needs assessment from Study 1, an item on what content should be included in the training (see item 1 in the Needs Assessment measure; Appendix A) was included. Response options in which the majority (over 50%) of the sample endorsed that the topic was '*very important*' or '*critical*' were included in the training. Items where the majority of responses indicated that a topic is '*moderately important*' were discussed with members of the dissertation committee to inform the potential pros (e.g., address a missing gap in the training) and cons (e.g., extends the length of the training beyond what providers identified as feasible) of including that topic within the training. Topics where committee members felt the pros of including the topics outweighed the cons were included in the training materials. Finally, responses where most of the sample's responses suggested that a topic was '*not at all important*' or '*somewhat important*' were not included in the developed pilot training materials.

Next, four modules were developed, one for each of the 4R's of Trauma-Informed Care (Substance Abuse and Mental Health Services Administration, 2014), while integrating providers' expressed content preferences on knowledge gaps, content preferences, and amount of information desired per topic from the needs assessment in Study 1 (Pierce, In Progress). Once the base of each module was developed, the team created a general overview of the program, including its purpose, an overview of the content, and instructions for providers on how to complete the training. Feedback on each module was gathered from multiple sources. First, the content was reviewed by two experts in perinatal mental health and trauma-informed care for

accuracy in describing birth trauma, prevalence, impact, clinical presentations, and how to provide trauma-informed care. Additionally, a knowledge translation expert from the CHI reviewed the content to ensure it was applicable across professions (physicians, nurses, and midwives), engaging, aligned with providers' expressed content preferences, and written in language accessible across varying levels of education. Content experts reviewed the content twice, while the knowledge translation expert reviewed it iteratively throughout the development phase. Table 7 summarizes the content and time spent on each module as a result of this process.

Table 7*Modules at a Glance*

Module	Module at a Glance
<i>Module 1: Realize</i> (20 minutes to complete)	• Realize the definition and types of birth trauma • Realize patients' and providers' experiences of birth trauma • Realize the prevalence of CB-PTSD and the impact on the birthing person and their family • Realize the prevalence and impact of vicarious trauma on providers and care provision
<i>Module 2: Recognize</i> (22 minutes to complete)	• Recognize the risk factors for birth trauma • Recognize the signs that birth trauma may have occurred • Recognize the symptoms of CB-PTSD • Recognize the signs and symptoms of vicarious trauma
<i>Module 3: Respond</i> (22 minutes to complete + 18 minutes for interactive case)	• Follow the 6 principles of trauma-informed care • Use the 5A's to respond to birth trauma • Identify helpful resources for patients
<i>Module 4: Resist Re-Traumatization</i> (7 minutes to complete)	• Discussion Guide: Continue Learning with your Colleagues • Infographic on Birth Trauma • Guide on Responding to Birth Trauma – includes Screening and Referral Guide • The City Birth Trauma Scale - A Birth Trauma Screening Tool

Note. CB-PTSD stands for childbirth-related post-traumatic stress disorder.

Interactive Case Development

Of the providers who participated in the pan-Canadian needs assessment (Study 1), 89%

indicated that having interactive case examples in the training to help them practice applying the content to real-world situations was critical. For the first iteration of this training program, the team decided to include only one case in consultation with the Centre for Healthcare Innovation (CHI). While one case cannot fully capture the range of presentations providers may encounter, limiting the pilot to one case allowed for feedback on the format and additional desired cases to be collected early in the development process.

To select a case for the pilot study, we consulted two content experts in perinatal mental health and trauma-informed care to identify common and challenging trauma presentations for providers. Drawing on clinical experience and existing literature, we selected a scenario in which a provider enters a recovery room to check on an infant but encounters a parent who feels dismissed and unsupported. This case was chosen for three key reasons. First, research shows that patients often feel their distress is dismissed during and following birth trauma (Reed et al., 2017). Second, addressing this scenario supports autonomy, dignity, and perceived provider support, which are critical in reducing the risk of CB-PTSD (Elmir et al., 2010; Ford & Ayers, 2011; Gokhale et al., 2020; Tham et al., 2010). Third, it targets known barriers to provider response, including hesitancy and uncertainty about how to respond within their scope (Pierce, in progress).

To develop the content for this case, ChatGPT-4o (omni) was first used to create a conversation base. To do this, I started by creating a paragraph that detailed the context of the case and interaction, and how both parties were feeling in the conversation. I then asked ChatGPT to write a script template based on this context. Below is the exact information typed into ChatGPT for this purpose.

“Help me write a script of a conversation between a health care provider and a mother in

a postpartum recovery unit. The context of this conversation is that the health care provider is coming to check on the newborn baby after there were medical complications during labour and delivery that required emergency intervention. The health care provider comes into the room and states they are just there to check on the baby's vitals. The mother says ok. The health care provider asks the mother questions about how the baby is doing, like whether the baby is latching, but does not ask the mother how she is doing. The mother becomes angry. The mother asks the health care provider why they are not asking her about her recovery and how she is doing after her birth experience did not go as planned. The health care provider replies, explaining to the mother that asking about her mental health is outside of their scope of practice and that they are just there to quickly check on how her baby is doing.”

Next, I reviewed the script format and changed the language to reflect accurate symptom presentation based on evidence-based information related to recognizing the context of being within a postpartum recovery unit in the Canadian healthcare system, the interactions that birthing people could have with a provider in this context, and how to recognize birth trauma and respond using the principles of trauma-informed care. Efforts were made to keep the language applicable to multiple healthcare provider roles, as the sample in this study is multidisciplinary to reflect the care context. Once this initial draft of the script was created, the two content experts reviewed the script to ensure that it accurately a) reflected what occurs within postpartum recovery rooms based on their expertise and lived experience, and b) demonstrated signs of birth trauma and the use of the principles of trauma-informed care.

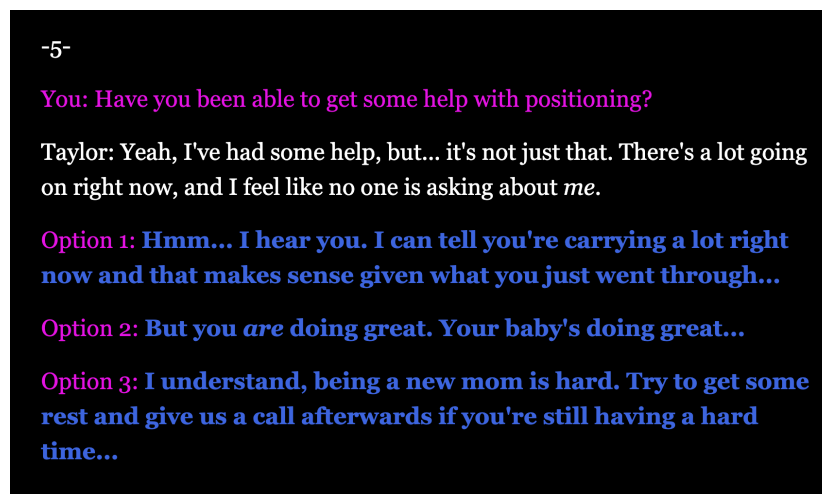
Finally, the initial case script was adapted to reflect three overall scenarios where: (1) the conversation followed the principles of trauma-informed care and the outcome of the interaction

was positive, (2) the principles of trauma-informed care were followed but the patient reacted negatively to something the provider said and the provider needs to re-establish trust, and (3) the principles of trauma-informed care were not followed and the patient left the interaction feeling unheard. The two content experts reviewed these three script templates again for accurate use of the 4R's of trauma-informed care, providers' use of the language included in the script, and the accuracy of client presentations based on clinical and lived experiences. These three script templates were then provided to a knowledge translation expert from the CHI to ensure that the language used was applicable and accessible across professions.

Once the content was developed, Twine software (Kilmas, 2025) was used to build conditional logic into the three scripts in accordance with recommendations from the CHI Knowledge Translation Expert. Twine is a free program that allows people to develop interactive text-based stories. Users first break a story down into interactions (i.e., statement and response options). The story developer can then create branching logic to illustrate the various ways a conversation could go based on the responses that the user chooses (see Image 1 for example).

Image 1

Example of Branching Logic Within Twine



Once all possible conversations within a story were developed, the resulting flowchart was exported as an HTML file and integrated into a program that added features such as imagery and audio to bring the story to life. I developed the flowchart in Twine and had the CHI knowledge translation expert review it to ensure accurate branching logic and that all possible interaction pathways were captured.

Training Format Development

Once the content was determined, a knowledge translation expert in web design and training development from CHI was consulted to ensure the training materials aligned with providers' format and delivery preferences. Over six months, we met regularly to review the training goals and materials, determine the best platform to develop the training, and iteratively develop the format grounded in providers' preferences expressed in Study 1. Through consultation, I decided to use Articulate Rise to develop the training (Articulate Global, LLC, 2026), based on its ability to support web-based, interactive, and accessible training that can be integrated into existing learning management systems. The platform offers multiple content formats (e.g., quizzes, simulations, multimedia) to enhance engagement, supports accessibility (e.g., adjustable text, captions, self-pacing), and allows for embedded evaluation tools such as REDCap surveys. Which formats to include were determined by reviewing providers' responses to format-preference items in Study 1. Formats where over 50% of the sample endorsed that they preferred or strongly preferred were considered important to include in the training.

Once the platform was decided, a Word document detailing the training content was provided to the knowledge translation expert and reviewed collaboratively to create a template for the various formats that could be applied to each section. From this, the knowledge translation expert created the first version of the Birth Trauma Training Program within

Articulate Rise. Four rounds of feedback occurred in which the research assistant and I trialled the training format, reviewed the format and content for congruence with providers' expressed unmet training needs and preferences, and provided detailed revisions to the knowledge translation expert. All meetings occurred via Zoom with the knowledge translation expert, research assistant, and I. The research assistant helped document the questions and responses. A record of each consultation meeting will be kept for transparency around the decisions behind developing this training. The knowledge translation expert was compensated for their time and expertise in developing the training program through my funding from the Partnering for Research Innovation in Mental Health (PRIME) Student Award.

Addressing Accessibility Needs

Additionally, providers' identified accessibility needs were integrated within the program design. Providers in Study 1 identified inclusivity, control over pacing, limiting required writing, and adjustable font sizes as accessibility needs for this training. Regarding inclusivity, providers wanted the training to use inclusive language. Gender-neutral language was used as much as possible, or explanations were provided for the use of gendered language. Additionally, pictures within the training were intentionally chosen to reflect diversity in patients, couples, and providers. Further, a gender-neutral name was chosen for the patient in the interactive case along with a gender-neutral colour scheme throughout the training. To help providers emotionally regulate as needed during the training, especially those with trauma histories, a mindfulness button was developed and included at the top of all pages within the training. When clicked, providers are taken to a separate webpage containing guided videos for four evidence-based mindfulness and grounding exercises proven to support emotion regulation (Wolfe et al., 2024). Additionally, the training was written at a grade 8 reading level to ensure that it was accessible to

providers with varying levels of prior knowledge. Finally, providers could adjust the font size within the training on their individual screens without negatively altering the overall format and flow of the program. This ensured the content could be read by all, including those with visual impairment. An audio recording of the training being read to providers who may be fully visually impaired or who prefer auditory learning could not be made at this stage due to budget constraints; this was noted for future iterations of the training.

Planning Training Access

By developing the Birth Trauma Training Program in Articulate Rise, the program was designed to be accessible via a link that could be embedded into new or existing learning platforms. For example, Articulate Rise allows the program to be downloaded in cmi5 format, the latest standard format used in all major Canadian healthcare centre staff education learning management systems. Additionally, the program could be downloaded into a format that can be uploaded to its own website, outside of an existing learning system. As such, the program was designed to be implemented in a way that is most accessible to perinatal providers in future studies. Some providers expressed wanting control over the pace at which they complete the training so they can work around busy clinical schedules and have time to emotionally regulate if they react to the content based on prior experiences. Because the training was not housed within a specific platform, providers could not create an account to save their progress and return later. However, the program was designed so that this would be the case once implemented into a learning management system or website. Further, providers were given instruction that they could minimize the web browser and return without losing their place.

Summary

Informed by a pan-Canadian needs assessment (Study 1), this chapter illustrates the process of developing the first iteration of *The Birth Trauma Training Program*. The resulting evidence-based, needs-informed program was then prepared for evaluation in a feasibility pilot study to ensure it was feasible and acceptable and to demonstrate preliminary effectiveness in improving knowledge and perceived ability to recognize and respond to birth trauma.

Chapter 4: A Pilot Evaluation of the Feasibility, Acceptability, and Preliminary Effectiveness of the Birth Trauma Training Program

Introduction

Traumatic births are unfortunately common, experienced by up to 50% of females (O'Donovan et al., 2014). Traumatic birth experiences have broadly been categorized as births where there was an actual or perceived threat of serious injury or death, where more medical intervention was required than anticipated, or when the person felt they lost control, dignity, or autonomy (Greenfield et al., 2016; Vignato et al., 2017). The adverse consequences of traumatic birth experiences are pervasive, with 4.7% of those who give birth developing CB-PTSD (Heyne et al., 2022). CB-PTSD is even more prevalent among those with histories of trauma or mental health disorders, who fear childbirth, have complications in pregnancy or labour, or feel unsupported by their care providers, with 16 – 19% of these groups developing CB-PTSD 1 – 6 months postpartum (Feeley et al., 2011; Grekin & O'Hara, 2014; Heyne et al., 2022; Ryding et al., 2003; Shaw et al., 2013; Yildiz et al., 2017). Providers' interactions with patients during the perinatal period profoundly influence females' psychological well-being. Females who perceive inadequate support, acknowledgment, or dialogue from their providers during labour and delivery face 2.5 times higher odds of CB-PTSD (Elmir et al., 2010; Ford & Ayers, 2011; Gokhale et al., 2020; Tham et al., 2010). Since healthcare providers' engagements can either heighten or reduce their patients' risk of CB-PTSD after traumatic births, equipping providers with the knowledge and skills to recognize and respond to birth trauma is vital. However, Canadian physicians, nurses, and midwives lack adequate training to help recognize birth trauma and facilitate early support access to prevent worsening mental health.

A survey of perinatal providers in Canada reported that 57% of perinatal providers ($N =$

435) have no training in postpartum mental health to support timely recognition and referrals (Hicks et al., 2022). Providers' lack of training in perinatal mental health has been identified as a major reason that only 50% of females struggling with perinatal mental health receive a diagnosis and only 15% receive access to appropriate referrals despite up to 25 contacts with their healthcare providers in the perinatal period (Bowen et al., 2012). A needs assessment looking at Canadian providers' training in birth trauma found that, of a sample of 100 physicians, nurses, and midwives, 80% had not received training in recognizing and responding to birth trauma (Pierce, In Progress). This remains true despite the enthusiasm for trauma-informed care within Canadian healthcare, and research demonstrating the effectiveness of training in trauma-informed care in improving providers' ability to recognize and respond to trauma in general populations (Cannon et al., 2020; Goldstein et al., 2018; Piper et al., 2021; Roberts et al., 2019). Further, a qualitative study exploring providers' experiences of working with perinatal trauma elucidated that providers want interdisciplinary training that demonstrates how to manage trauma using trauma-informed care tailored to the perinatal context (Mota et al., n.d.). Given such gaps in Canadian providers' training, the Birth Trauma Training Program was developed.

Birth Trauma Training Program

The Birth Trauma Training Program was developed to address the current problem of non-mental health providers' recognizing birth trauma and initiating trauma-informed conversations to help facilitate timely access to supports. The content, format, and access to this training program were determined by a pan-Canadian needs assessment involving 100 perinatal providers, specifically physicians, nurses, and midwives. The findings from this needs assessment revealed that Canadian providers wanted the training format to be brief (i.e., 1–3 hours) and interactive, with multiple ways of presenting information to keep engagement high.

Providers wanted to access the training flexibly within and outside their work hours, on any device, and complete it at their own pace to accommodate high clinical workloads. Concerning content, providers were presented with content that aligned with the 4R's of trauma-informed care tailored to birth trauma and CB-PTSD and asked about the amount of information they would like per topic. Providers revealed that they wanted information related to each of the 4R's, while wanting the most information to be on how to respond to birth trauma using trauma-informed care, with interactive case examples to allow them to practice implementing their knowledge. From the needs assessment, a one-hour self-guided online training was developed with four modules covering the 4R's of trauma-informed care: the Birth Trauma Training Program. While the training is evidence-based and needs-informed, an evaluation of its impact on providers' knowledge, confidence, and care provision is needed.

Evaluation of Training Programs

A challenge in evaluating training programs is the limited understanding and consensus on what makes training successful and which outcomes predict success. This makes it difficult to determine and establish validated measures to evaluate training programs in comparison to other programs, perpetuating the challenge of understanding what makes a training program effective in creating change in knowledge, attitudes, and behaviour (Beidas & Kendall, 2010; Frank et al., 2020; Herschell et al., 2010). Within the training evaluation literature, two models are widely used to guide the selection of training outcomes: Proctor's Implementation Outcome Framework and Kirkpatrick's Four-Level Training Evaluation Model (Kirkpatrick & Kirkpatrick, 2006; Proctor et al., 2011).

Proctor and colleagues developed the Implementation Outcome Framework, which defines implementation research outcomes under three umbrellas: implementation outcomes,

service outcomes, and client outcomes (Proctor et al., 2011). The framework notes that evaluation outcomes depend on the program's logic model, but recommends evaluating outcomes such as appropriateness, acceptability, and feasibility early to inform whether the intervention is achieving its intended goal (Proctor et al., 2011).

Appropriateness is defined as providers' perceived relevance, usefulness, and practicability of the program in a particular setting, group, and clinical purpose (Proctor et al., 2011). Common indicators of appropriateness for healthcare provider training interventions include the perceived clinical relevance and the degree to which participants intend to change their practice based on the training (Cho et al., 2022; Doi et al., 2025). Across evaluations of trauma-informed care trainings for nurses and midwives, trainings have been deemed appropriate when more than 75% indicated that the intervention was clinically relevant (Alhalal, 2026; Doi et al., 2025) and at least 70% intended to change their practice because of the intervention (Alhalal, 2026; Cain & Held, 2026). For example, in a randomized controlled trial of a trauma-informed care video training program for midwives, 76% of participants agreed that the training content was appropriate (Doi et al., 2025). Taken together, these findings suggest that a trauma-informed care training for health care providers is appropriate when more than 70% agree it is clinically relevant and at least 70% intend to change their practice because of the intervention.

Feasibility is defined as the degree to which a training can be completed as intended within the context in which providers work (Hides et al., 2007; Karsh, 2004; Proctor et al., 2011). Common indicators of feasibility within studies evaluating training interventions for health care providers include recruitment and uptake, training completion, attrition, and perceived manageability of the time commitment (Hides et al., 2007; Mitchell et al., 2022). Previous evaluations have concluded that a training program is feasible for healthcare providers

when there is more than 50% recruitment uptake (Hides et al., 2007; Mitchell et al., 2022), and less than 30% attrition (Doi et al., 2025; Hides et al., 2007). Additionally, Doi and colleagues (2025) concluded their video-based trauma-informed care training for midwives was feasible because 95% of providers completed all training modules and 85% reported that the length of the training was manageable. Another evaluation of an online trauma-informed care training deemed the intervention feasible, based on 65% of providers completing at least 90% of their modules, most within 5–10 hours, which they qualitatively described as manageable (Ross et al., 2026). Taken together, these findings suggest that trauma-informed care training for healthcare providers is feasible when completion rates are more than 70%, attrition rates are less than 30%, and time burden is less than 5–10 hours and qualitatively described as manageable.

Acceptability is defined as providers' satisfaction with aspects of the program, including the content, delivery, and format (Proctor et al., 2011; Sekhon et al., 2017). Evaluations of healthcare provider trainings commonly assess acceptability through participant satisfaction, willingness to recommend the training to others, perceived usefulness, qualitative endorsement, and perceived confidence in applying acquired knowledge and skills (Cho et al., 2022; Mitchell et al., 2022; Alhalal, 2026; Cain & Held, 2026). Existing evaluations of healthcare provider training programs have deemed an intervention acceptable when more than 70% of providers are satisfied with the program (Alhalal, 2026; Mitchell et al., 2022), are willing to recommend the intervention (Mitchell et al., 2022), and perceive the training as useful to their practice (Cho et al., 2022; Mitchell et al., 2022). For example, Doi et al (2025) concluded that their training was acceptable to midwives, as 85% of participants rated the intervention as acceptable and 92% reported they were satisfied with the program. Similarly, Ross et al. (2026) concluded that their training was acceptable to providers, as 59% described the training as meeting their expectations

and 74% indicated that they would recommend it to colleagues. Ross et al. also reported additional qualitative indicators of acceptability, including positive feedback on the clarity, practicality, and ease of use of their trauma-informed care online training (Ross et al., 2026). Additionally, a statistically significant improvement in perceived ability from pre-training to post-training has been used as another indicator of acceptability of a training intervention (Alhalal, 2026; Cain & Held, 2026; Powers et al., 2024). Taken together, these findings suggest that 70% or more of providers endorsed that they were satisfied with the program, perceived it as useful, and would recommend it; along with positive qualitative feedback and a significant change in their perceived abilities, this indicates that trauma-informed care training is acceptable.

Importantly, studies have demonstrated that trainings developed using a bottom-up approach, where training interventions are foregrounded in the perspectives of those the training is for, are more likely to be viewed as acceptable, feasible, and engaging than trainings developed without their input (Cho et al., 2022; Mitchell et al., 2022). Together, these outcomes provide a comprehensive evaluation framework for determining whether a training intervention is suitable for sustained integration into maternity care settings and for supporting improved provider readiness in recognizing and responding to trauma, including CB-PTSD risk.

In addition to Proctor's framework, evaluations of healthcare trainings are commonly grounded in Kirkpatrick's Four-Level Training Evaluation Model (Kirkpatrick & Kirkpatrick, 2006; Légaré et al., 2015; Proctor et al., 2011; Smidt et al., 2009; Tamkin et al., 2002). The model outlines four levels of evaluation: 1) reaction to the training, 2) impact of the training on knowledge, 3) impact of the training on behaviour, and 4) long-term outcomes on patient outcomes or the system. Table 8 provides a detailed description of each evaluation level and how it will be applied to the current study.

Table 8*Kirkpatrick's Four-Level Training Evaluation Model*

Level of Evaluation	Description
Level 1: Reaction	Providers' reactions to the training which is assessed subjectively by asking about their experience completing the training and objectively through gathering feasibility metrics such as attendance and adherence to the training protocol.
Level 2: Learning	Change in knowledge or skill after completing the training. In the proposed study, the assessed change will be whether their CB-PTSD mental health literacy improves after the training.
Level 3: Behaviour	Evaluates whether the training moves beyond the learning phase to how the learning translates into action in practice. This will be assessed by asking health professionals how they believe the training will impact their care provision going forward.
Level 4: Results	Long-term outcomes of the training, such as systemic changes or patient-reported outcomes. This level will not be assessed within the proposed study due to resource limitations, though it will be assessed in a future randomized control trial.

Improving providers' recognition of birth trauma and initiation and implementation of trauma-informed care requires both knowledge and confidence (Huo et al., 2023). As such, evaluations of trauma-informed care training programs' effectiveness should assess impacts on both knowledge and confidence. Within existing evaluations of trauma-informed care trainings, knowledge change has been assessed subjectively (e.g., having providers self-rate their knowledge at multiple time points) and objectively (e.g., asking questions to have providers demonstrate their knowledge and grade their knowledge level (Stewart et al., 2024). Provider's confidence in their ability to recognize and implement trauma-informed care is often evaluated through self-rating (Şimşek & Uğur, 2025). Additionally, feasibility and acceptability must be evaluated to determine whether the training goes beyond evidence-based content and can be completed by all providers within an organization (Kenny et al., 2017). However, an evaluation of the feasibility, acceptability, and effectiveness of a training program for employing trauma-informed care for birth trauma is lacking.

Evaluation of Trauma-Informed Care Training

Looking specifically at trauma-informed care trainings, a review assessing the efficacy of trauma-informed care found that, across 36 studies, educating providers in trauma-informed care improves their awareness, confidence, knowledge, and attitudes toward trauma-informed care (Chin et al., 2024). Further, providers' use of trauma-informed care has been found to reduce mental health consequences of trauma, improve physical health, and improve interactions between patients and their care team (Chin et al., 2024). Additionally, trauma-informed care training has been found to significantly reduce providers' perceived barriers to responding to trauma, such as fear of perpetuating harm and lack of experience (Palfrey et al., 2019).

One study qualitatively evaluated the effectiveness of a trauma-informed care training program across community health centers in Texas (Choi et al., 2024). Following this training, providers' responses reflected greater awareness of trauma generally, a shift in their perspective on how they provide patient care toward a trauma-informed approach, and behavioural change, with providers using trauma-informed language and care more frequently after training (Choi et al., 2024). Additionally, a pilot study evaluated the impact of a brief (1-hour) training in the 4R's of trauma-informed care on health care providers' knowledge of PTSD generally, comfort talking to patients who experienced trauma, and using a trauma-informed approach (Powers et al., 2024). This study found that training in the 4R's significantly increased their ability to realize what PTSD is and its impacts, recognize PTSD, and feel comfortable responding using trauma-informed care. While provider's implementation of trauma-informed care trended upward from pre-training to six months after training, the change in their implementation was not significant. However, this training did not include hands-on methods to practice application of knowledge, which the authors hypothesized may explain the non-significant finding. The findings of this

study demonstrate the critical impacts of training on providers' knowledge, comfort/confidence, and implementation of trauma-informed care generally with patients who have experienced trauma (Powers et al., 2024). While general training in trauma-informed care has shown numerous positive impacts, research highlights that general training in trauma-informed care is not sufficient for providers working with perinatal populations that experience birth trauma.

A review looking at birth and perinatal trauma elucidated that general trauma-informed care training does not always transfer to the obstetric care context (Isobel, 2023). A common example where general trauma-informed care training does not account for the nuances of obstetric care is in responding to emergency complications during pregnancy or labour and delivery, as providers are often in the position of needing to act quickly to save the lives of the patient and their baby. Further, this review highlights how looking at trauma broadly leaves gaps in understanding how pregnancy, labour, postpartum, and obstetric and gynecological care can be experienced as traumatic (Isobel, 2023). One reason birth trauma occurs is when the birthing person feels they have lost autonomy, dignity, or control during labour and delivery. These nuances highlight the need for the Birth Trauma Training Program to be evaluated to inform the feasibility, acceptability, and effectiveness of this evidence-based, needs-informed training in trauma-informed care for birth trauma.

Objectives

Grounded in Proctor and colleagues Implementation Outcome Framework and Kirkpatrick's Four-Level Training Evaluation Model, an open feasibility pilot study was conducted for the *Birth Trauma Training Program* to assess (a) its feasibility and acceptability, (b) preliminary evidence for its effectiveness in improving providers knowledge and perceived ability to recognize and respond to birth trauma and CB-PTSD, and (c) feedback on the materials

to inform refinements. This pilot study is a crucial step in developing a sustainable, accessible, evidence-based and needs-informed training in trauma-informed care for birth trauma.

Study 2 Research Questions

R1. Is this training feasible, acceptable, and appropriate to physicians, nurses, midwives, and students in these fields involved in perinatal care?

R2. How did health professionals' perceived ability and knowledge of how to recognize and respond to birth trauma and CB-PTSD change across three time points (pre-training, post-training, and one month after training)?

Study 2 Hypotheses

H1. Given that the development of this novel training intervention was guided by providers' unmet content, format, and delivery needs, the developed training will be viewed as feasible, acceptable, and appropriate to participating physicians, nurses, midwives, and students

H2. Given that the developed training is evidence-based and needs-informed, it is hypothesized that the training will improve providers' knowledge and perceived ability to recognize and respond to birth trauma and CB-PTSD.

Methods

Participants

A target sample size of $N = 12 - 44$ physicians, nurses, and midwives were recruited. The target sample size was based on prior literature, G*Power analysis, and potential dropout. Prior mixed-methods pilot studies assessing the feasibility of mental health literacy interventions have suggested that a minimum sample of $N = 12$ is sufficient to inform full trials (Julious, 2005; Martinez et al., 2024). A power analysis was conducted to determine the sample size needed to conduct Wilcoxon Signed-Rank tests (matched pairs), allowing change to be assessed in non-

normal distributions. The power analysis was based on Wilcoxon Signed-Rank tests rather than the Friedman test because the research questions warranted assessment of change at each time point rather than whether there was any improvement. Based on a prior systematic review including 144 mental health interventions, digital mental health interventions have been found to have a medium effect ($d = 0.65$, 95% CI 0.59-0.74; $p < .001$) in improving mental health literacy (Yeo et al., 2024). While the present study did not use a standardized questionnaire to assess mental health literacy, providers' competence and beliefs in their ability to recognize and respond to birth trauma while enacting trauma-informed care were assessed. A power analysis was run using an effect size of 0.65. The power analysis indicated that $N = 31$ providers would be sufficient to achieve 80% power. However, given that attrition rates for feasibility trials are generally between 20%–40% (Pearson et al., 2020), we recruited a maximum of 44 providers, making the recruitment *range* $N = 12$ –44.

Inclusionary criteria were providers who: (1) were at least 18 years old; (2) worked as a physician (obstetrician-gynecologists, neonatologists, family doctors, pediatrician), nurse (labour and delivery, postpartum, or public health), midwife, or student providing care during labour and delivery to birthing people who may have experienced birth trauma; (3) were fluent in English; (4) had access to the Internet to partake in the training and complete questionnaires. Providers were ineligible to participate if they (1) did not work with perinatal populations; (2) worked primarily in treating mental health; (3) did not have access to the Internet; (4) were not fluent in English. Providers across Canada were recruited through convenience sampling by inviting those who completed Study 1 and consented to being contacted about related research. Recruitment ran concurrently with data collection until 31 participants completed all study components.

Procedures

After obtaining ethics approval from the University of Manitoba Research Ethics Board, we distributed an email containing a poster and a description of the study. Interested participants who reached out were provided a participant ID and a link to the informed consent form in REDCap (Harris et al., 2009, 2019). Once informed consent was obtained, providers were automatically directed to complete a series of pre-training questionnaires. At the end of the pre-questionnaire, they were provided a link to the online training program housed in Articulate Rise 360 (Articulate Global, LLC, 2026). A link to the post-training questionnaire housed in REDCap was embedded at the end of the training. Finally, one month after completing the post-training questionnaire, participants received a follow-up questionnaire that reassessed their knowledge of how to recognize and respond to birth trauma and CB-PTSD and asked about the impact of the training on their interactions with patients and their care provision. At the end of the one-month follow-up questionnaire, participants were offered a \$20 Amazon electronic gift card. All Study 2 materials and questionnaires are available in Appendix C.

Measures

Questionnaires were administered based on the timeline provided in Table 9.

Table 9

Timeline of Measures Completed by Participants

Measures	T1: Pre-training	T2: Post-training	T3: One-Month After Training
Informed Consent	X		
Demographic Questionnaire	X		
Past Training Experiences	X		
Personal Birth Trauma Experience	X		
Knowledge Check	X	X	X
Feedback: Feasibility, Acceptability, Revisions		X	X

Demographics and Background

The demographic questionnaire assessed providers' age, gender, education, marital

status, occupational status, income, and ethnicity. Demographic items also assessed their field, years of experience working with perinatal populations, work setting, and geographic location. Providers were also asked closed- and open-ended questions about their prior formal (e.g., through a professional organization) and informal (e.g., personal reading, podcasts, etc.) training in birth trauma and CB-PTSD. Finally, providers were asked six closed-ended and open-ended questions to inform their personal experience with birth trauma or vicarious trauma and why they were interested in this training. Questions around providers' personal experiences with birth trauma were important, as they could inhibit their capacity to employ trauma-informed care (Sachdeva et al., 2022; Shorey & Wong, 2022).

Knowledge Check

Provider's knowledge of and perceived ability to recognize and respond to birth trauma and CB-PTSD using trauma-informed care was determined using an 11-item mixed-methods questionnaire developed for this research to reflect the training content. Given prior research highlighting that both change in knowledge and perceived ability are required to influence a desired behaviour change (Huo et al., 2023), questions were developed to assess both domains related to each topic within the training. Quantitative questions assessed the extent to which providers felt able to recognize or respond to birth trauma and CB-PTSD, and qualitative questions asked providers to demonstrate their knowledge by describing the signs, symptoms, risk factors, and use of the principles of trauma-informed care to respond to birth trauma. The knowledge check was completed before, after, and one month after the training, in line with the second level of Kirkpatrick's training evaluation model (Kirkpatrick & Kirkpatrick, 2006).

Feasibility & Acceptability & Appropriateness Data

Feasibility and acceptability were assessed in line with Proctor's Implementation Science

Framework (Fernandez et al., 2019; Proctor et al., 2011). Feasibility quantitative data that were collected and compared to benchmarks from extant literature included completion rates, recruitment uptake, attrition, and time burden for completing the questionnaires and training. Additionally, an open-ended question asked what would be needed to integrate this program into their training or organization.

Acceptability quantitative data that was collected and compared to existing benchmarks included the extent to which the training met provider's expectations (5-point Likert scale ranging from 1 = *far below expectations* to 5 = *significantly exceeds expectations*), how engaging they found the training (5-point Likert scale ranging from 1 = *not at all engaging* to 5 = *completely engaging*), how likely they were to recommend the training (5-point Likert scale ranging from 1 = *not at all likely* to 5 = *extremely likely*), and how useful they perceived the training to be to their clinical practice (5-point Likert scale ranging from 1 = *not at all useful* to 5 = *extremely useful*). Additionally, open-ended questions about their perceptions of the training's strengths, weaknesses, barriers, and facilitators were used to assess how acceptable the training was to providers (Sekhon et al., 2017). Qualitative assessment of the program's acceptability aligned with similar research (Mitchell et al., 2022) and Level 1 of Kirkpatrick's training evaluation model (Kirkpatrick & Kirkpatrick, 2006).

Finally, appropriateness data were also collected quantitatively and qualitatively and compared to existing benchmarks. Quantitatively, appropriateness was assessed by the extent to which providers felt the training was clinically relevant (1 = *yes*, 2 = *no*) and by providers' intent to change their practice as a direct result of the training (1 = *yes*, 2 = *no*).

Post-Questionnaire Feedback Form

An adapted feedback form developed within the Health Information Exchange

Laboratory to gather feedback on a group intervention for perinatal trauma was used to gather feedback on the training intervention (Chou, 2026). Adaptations were informed by Level 1 of Kirkpatrick's training evaluation model, which covers providers' experience completing the training, the extent to which it meets their expectations, and their perception of the training's biggest strengths and weaknesses (Kirkpatrick & Kirkpatrick, 2006). The 21-item mixed-methods questionnaire includes items assessing how helpful providers found the training, its accessibility, and suggested program refinements. Open-ended questions to inform revisions asked whether they had outstanding training needs, how engaging they found the materials, any accessibility concerns they experienced, and suggested revisions to improve the training.

One-month Follow-up Feedback Form

To assess the initial impacts of this training on their care provision and interactions, three open-ended questions were developed in accordance with Kirkpatrick's model to assess Level 3 of training evaluation, which covers early behaviour change because of training (Kirkpatrick & Kirkpatrick, 2006). The three questions asked how the training impacted their interactions with patients and colleagues. Additionally, one question asked about further training needs in this area.

Data Analysis

Quantitative data were analyzed using IBM Corporation's Statistical Package for the Social Sciences (SPSS) Version 31 (IBM Corp., 2024). Data were cleaned following Meade and Craig's guidelines before running descriptive and inferential analyses, as outlined below (Meade & Craig, 2012). There was no missing data in this dataset.

R1. Is the Training Feasible, Acceptable, and Appropriate to Providers?

Feasibility was determined by running descriptives to determine a) recruitment uptake, b) completion rates, c) time burden to complete the study, and d) the proportion of providers that experienced barriers or accessibility concerns. A rich understanding of barriers, facilitators, and accessibility concerns was elucidated through analyzing open-ended responses to three questions using a Reflexive Thematic Analytic approach, as outlined below.

Acceptability was determined by running descriptives to determine the proportion of providers that a) endorsed that the training met their expectations, b) found the training ‘very’ or ‘completely’ engaging, c) were ‘very’ or ‘extremely’ likely to recommend the training, and d) perceived the training as ‘very’ or ‘extremely’ useful to their practice. To further inform acceptability, responses to open-ended questions assessing the biggest strengths and weaknesses of this training were assessed using Reflexive Thematic Analysis. Additionally, a Friedman test was conducted to examine whether provider preferences differed across 10 training formats included in the intervention. Post-hoc Wilcoxon Signed-Rank tests were planned following a significant Friedman test to examine pairwise differences between training formats.

Appropriateness was determined descriptively by determining the proportion of providers that a) endorsed topics as irrelevant to their practice, and b) intended to change their clinical practice because of taking the training. A rich understanding of impacts was obtained by analyzing open-ended responses to an item asking about changes providers made to their care provision between post-training and one month after training, using a Reflexive Thematic Analysis approach as outlined below. All quantitative outcomes regarding feasibility, acceptability, and appropriateness were compared to benchmarks within extant implementation science research and similar pilot studies to interpret the findings.

Finally, providers’ suggested revisions were determined by analyzing their responses to

an open-ended feedback question using a Reflexive Thematic Analytic approach. Additionally, a Friedman test was conducted to determine whether there was a significant difference in perceived usefulness across additional suggested case examples that could be included in the next iteration of the training. Post-hoc Wilcoxon Signed-Rank tests were planned to be conducted following a significant Friedman test to examine pairwise differences between training formats. Finally, providers' qualitative responses to other cases they would want included in future iterations of the training were analyzed using a Reflexive Thematic Approach.

Reflexive Thematic Analysis. Reflexive thematic analysis was considered most appropriate to evaluate the acceptability of the training and suggested revisions, as it is an inductive approach that emphasizes the need for researchers to consider their subjectivity throughout the coding process reflexively (Braun et al., 2022). Such reflexivity was needed to consider how each coder's biases, shaped by their sociodemographic background and lived experiences, influenced their interpretation of providers' feedback.

Reflexive Thematic Analysis was conducted iteratively and collaboratively through six steps. Prior to embarking on these six steps, each coder wrote and discussed any preconceived notions that they held about (a) people who undergo traumatic birth experiences, (b) providers who work with this population, and (c) the training needs of providers in recognizing and responding to birth trauma. As the first step of Reflexive Thematic Analysis, a trained master's-level research assistant and I became familiar with the data by pulling and reading all responses to open-ended questions. Second, each coder independently assigned initial codes to each sentence of data, staying as close to the data as possible. Third, the coders developed main and subthemes collaboratively by grouping initial codes with shared meanings. Fourth, both coders reviewed the main and subthemes to ensure they captured the breadth and nuances of the data by

going back to the original data and ensuring that all data fit within the developed themes. Fifth, both coders met to review the thematic framework of emerging main and subthemes and ensure the themes captured the data in a meaningful way that answered the original research questions. Finally, a written description of the data under each main and subtheme was generated to answer research questions, using de-identified quotes or providers' wording where possible. Rigorous qualitative results were ensured by following Tracy's "big-tent" criteria for excellent qualitative research (Tracy, 2010), as outlined in Study 1 (see Rigour Section). However, unlike Conventional Content Analysis, this approach allowed nuances in data interpretation rather than requiring coders to reach unanimous decisions (Braun et al., 2022).

What Refinements do Providers Want Made to the Developed Training?

Providers were asked suggest how the content, format, and delivery of the training could be improved. These open-ended questions were analyzed through Reflexive Thematic Analysis, as outlined above, and compiled into a table of suggested refinements.

R2. Is the Training Effective in Improving Providers' Perceived Ability and Knowledge of how to Recognize and Respond to Birth Trauma and CB-PTSD?

To test the hypothesis that the training would demonstrate preliminary effectiveness in improving providers' perceived ability to and knowledge in recognizing and responding to birth trauma using a trauma-informed approach, quantitative data were analyzed using Friedman's test and qualitative data were analyzed using a deductive trajectory approach informed by Qualitative Longitudinal Research (QLR) and a Framework Analytic Approach.

Change in Perceived Ability. A Friedman test was run on the quantitative questions within the Knowledge Check questionnaire to determine whether there was a significant change in providers' perceived ability to recognize and respond to birth trauma across pre-, post-, and one-

month after training. The Friedman test was considered most appropriate because items assessing providers' perceived ability were measured ordinally rather than continuously and across three time points. To conduct the Friedman test, data were first checked to ensure they met the appropriate assumptions. The Friedman test assumes that 1) data are reflective of one group measured on three or more time points, 2) data reflect a random sample, 3) the dependent variable is measured at the ordinal level, and 4) the sample is not normally distributed. Because these assumptions were met, a Friedman test was conducted. A Wilcoxon signed-rank test was run post hoc to identify which time points contributed to the significant difference in perceived ability. Multiple comparisons were made across groups, including pre-post, pre-one month, and post-one month. Because multiple comparisons were made, a Bonferroni adjustment was used to ensure that multiple comparisons did not inflate the likelihood of obtaining a significant result.

Change in Knowledge. QLR is a newer qualitative approach that aims to analyze change in qualitative responses over time (Audulv et al., 2022; Bennett et al., 2020; Calman et al., 2013; Plano Clark et al., 2015). Debate remains about whether QLR is most appropriate as an independent analytic approach or should be used to contextualize a traditional qualitative approach. Most recent studies suggest relying on the research question to determine whether it is most appropriate to use QLR as an independent approach or in conjunction with a traditional approach (Audulv et al., 2022). Because the present study aimed to assess change in providers' knowledge over time across pre-determined content areas, a within-subjects, deductive trajectory approach was considered most appropriate.

A trajectory approach allowed assessment of change across time, making it most appropriate for the goal of assessing knowledge change from pre-training to post-training to one month after training. Within the present study, assessing trajectories within subjects was most

appropriate to determine each provider's change in knowledge across time, rather than between subjects. A deductive approach was considered more appropriate than an inductive approach, as it allowed qualitative responses to be evaluated against the predetermined learning objectives and content provided in the training. Given the predetermined learning objectives and the objective to evaluate knowledge gained from the training, qualitative questions within the knowledge check were not designed to elicit a rich understanding of providers' experience, but rather to align with the content provided in the training. The framework analytic approach was considered most appropriate, as it allowed for an a priori framework capturing training content and definitions for levels of knowledge, which could be developed and used to evaluate providers' knowledge gains across participants, time, and themes. Of the existing studies that have employed QLR with a framework analytic approach, few have outlined their analytic process for analyzing change over time. In the present study, I followed the steps of a framework analytic approach and integrated QLR to guide the assessment of within-subject knowledge trajectories. To do this, I first developed a knowledge framework that covered the following main themes: 1) Content, 2) knowledge levels with subthemes, 3) Knowledge trajectories, and 4) Contextualizing knowledge trajectories. Table 10 provides a detailed description of these themes and their subthemes.

Table 10

A Priori Framework Assessing Provider's Knowledge Pre-, Post-, and One-Month Post-Training

Main Theme	Subtheme	Explanation of Subtheme
Content	Symptoms and Signs of Birth Trauma	Re-experiencing (e.g., recurrent unwanted thoughts or memories of the birth)
		Avoidance
		Negative mood and cognitions
		Hyperarousal/hyper-reactivity

Risk Factors	Dissociation (e.g., feeling detached as if in a dream, feeling things are distorted) Before birth: prior mental health challenges, afraid of childbirth, past or current pregnancy-related mental health impacts During birth: complications, interventions, negative interactions, negative emotions, perceived lack of support, dissociation
Trauma-Informed Care	After birth: depression, poor coping and stress Safety = Create a physical and psychological sense of safety within the health care setting and within the patient-provider relationship. Trustworthiness and transparency = Build and maintain trust by being transparent with interpretations of the patient's circumstances and their treatment options. Set clear expectations with patients and families about what and who will be involved in treatments and how care will be provided. Peer support = Include or support ways for people who have experienced birth trauma to connect with those who have had similar experiences to further foster safety, trust and hope. E.g., informing patients of in-person and online peer support groups. Collaboration and mutuality = Approach interactions with patients, families, and colleagues collaboratively to support shared decision-making and honour their wishes. Empowerment, voice and choice = Recognize, validate, and build upon patients', families', and colleagues' strengths and empower them to be active members in determining their support needs. Humility and responsiveness = Recognize the diversity of patients and consider diversity and historical trauma in all aspects of care provision. Also, prioritize recognizing and addressing your own biases and stereotypes based on race, ethnicity, sexual orientation, age, geography, and past experiences.
5A's	1. ASK about birth trauma

		2. ADVISE by normalizing that it is okay to have mixed feelings after a traumatic birth and providing resources 3. ASSESS the severity of mental health challenges 4. ASSIST to identify treatment plans in a collaborative, patient-centred way 5. ARRANGE follow-up appointment to check in and offer additional support
Knowledge Level Grounded in Bloom's Taxonomy	0 = Inaccurate/missing	No mention, vague, incorrect, unsure, I don't know
	1 = Emerging	Lists some correct concepts but also some incorrect
		Some concepts but not explained
		Refers to correct concepts through explanation but does not correctly name the concept
		Some symptoms but no risk factors. Some risk factors but no symptoms.
	2 = Somewhat accurate	Some correct signs, no risk factors, no symptom labels Correctly names multiple but not all signs, symptoms, and risk factors and/or provides brief explanations.
	3 = Accurate and/or applied	All symptoms but no risk factors and vice versa. Most signs, symptoms, and most risk factors explained using correct terminology or examples (missing no more than one or two across signs, symptoms, and risk factors)
Knowledge Trajectories	Knowledge gained and maintained	The provider gained knowledge from pre-post training and maintained their knowledge one-month after training
	Delayed knowledge gain	The provider did not show a knowledge gain from pre-post training, but did show knowledge gain from pre-one month after training
	Knowledge gained but not maintained	The provider gained knowledge from pre-post training but did not maintain their knowledge gain one month after the training
	Knowledge not gained	The provider did not show a change in knowledge from pre-post training or pre-one month after training
Contextualizing Knowledge Trajectories	Concepts Maintained	What concepts were maintained across time
	Concepts Forgotten	What concepts were forgotten/lost across time
	Concepts Not	What concepts were not learned across time

learned Complexity	Change in language (e.g., more use of language from training) and application of concepts
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An a priori main theme for recognizing and responding to birth trauma was developed by summarizing training content. For this training, a 4-point Likert scale grounded in Bloom's Taxonomy was developed to provide an a priori framework for categorizing providers' knowledge level at each time point (Anderson, 2014; Anderson et al., 2001; Krathwohl, 2002), as detailed in Table 10. Qualitative longitudinal research emphasizes analyzing both responses at each time point and changes over time. Prior studies also highlight that change should reflect not only content (e.g., fewer misconceptions) but also complexity (e.g., more accurate use of technical terms, appropriate application of concepts; Audulv et al., 2022). To address this, we included a subtheme capturing changes in complexity.

After developing the a priori framework, the two coders familiarized themselves with the data by reading all pre-training, post-training, and one-month follow-up responses. Next, each coder independently gave initial codes to label or paraphrase the point conveyed within each provider's response at each time point. Next, a knowledge level was assigned to their response at each time point. After initial content coding and knowledge-level assignment, initial codes for each subtheme were integrated to expand the framework and accurately capture the data. The knowledge trajectory was also pulled by confirming the knowledge level assigned at each time point (e.g., 1(pre-training) → 3(post-training) → 3(one-month after training)).

Additionally, to enrich the understanding of each provider's knowledge trajectory across the three time points, coders compared providers' responses at each time point. They coded for changes in concepts (e.g., new concepts appearing, misconceptions disappearing, less uncertainty), increased complexity, and more appropriate real-world application of concepts over

time. This process was followed iteratively, allowing for the framework to be applied to each participant's responses and expanded upon throughout the coding process. Finally, tables representing the knowledge trajectories were developed for a) change in knowledge of how to recognize birth trauma and b) change in how to respond to birth trauma.

To understand change over time, quantitative representations of knowledge trajectories (i.e., the knowledge level assigned at each time point and the number of providers that endorsed each knowledge trajectory) were integrated with qualitative results (i.e., quotes from each time point and codes regarding change in more accurate content, less misconceptions) through a weaving narrative approach to provide a rich explanation of how providers' knowledge changed over time (Fetters et al., 2013). Further, qualitative findings were integrated with quantitative findings regarding change in provider's perceived ability to recognize and respond to birth trauma in the results section using a weaving narrative approach. Across all stages of analysis, rigorous results were ensured by following Tracy's "big-tent" criteria for excellent qualitative research (Tracy, 2010), as outlined in Study 1 (see Rigour section). Additionally, inter-rater reliability for assigned knowledge levels was determined by comparing each coder's independent coding books once they had finished analyzing the data.

Results

The results inform a) participants' demographics and background, b) the feasibility, acceptability, and appropriateness of the training, and c) the preliminary effectiveness of the training. Supplementary quotes supporting results can be found in Appendix B, Table 2.

Demographics and Background

A total of 44 participants enrolled in the pilot study, of which 29.55% were lost to attrition (see Figure 6). The final sample was $N = 31$ providers, which aligned with the target

sample (see Figure 7 for geographic distribution). Most of this sample identified as white (70.97%) cisgendered women (93.55%), and were between the ages of 26 and 54 ($M = 37.71$, $SD = 8.4$ years). Most had a bachelor's degree (64.52%) and were working full-time (61.29%) in urban (80.65%) hospital settings (67.74%). Most providers were nurses (54.83%) and had worked 1–30 years ($M = 10.77$, $SD = 8.59$). See Table 11 for additional demographics.

Figure 6

Attrition Across all Study Timepoints

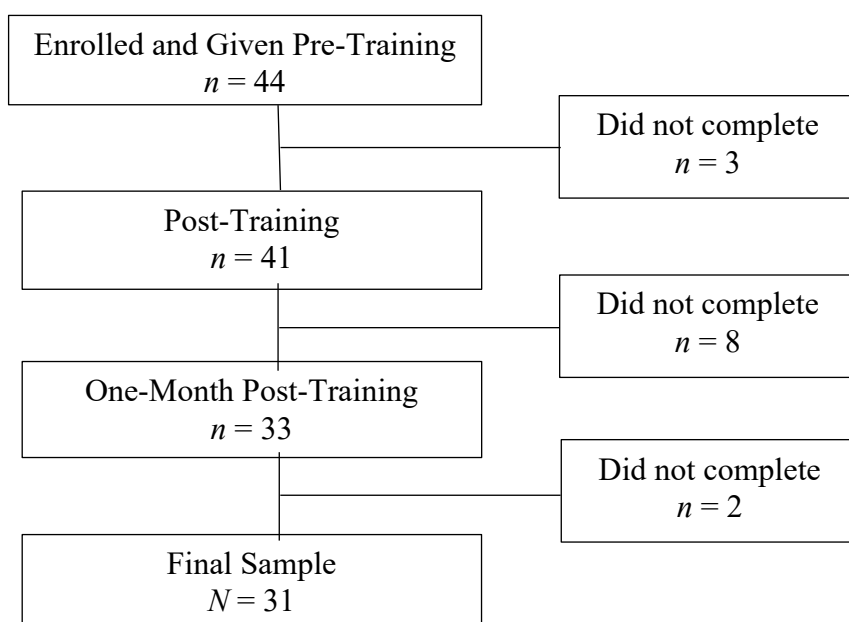
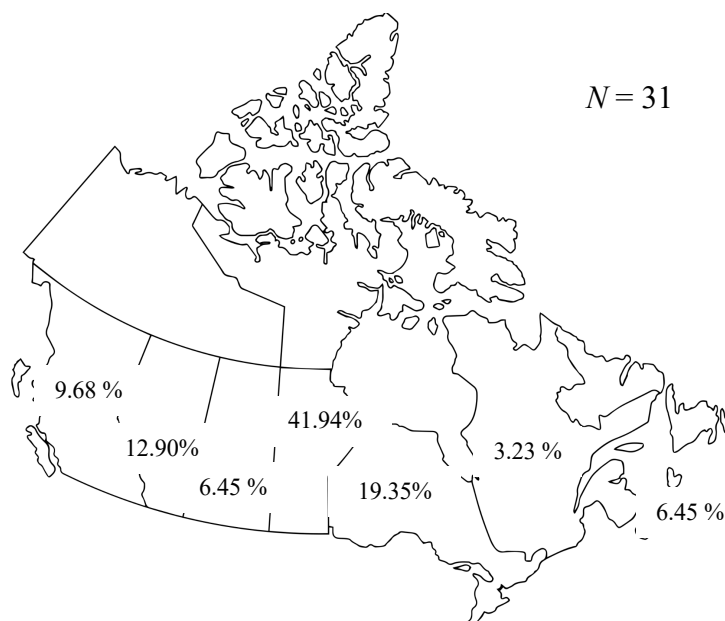


Figure 7

Distribution of Participating Study 2 Providers Across Canada



Personal Birth Trauma Experience

Of this sample, 38.71% of providers endorsed having personally experienced birth trauma and 29.03% endorsed receiving therapy for their personal experience with birth trauma. Concerningly, 61.29% of providers endorsed having experienced vicarious trauma. However, 74.19% endorsed that their workplace creates space to debrief or consult to manage this.

Table 11

Demographics Table

Demographic Variable	<i>n</i> (%)
Age (years)	$M = 37.71$, $SD = 8.4$, $Range = 26 - 54$
Gender	
Woman	29 (93.55)
Man	2 (6.45)
Biological sex	
Female	28 (90.33)
Male	3 (9.68)
Race	
White	28 (90.32)
Indigenous	4 (12.90)
East Asian	3 (9.68)
Other	1 (3.23)
Prefer not to answer	1 (3.23)
Profession	
Nurse	17 (54.38)

Midwife	4 (12.90)
Neonatologist	3 (9.68)
Family Doctor	2 (6.45)
Midwife Student	2 (6.45)
OBGYN Resident	2 (6.45)
OBGYN	1 (3.23)
Length of time in Profession (years)	$M = 10.77, SD = 8.59, Range = 1 - 30$
Education Level	
Bachelor's Degree	20 (64.52)
Professional Degree	7 (22.58)
Master's	2 (6.45)
PhD	1 (3.23)
College/Technical Degree	1 (3.23)
Employment Status	
Full Time	19 (61.29)
Part Time	7 (22.58)
On leave	5 (16.13)
Urban or Rural Work Setting	
Urban	25 (80.65)
Rural	6 (19.36)
Work Setting	
Hospital	21 (67.74)
Community	9 (29.03)
Private	1 (3.23)

Note. $N = 31$.

Prior Training

Most providers endorsed being moderately comfortable discussing mental health with their patients (58.07%) and were somewhat likely to debrief after witnessing a patient's traumatic birth (41.94%). Most endorsed receiving formal training in mental health broadly (61.13%). Of note, 87.09% of providers had no formal training in birth trauma. When asked about barriers to accessing training in recognizing and responding to birth trauma, training not being provided in their education or residency was the most endorsed barrier (61.29%), followed by being unsure of where to access training (51.61%). See Table 12 for additional information.

Table 12

Prior Training Experience

Variable	<i>n</i> (%)
Formal Training in Mental Health	
Mental Health Broadly	19 (61.29)
Depression	15 (48.39)
Anxiety	14 (45.16)
Anger	10 (32.26)
Borderline Personality Disorder	5 (16.13)
Bipolar Disorder	6 (19.35)
Substance Use	16 (51.61)
Other	6 (19.35)
Formal Training in Birth Trauma (training or professional organization)	
Yes	3 (9.68)
No	27 (87.09)
Unsure	1 (3.23)
Barriers to Accessing Formal Training	
Not enough time	2 (6.45)
Not provided in my education/residency	19 (61.29)
Too costly	2 (6.45)
Unsure where to access	16 (51.61)
Unsure of the benefits	1 (3.23)
Not interested	0
Do not believe that I need training	0
Other	3 (9.68)
Facilitators to Accessing Formal Training	
Believe the training would help my patients	3 (9.68)
Considered Continuing Education (CE)	3 (9.68)
Generally interested	3 (9.68)
Low cost or free	0
Referred by professional organization	0
Referred by colleagues	0
Other	1 (3.23)
Informal Training in Birth Trauma	
Professional Readings	25 (80.65)
Podcasts	14 (45.16)
Consultation	8 (25.81)
Resources in Trauma-Informed Care	20 (64.52)
Other	5 (16.13)
Prefer not to answer	1 (3.23)

Note. *N* = 31.

Why are you Interested in Receiving This Training?

When asked why providers were interested in receiving this training, most endorsed both personal and professional reasons (67.74%), which was echoed in their responses to open-ended

items. Providers wrote about how they have experienced birth trauma or vicarious birth trauma and wanted training to improve care for all involved. One provider wrote, “training strengthens the team and lessens burnout – huge gap in the hospital setting (ID 9).” Providers' professional reasons for wanting this training included that they recognized the role they can play in contributing to traumatic birth experiences and mitigating the impacts of birth trauma, and they wanted to support families better. One provider shared,

“Professionally, I've seen clients experience and discuss their birth trauma over the years and want to be able to offer a more academic and evidence-based approach to supporting them. This training will guide me in the best approach. Personally, I've talked with family and friends as they've experienced birth trauma and tried to help them navigate supports. I had a very normal and straightforward homebirth. However, I also felt trauma when I thought I shouldn't have because it was so normal. I look forward to learning more about the types and management of birth trauma for all these reasons (ID 5).”

R1. Is the Training Feasible, Acceptable, and Appropriate to Providers?

Given that the training is evidence-based and needs-informed, it was hypothesized that the training program would be feasible and acceptable to providers. Feasibility and acceptability were determined by comparing findings to benchmarks established in the extant implementation science literature and similar pilot studies (see Table 13 for summary). Overall, the training was acceptable, feasible, and appropriate for perinatal physicians, nurses, and midwives.

Feasibility

Feasibility was determined by comparing findings on recruitment uptake, completion rates, attrition, and time burden with findings from similar research. Workflow integration, barriers and facilitators to completing training, and accessibility concerns were also assessed.

Recruitment, Completion, and Attrition Rates. Participants were recruited from the Study 1 sample. Of the 100 providers who completed Study 1, 75 endorsed that they would like to be contacted about future related studies. Of these, 44 responded and enrolled in the study, meaning recruitment uptake was 58.67%, meeting the established benchmark of $\geq 50\%$ (Hides et al., 2007; Mitchell et al., 2022). Of the 44 enrolled providers, 31 (70.45%) completed all study components, meeting the benchmark of $\geq 70\%$ completion (Doi et al., 2025; Ross et al., 2026). Further, 29.55% of providers were lost to attrition, meeting the benchmark for attrition of $\leq 30\%$ (Doi et al., 2025; Hides et al., 2007).

Time Burden. Most (51.61%) providers self-reported taking 40–60 minutes to complete the training, meeting the benchmark for time burden of less than 5–10 hours (Ross et al., 2026). Most (74.19%) endorsed that the length of the program felt sufficient. Qualitatively, many providers commented that the training struck a balance between providing sufficient information and not requiring a long-term commitment that would not be feasible with providers' clinical caseloads. One provider shared, “I think that for people in birth work, there's often limited time to complete courses. This was really palatable and easily completed in under an hour while also offering comprehensive information (ID 2).” While some shared that they wanted more information, they felt this would be best covered with additional cases and learning formats being included in future renditions of the training.

Workflow Integration Feasibility. Providers completed the training in multiple sittings (51.61%) at home (70.97%). Providers said that informing directors, management, and educators of the importance of this training and its impacts on care provision and staff is necessary for successful implementation. Providers also suggested implementing this training within existing learning opportunities and systems to increase access during work hours.

Table 13*Summary of Feasibility, Acceptability, and Appropriateness Findings Compared to Benchmarks*

Outcome Domain & Indicators	Benchmark	Quantitative Findings	Qualitative Findings	Interpretation
Feasibility				
Recruitment uptake	≥50% (Hides et al., 2007; Mitchell et al., 2022)	75/100 Study 1 providers indicated interest in future studies; 44 enrolled, yielding a recruitment uptake of 58.67%	Participants noted willingness to engage in follow-up research when content was relevant and clinically meaningful	Benchmark met
Completion rates	≥65% (Doi et al., 2025; Ross et al., 2026)	70.45% completed all study components (training and all questionnaires)	Participants generally described the training as manageable and feasible to complete within professional constraints	Benchmark met
Attrition	≤30% (Doi et al., 2025; Hides et al., 2007)	29.55% attrition across all time points	Attrition primarily attributed to competing clinical demands and time constraints	Benchmark met
Time burden	≤5–10 hours total (Ross et al., 2026)	51.61% completed training in 40–60 minutes; 74.19% reported training length was sufficient	Training was described as concise, appropriately paced, and feasible within clinical workload	Benchmark met
Workflow integration feasibility	Ability to integrate into training / organization	NA	<i>Organizational Changes:</i> Educate management on importance of training and integrate into existing training	Implementation is feasible but dependent on organizational support and integration into existing training
Barriers, facilitators and accessibility	Minimal barriers and accessibility concerns (Ross et	<i>Barriers:</i> 25.81% endorsed <i>Accessibility concerns:</i>	<i>Barriers:</i> Time demands, hard to complete on a cellphone, unable to close and return where they left off	Low levels of reported barriers and accessibility concerns

concerns	al., 2026)	12.90% endorsed	<i>Facilitators:</i> Flexibility in where and how to complete training, counting as continuing education <i>Accessibility:</i> Audio desired for those with attention or visual impairments	suggest feasibility, with findings highlighting specific modifiable areas for improvement
Acceptability				
Satisfaction / met expectations	≥70% (Alhalal, 2026; Cain & Held, 2026; Doi et al., 2025; Ross et al., 2026)	96.78% endorsed that the training met expectations	Participants described the training as informative, relevant, and aligned with clinical needs	Benchmark met
How engaging was training	≥70% (Ross et al., 2026)	64.52% found the training very or completely engaging	<i>Strengths:</i> relevance and clarity; <i>Weakness:</i> desire for greater interactivity and depth in some areas	Below benchmark
Willingness to recommend	≥70% (Mitchell et al., 2022; Ross et al., 2026)	74.20% very or extremely likely to recommend the training	Participants indicated they would recommend the training due to its relevance and applicability	Benchmark met
Perceived usefulness	≥70% (Cho et al., 2022; Mitchell et al., 2022)	80.64% perceived the training as useful to their practice	Participants described improved understanding of trauma-informed care and applicability to clinical interactions	Benchmark met
Appropriateness				
Clinical relevance	≥75% (Alhalal, 2026; Cain & Held, 2026; Doi et al., 2025)	93.55% reported no topics felt irrelevant to their practice	Participants emphasized strong relevance to real-world clinical practice	Benchmark met
Intent to change practice	≥70% (Alhalal, 2026; Cain & Held, 2026; Doi et al., 2025)	74.19% endorsed intent to make direct changes to care provision following training	At follow-up, participants described specific changes to communication, sensitivity, and trauma-informed practice	Benchmark met

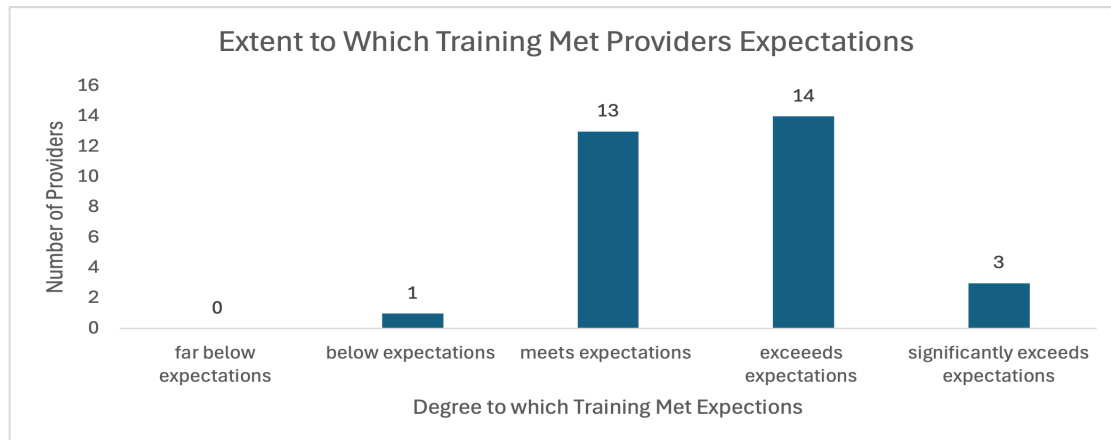
Barriers, Facilitators, and Accessibility Concerns. Most providers did not endorse experiencing accessibility concerns during the training (87.10%). Of those who did, audio was the accessibility feature most requested. Most providers did not endorse experiencing barriers to completing the training (74.19%). Those who did endorse barriers elaborated that personal issues (e.g., being a new mom, their own availability, having a busy work schedule, and being someone who would benefit from daily reminders), that the program was hard for them to complete on their cellphone, and that they were unable to close the program and return to where they left off at a future time were barriers. Providers identified flexibility in where and how they completed the training, the ease of completing the program, and their personal interest in the topic as facilitators of completion. Providers also described personal factors such as being able to count the training toward continuing education as facilitating their completion of the program. This echoes quantitative findings that most providers wanted a continuing education certificate after completing the training (93.55%).

Acceptability

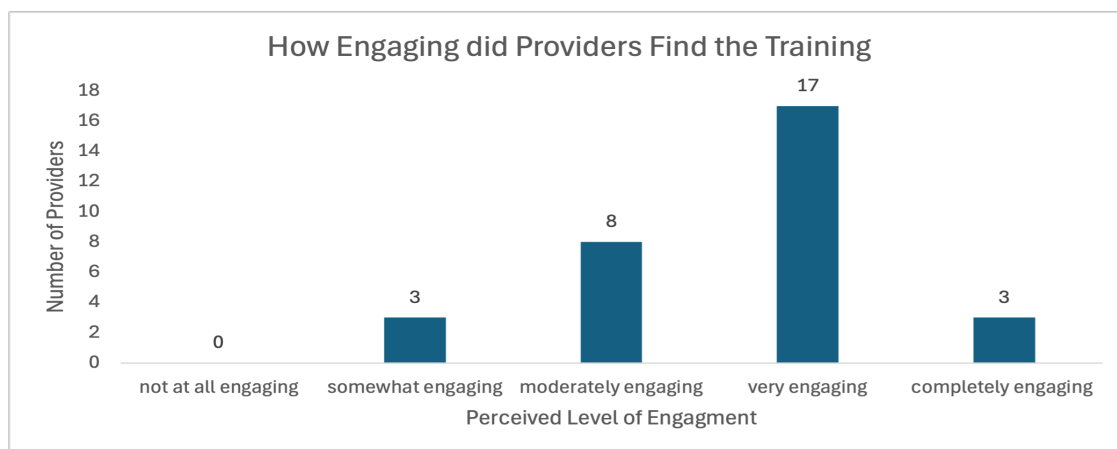
In line with implementation science, acceptability was determined by comparing findings on the extent to which the training met expectations, how engaging they found the training, their willingness to recommend the training to colleagues, and how useful they perceived the training to be to their practice with findings from similar evaluation studies.

Satisfaction. Figure 8 shows providers' responses regarding the extent to which the training met their expectations. Overall, 96.77% of providers said the training met, exceeded, or significantly exceeded their expectations, meeting the benchmark of $\geq 70\%$ (Alhalal, 2026; Cain & Held, 2026; Doi et al., 2025; Ross et al., 2026).

Figure 8

Extent to Which Training Met Providers Expectations

Perception of How Engaging the Training Was. Providers' satisfaction was also determined by how engaging they found the training, as this was identified as a key preference that supports providers in completing such training. Figure 9 captures providers' responses on how engaging they found the training. Overall, 20 providers said the training was very or completely engaging (64.52%), which falls below the benchmark ($\geq 70\%$) for acceptable engagement (Ross et al., 2026).

Figure 9*Providers Responses to How Engaging they Found the Training*

Biggest Strength of the Training. To elicit a rich understanding of what providers found

acceptable or unacceptable about the training's design, providers were asked what they perceived as the training's biggest strength. Descriptions were captured under four main themes: 1) The format; 2) Length; 3) Informative Content; and 4) Overall flow.

Many providers said the training's format was the program's biggest strength. Many providers highlighted the program's interactivity as a major strength, along with the brief opportunities to assess their knowledge at the end of each module. Some providers shared that opportunities for self-reflection, mindfulness exercises, and the ability to move through the training at their own pace were the biggest strengths. Providers also shared that the program's ease of access and online availability were among its biggest strengths.

The length of the training also captured multiple providers' responses. Many wrote that the program was "short and to the point," "succinct," "not repetitive," and did not have an "overwhelming amount of information" as the biggest strength. Others identified the program's brevity as its biggest strength.

Several providers identified aspects of the program's content as the biggest strength, including the informative topics, the summaries, the patient-centred focus, and applicability to everyday practice. Many providers mentioned specific topics as informative and the biggest strength of the training, including the "interactive case," "captivating stories of trauma," and "acronyms." Some providers shared that the summaries were the program's biggest strength. Some providers shared that the content being easy to understand and patient-centred was the program's biggest strength. Providers also said the biggest strength was that the content was easy to implement in everyday practice.

Lastly, many providers identified the overall flow and organization of the training as its biggest strength. Regarding the flow of modules, providers wrote that they found it easy to

“digest,” “understand,” “follow,” “navigate,” and “complete.” One provider shared that they felt the biggest strength was that the training was “split into different sections that weren’t too long – could complete a section and stop when your attention drifted (ID 32).”

Biggest Weakness of the Training. Providers were asked what they perceived as the biggest weakness of the training program. Providers' responses were captured under the following main themes: 1) The online system; 2) Formatting; 3) More Information; and 4) None.

Regarding the online system, one provider shared that the biggest weakness was that they could not stop midway and return to where they left off unless they kept the browser open. Two other providers informed that the platform lagged and the scenario was challenging on a cellphone. Concerning formatting, one provider shared that the font was too small to read. Two shared that they found some features confusing and could be clarified, including numbers in the matching games and tracking of the percent of training they had completed. Finally, one provider shared that they thought the training could be more interactive, though they did not clarify how.

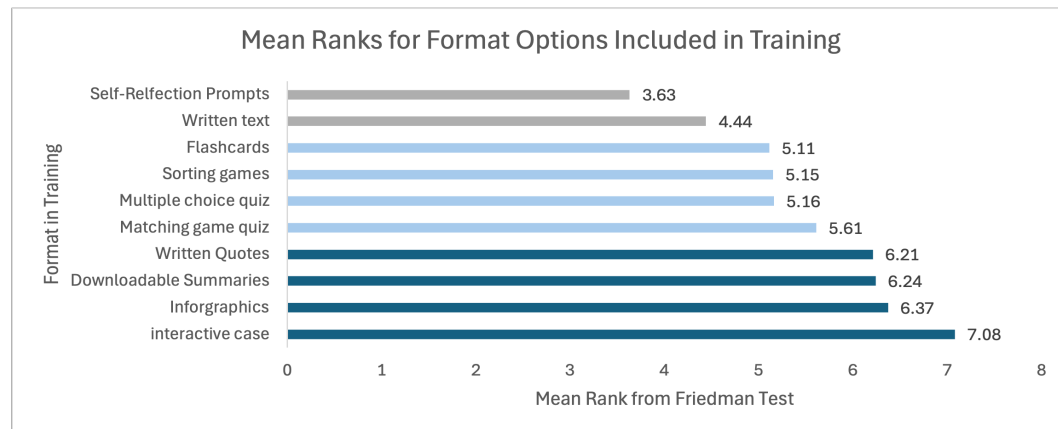
Regarding the content, some providers shared that they wanted more real-life stories and examples throughout the training to demonstrate the concepts and ideas. One provider wanted more challenging scenarios, saying “I liked scenario but found I could easily guess correct responses so I think it could be more challenging (ID 18).” Further, one provider wanted more information and conversation examples in Module 4 on how to resist re-traumatization. Lastly, some providers said that they felt there was no weakness and used this question to write about how they felt the training should be standard of practice prenatally, intrapartum, and postpartum.

Format Preferences. A Friedman test was conducted to examine whether provider preferences differed across 10 training formats included in the intervention. Results indicated a statistically significant difference in format preferences, $\chi^2(9) = 47.20, p < .001$. Mean rank

scores indicated that interactive case-based content was the most preferred format, followed by infographics, downloadable summaries, and written quotes. Self-reflection prompts and written text were the least preferred formats. Figure 10 shows the mean rank scores.

Figure 10

Mean Ranks Indicating Providers Format Preferences



Note. Dark blue = highest mean ranked formats. Light blue = middle mean ranked formats. Grey = lowest mean ranked formats.

Post-hoc Wilcoxon signed-rank tests were conducted following a significant Friedman test to examine pairwise differences between training formats. Given the large number of possible comparisons ($k = 10$; 45 pairwise tests), analyses were conducted only between the highest- and lowest-ranked formats to reduce Type I error inflation and improve interpretability. Specifically, applied formats (interactive case, infographics, downloadable summaries, written quotes) were compared with lower-rated formats (written text and self-reflection prompts). A Bonferroni correction was applied to control for multiple comparisons ($\alpha = .00625$).

Wilcoxon Signed-Rank tests indicated that interactive case-based learning was rated significantly higher than both written text and self-reflection prompts (all p 's $\leq .002$; see Table 14). Similar patterns were observed for infographics, downloadable summaries, and written quotes, which were all preferred over written text and self-reflection prompts. Interestingly, self-

reflection prompts had the lowest preference in these comparisons. All comparisons remained significant after Bonferroni correction ($\alpha = .006$).

Table 14

Wilcoxon Signed-Rank Test Results for Providers Format Preferences

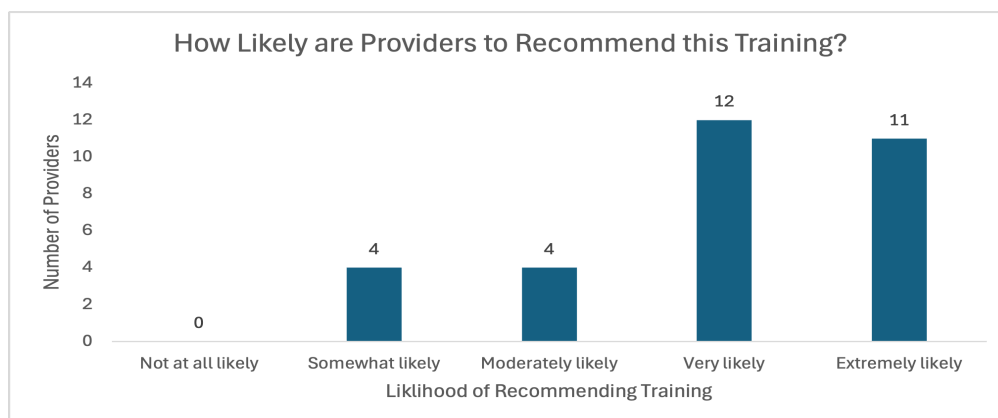
Comparison	Z	p-value
Interactive case vs Written text	-3.15	.002
Interactive case vs Self-reflection	-3.57	<.001
Infographics vs Written text	-2.92	.004
Infographics vs Self-reflection	-3.91	<.001
Downloadable summaries vs Written text	-2.78	.005
Downloadable summaries vs Self-reflection	-3.42	<.001
Written quotes vs Written text	-2.72	.006
Written quotes vs Self-reflection	-3.29	.001

Note. Bonferroni $\alpha = 0.006$.

Willingness to Recommend. Figure 11 captures providers' responses on how likely they are to recommend the training to their colleagues. Overall, 74.19% of providers said that they were 'very' or 'extremely likely' to recommend the training to their colleagues, meeting the benchmark of $\geq 70\%$ from similar studies (Mitchell et al., 2022; Ross et al., 2026).

Figure 11

Provider's Likeliness to Recommend this Training to Colleagues

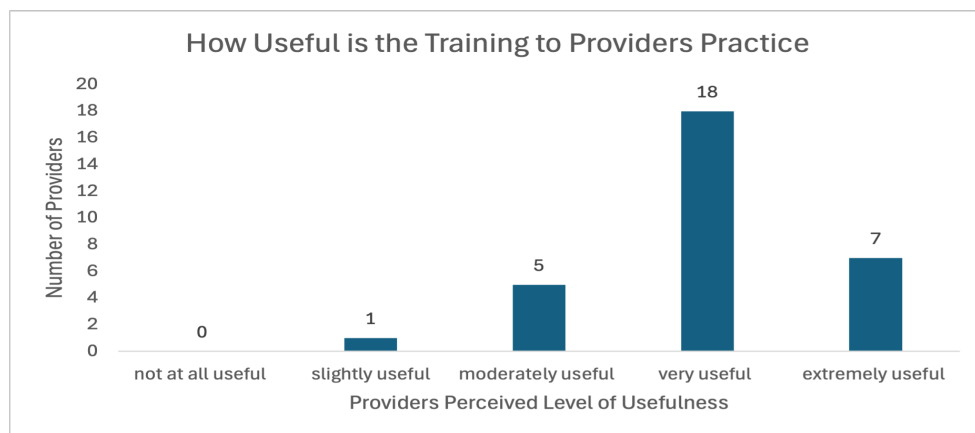


Perceived Usefulness. Finally, 80.65% of providers endorsed the training as either 'very'

or ‘*extremely*’ useful to their practice (see Figure 12 for the range of responses), meeting the related benchmark of $\geq 70\%$ (Cho et al., 2022; Mitchell et al., 2022).

Figure 12

Perceived Level of how Useful the Training is to Provider’s Practice



Appropriateness

Finally, aligning with implementation science, appropriateness was determined by comparing findings on the extent to which the training was perceived as clinically relevant, applicable to providing trauma-informed care within their context, and likely to influence providers' intent to change their practice based on what they learned.

Clinical Relevance. Most providers (93.55%) endorsed that they found no topics irrelevant to them or their practice, meeting the benchmark of $\geq 75\%$ endorsing that the content felt relevant (Alhalal, 2026; Cain & Held, 2026; Doi et al., 2025). Providers also endorsed that they felt the amount of information on each topic was sufficient (83.87%). While most (74.19%) did not respond to an open-ended question about additional content areas they would like to see captured in the training, eight providers did. Suggested content additions included more information on the neonatal intensive care unit context, responding to vicarious trauma, patient accounts of the impact this training has on their care experience, and resources for patients and

providers who have experienced birth trauma.

Two providers endorsed that some information felt irrelevant to them. One provider felt that the inclusion of the six principles of trauma-informed care in addition to the 4R's of trauma-informed care was more information than was necessary to understand how to respond to birth trauma effectively. The other provider felt that any information regarding scenarios where providers are responding more than two hours after a traumatic delivery was irrelevant, as patients are transferred to other units by that point.

Intent to Change Practice. After taking the training, 74.19% of providers endorsed that they intended to make direct changes to their care provisions because of the training, which met the benchmark for intent to change of $\geq 70\%$ (Alhalal, 2026; Cain & Held, 2026; Doi et al., 2025). One month after taking the training, providers spoke to the actual changes that had occurred in the following areas because of taking the training: 1) care provision, 2) interactions with patients, and 3) interactions with colleagues.

Care Provision. Providers specifically described implementing skills from modules on recognizing birth trauma and its impacts and recognizing signs, symptoms, and risk factors. Providers described being more aware of birth trauma, the questions they ask patients, patients' experiences, and being more observant since taking the training. Providers also wrote about implementing the 5A's since taking the training. One provider described an example, writing,

"I always ask my parents at work how they are coping and provide active listening. I reached out to a social worker to ensure that they connected with parents who lost a twin in the first trimester and whose other baby was admitted to the NICU after an emergency c/s and required respiratory support, and talked to a parent about how he felt triggered by the NICU environment. Asked about his coping strategies and offered others. Talked to a

staff member who had had a traumatic experience at work and provided peer support (ID 13).”

Interactions with Patients. A few providers wrote that they felt more compassionate toward patients and more confident in the support they could provide since taking the training. One provider wrote,

“It has made me have more compassion for patients that feel their birth was traumatic even if it didn't 'seem' like a traumatic birth to me or the healthcare team. I was able to connect a patient with appropriate supports when I picked up on their verbal cues of feeling scared/unsafe in the postpartum period and discussed these feelings with them further instead of just writing them off as typical postpartum anxieties (ID 5).”

Interactions with Colleagues. Finally, regarding changes to their interactions with colleagues, multiple providers wrote that, since taking the training, they discussed cases and checked in with colleagues more often. This helped foster more productive conversations where providers felt they were “working together collaboratively (ID 29).” Many providers also wrote about how the training helped them to recognize the signs of vicarious trauma in themselves and colleagues. Finally, some providers spoke to how they have been sharing the knowledge they gained within the training with others.

What Refinements do Providers Want Made to the Training?

Providers were asked whether additional topics and formats should be included in future renditions of the training. Suggested revisions are captured in Table 15.

Table 15

Summary of Providers Recommended Refinements to Training Materials

Aspect of	Refinements	Change to be Made
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Training		
Content	More case examples	- Create more interactive cases for patient-provider interactions and provider-provider interactions - Incorporate case examples throughout modules (e.g., into knowledge checks, to illustrate concepts) - More testimonies of people who have been through birth trauma and what made a difference to them for coping and recovery built in across Modules
	More statistics on who develops birth trauma and when	- Add more information on who experiences birth trauma and when into Module 1: Realize
	More information on the 5A's and how to resist re-traumatization	- Illustrate the 5A's with multiple case examples in addition to providing a definition in Module 3: Responding - Build more information about how to resist re-traumatization into Module 4
	Additional topics	- Information on NICU, fertility challenges, perinatal loss - Information on local referral options
Format	Font size was small and hard to read for some	- Add feature to adjust font size
	Incorporate video	- Develop video to help illustrate testimonials, interactions, and skill application
	Leave and return	- Integrate training into a platform where providers can make an account and save progress
	Progress complete percentage is confusing	- Leave the progress bar but remove the percent complete from the title of each module to reduce confusion
	Matching game numbers were confusing	- Adjust the matching game so that there are no numbers to reduce confusion
Access	Integrate into existing learning systems	- Meet with management and educators to discuss existing learning management systems and integration requirements
	Educate management	- Educate management on the importance of providers having this training to help foster their support of staff completing the training - Perhaps develop a short presentation on the issue, impacts, and study results

Reminders	- Provide resources on debriefing to reduce staff distress and prevent vicarious trauma - Develop reminders feature where providers can opt in to receive reminders to complete training
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Content Revisions. Most providers endorsed that there were no topics they wished were included in the training but were not (74.19%). Of those who said there were additional topics they wished were covered, the following topics were mentioned: 1) The NICU, 2) Real-world resources, 3) Examples of Interactions with Providers, and 4) Perinatal Loss. A couple of providers wanted more information regarding local resources and how to access them for both the patient and for personal use. One provider shared wanting accounts from parents who had a health care provider who demonstrated empathy around birth trauma and how it impacted them. Finally, one provider mentioned wanting more information regarding perinatal loss.

Interactive Case Revisions. Given that only one case was included in the pilot of this training, providers were asked what additional cases would be helpful to include in future renditions of the training. A Friedman test indicated a significant difference in perceived usefulness across case examples, $\chi^2(3) = 12.45, p = 0.006$. Wilcoxon signed-rank tests with Bonferroni correction were not run post hoc, as the correction was extremely conservative ($p = 0.00091$), making it likely that any significant differences in perceived helpfulness would be missed. As such, medians were used to indicate which cases most providers endorsed as ‘5 = *very helpful*.’ Two cases, where the patient is angry and where the partner is showing emotional distress, had a median of 5. This finding suggests that the largest number of providers feel it would be very helpful to include interactive cases in these scenarios. All other cases had a median of ‘4 = *quite helpful*’ suggesting that providers also find these topics important to include. However, additional testing with a larger sample size is needed to determine whether perceptions of how helpful these cases are differ significantly and which should be included in

the training. Providers were also asked to write any additional case examples they felt would be helpful to include in future iterations of this training. Responses were captured under the following types of cases: vicarious trauma in a colleague, fertility challenges, neonatal or maternal loss, trauma caused by a healthcare provider, and a case where there is conflict between the birthing person and partner's expectations or birth plan.

Format Revisions. Providers in Study 1 endorsed some formats they wanted that could not be included in the training due to budget constraints, namely audio and video. Providers were asked to what extent they feel it would be important to include audio and video formats in future renditions of this training program. Most providers endorsed feeling 'neutral' toward audio being important to include in future renditions (32.26%), and that video was 'important' to include in future renditions (29.03%).

R2. How Did Providers' Knowledge and Perceived Ability to Recognize and Respond to Birth Trauma Change from Pre-Training, Post-Training, and One-Month Post-Training?

Recognize Signs, Symptoms, and Risk Factors of Birth Trauma

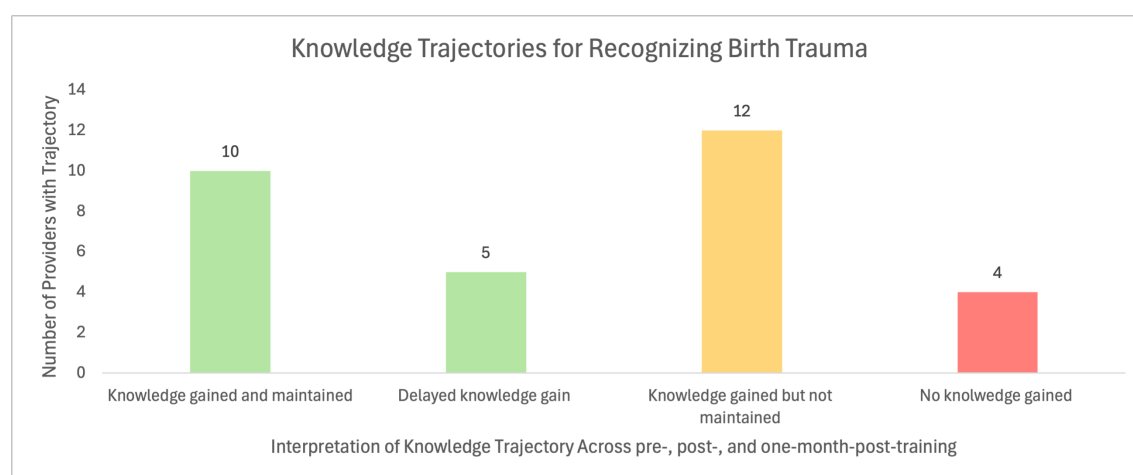
Perceived Ability. The Friedman test showed a statistically significant difference in providers' perceived ability to recognize signs, symptoms, and risk factors of birth trauma and CB-PTSD across the three time points (pre-training, post-training, one month after training; $\chi^2(2) = 45.87, p < 0.001$). Post hoc Wilcoxon Signed-Rank Tests with Bonferroni correction ($\alpha = 0.017$) showed that perceived ability was significantly higher post-training than pre-training ($Z = -4.67, p = < 0.001$) and one month after training than pre-training ($Z = -4.42, p = < 0.001$), though not from one month after training to post-training ($Z = -2.07, p = 0.039$).

Knowledge Trajectories. The knowledge trajectory results showed that ten providers gained and maintained knowledge, five showed delayed knowledge gains, 12 gained knowledge

after training but did not maintain the same amount of knowledge one month later, and four providers did not gain knowledge over time. Figure 13 summarizes the number of providers who endorsed each specific knowledge trajectory. Additionally, inter-rater reliability for coding within this framework was 97.00%, suggesting the results can be interpreted as rigorous rather than subjective.

Figure 13

Knowledge Trajectories for Recognizing Birth Trauma Signs, Symptoms, and Risk Factors



Note. Green represents knowledge being gained, yellow represents knowledge being gained though not maintained one-month after training, and red represents knowledge not being gained.

Knowledge Gained and Maintained. Ten (32.23%) providers gained knowledge in how to recognize the signs, symptoms, and risk factors of birth trauma from pre- to post-training and maintained their knowledge gains at the one-month post-follow-up. In looking at patterns for what knowledge was gained and maintained across time points. One pattern was that providers at pre-training demonstrated that they either were unsure of or had misconceptions regarding the signs, symptoms, and risk factors of birth trauma. However, they gained knowledge in these domains after training and maintained it one month later. For example, one provider at pre-training described misconceptions about trauma, including talking about physical trauma only and that birth trauma was like several other conditions including, “major depression, anxiety, and

panic disorder (including PTSD).” However, they were able to correctly identify some signs, symptoms, and risk factors for birth trauma both immediately and one month after training. Another pattern was that providers identified some signs and risk factors at pre-training, but not symptoms. After training, they could identify symptoms in addition to more signs and risk factors and maintained this knowledge. A third pattern was that some providers knew signs, symptoms, and risk factors at pre-training, but were able to provide more breadth and examples immediately and one month after training.

Delayed Knowledge Gain. Five (16.13%) providers had knowledge trajectories that showed delayed knowledge gains, where their responses at one-month follow-up reflected more knowledge than they had immediately after training. Three providers demonstrated delayed knowledge gains because they had some correct signs and symptoms at post-training but no risk factors. In contrast, at one-month follow-up they wrote examples of signs, symptoms, and risk factors. Two providers’ knowledge trajectories showed delayed knowledge gain that likely reflected their response style rather than their change in knowledge over time. For example, one provider gave a vague post-training response that was much less descriptive than their pre- and one-month responses and used training terminology at the one-month time point that they did not use at pre-training, further suggesting that their trajectory reflects response style rather than genuine knowledge gains. Another provider wrote “same as previous” for their post-training response to this question, though it was unclear which previous response they were referring to, resulting in a code of zero. This provider wrote detailed responses at both pre-training and post-training, suggesting that their knowledge trajectory reflects more their choice not to use a similar response style at post-training than what they did at pre-training and one-month.

Knowledge Gained but not Maintained. Importantly, 12 (38.71%) providers’ knowledge

trajectories showed that they had gained knowledge from pre-training to post-training but did not maintain the full scope of their knowledge gains at one-month follow-up. Reasons for not maintaining knowledge fell under two general patterns: 1) fewer examples/correct use of terms and 2) not answering the full scope of the question. Across responders, signs were retained across time, whereas symptoms and risk factors were not. Regarding symptoms, examples were provided across time, but correct terminology was lost from post-one-month after training (e.g., hypervigilance vs. overprotective). Regarding risk factors, providers either wrote fewer or no risk factors at one-month than at post-training or maintained not knowing risk factors. Two providers' responses at the one-month follow-up made it unclear whether they did not maintain knowledge gains or did not respond to the full scope of the question (e.g., only writing about signs and symptoms and not mentioning any risk factors).

No Knowledge Gained. Finally, four (12.90%) providers' knowledge trajectories showed that they did not gain knowledge across time from taking this training. Reasons for these knowledge trajectories included: 1) no change evident, 2) not answering at follow-up, and 3) off-topic responses. For one provider, they did not answer the question at one-month follow-up. As such, it is unclear whether their trajectory reflects that they truly did not gain knowledge across time. They may have shown delayed knowledge gains by answering the question at the one-month follow-up. Therefore, their knowledge trajectory is considered inconclusive. For another provider, their knowledge trajectory did not change because their responses were off-topic (e.g., commenting on their belief that they have a "much better toolkit" after taking the training and on what symptoms they did not know about prior to training, rather than listing the signs, symptoms, and risk factors they had learned. Finally, two providers' knowledge trajectories showed no knowledge gains, as they included signs and symptoms but did not include risk

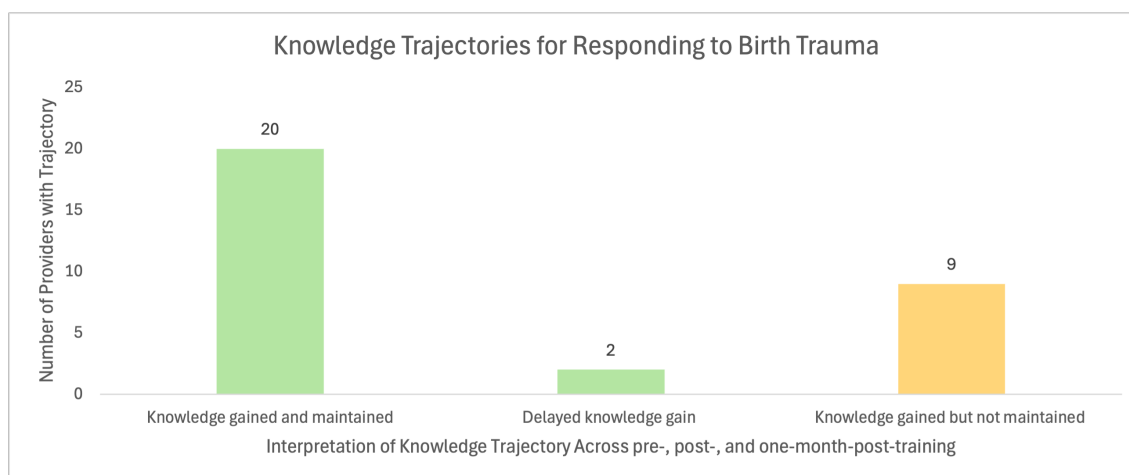
factors at any time point.

Respond to Birth Trauma

Perceived Ability to Respond to Birth Trauma. The results of the Friedman test showed that there was a statistically significant difference in health care providers' perceived ability to have trauma-informed conversations about birth trauma with their patients across the three time points (pre-training, post-training, one month after training) included ($\chi^2(2) = 32.21, p = < 0.001$). Post hoc Wilcoxon Signed-Rank Tests with Bonferroni correction ($\alpha = 0.017$) showed that perceived ability was significantly higher post-training than pre-training ($Z = -4.36, p = < 0.001$) and one month after training than pre-training ($Z = -4.19, p = < 0.001$), though not from one month training to post-training ($Z = -1.39, p = 0.166$).

Additionally, providers' perceived ability to respond using the 5A's and principles of trauma-informed care in conversations with their patients differed significantly across the three time points (pre-training, post-training, one month after training) included ($\chi^2(2) = 52.07, p = < 0.001$). Post hoc Wilcoxon Signed-Rank Tests with Bonferroni correction ($\alpha = 0.017$) showed that perceived ability was significantly higher post-training than pre-training ($Z = -4.84, p = < 0.001$), one-month after training than post-training ($Z = -3.50, p = < 0.001$), and one-month after training than pre-training ($Z = -4.65, p = < 0.001$).

Knowledge Trajectories for Responding to Birth Trauma. The results showed that 18 (58.06%) providers gained and maintained knowledge; 1 showed delayed knowledge gains; 10 gained knowledge from pre- to post-training but did not maintain it one month later; and 2 providers did not gain knowledge over time. Figure 14 summarizes the number of providers who endorsed each specific knowledge trajectory. Inter-rater reliability for coding within this framework was 94.00%, suggesting rigorous rather than subjective results.

Figure 14*Knowledge Trajectories for Responding to Birth Trauma.*

Note. Green represents knowledge being gained, yellow represents knowledge being gained though not maintained one-month after training, and red represents knowledge not being gained.

Knowledge Gained and Maintained. The highest proportion of providers (64.52%, $n = 20$) gained knowledge of how to use the trauma-informed care principles and 5A steps to respond to birth trauma and maintained their knowledge one month after the training. Some of these providers made large knowledge gains, going from writing ‘unsure’ of how to respond to birth trauma using the principles of trauma-informed care and 5A’s before training to being able to speak to how to use most of these principles and steps after training and maintaining this knowledge one month later. Additionally, some providers went from unsure before training to correctly identifying some and incorrectly identifying other principles of trauma-informed care and 5A’s after training. One month after the training, some providers maintained their knowledge of the same concepts they described correctly after the training. In contrast, others got new concepts correct (e.g., had a more accurate description of ASK at one month than at post-training) or forgot some concepts. In general, providers tended to retain the trauma-informed care principles better than the 5A steps. One provider also included additional communication skills in their one-month response, namely active listening. Finally, multiple providers were able

to speak to some trauma-informed care principles generally before training, though not in relation to birth trauma and without mention of the 5A's. After training, they were able to describe some 5A's and some trauma-informed care principles related to birth trauma, and they maintained knowledge of these principles one month after training.

Delayed Knowledge Gain. While all participants gained knowledge from pre-training to post-training, two providers' (6.45%, $n = 2$) responses reflected delayed knowledge gains, where they had more correct responses one month after the training than they did immediately after the training. Another provider went from being unsure prior to training to recognizing some signs and symptoms after training. However, they were able to describe almost all 5A's and trauma-informed care principles one month after training. Another provider wrote unsure before training and learned some trauma-informed care principles and 5A's after the training. They gained more knowledge one month after training and correctly described most trauma-informed care principles and the 5A's using examples.

Knowledge Gained but not Maintained. Finally, nine providers (29.03%, $n = 9$) gained knowledge of how to use trauma-informed care principles and the 5A steps to respond to birth trauma after training. However, they did not maintain the full scope of their knowledge gains one month after training. Of the nine providers who did not maintain their gained knowledge, three did not maintain the full scope of their knowledge of the 5A's, three did not maintain the full scope of their knowledge of the trauma-informed care principles, one did not maintain their knowledge of both the 5A's and trauma-informed care principles, and two had response styles that influenced their knowledge trajectories. Of the 5A's for responding to birth trauma, knowledge of the steps for *asking* about their experience, *advising* that their reaction makes sense and *arranging* for follow-up to ensure that people are connected to supports were not

maintained across the four providers. Of the trauma-informed care principles, one provider did not maintain their knowledge of safety, collaboration and mutuality, and trustworthiness, and transparency and two providers did not describe any of the trauma-informed care principles. It was unclear for two providers whether they lost knowledge or if a change in their response style better explained their knowledge trajectory. One provider wrote unsure before training, identified several trauma-informed care principles and 5A's after training. However, they provided vague descriptions for some trauma-informed care principles at one-month, making it unclear whether they lost knowledge or changed their response style. Another provider left multiple responses blank at one-month, making it unclear whether knowledge was truly lost.

Ongoing Training Needs

In the one-month follow-up questionnaire, providers were asked to describe what further training they would like to receive related to recognizing and responding to birth trauma. Providers' responses were captured under three main themes: 1) Refresher sessions; 2) What to do after recognizing and responding to birth trauma; and 3) How to carry this work forward.

Several providers wrote about wanting refresher sessions to revisit the content in this training. Providers mentioned various frequencies for refresher sessions, including multiple times throughout the year, an annual refresher, and a refresher every two years. Many providers said they wanted refreshers every couple of months to solidify knowledge and practice skills. Some providers described wanting short emails with snippets of the training to reinforce knowledge and support skill practice, while others described wanting in-person groups to review case examples collaboratively.

A few providers described wanting more training in what to do after you have recognized and responded to birth trauma. Next steps were captured as tangible and existing resources, and

how to treat the symptoms of birth trauma. One provider wrote,

“I would like more training on how to connect patients with resources for birth trauma and who to inform after it is recognized. I feel like I can see potential for it in patients, but then it comes to a "now what" stage. I don't feel like doctors are helpful providers for that. I don't know if I should consult social work or what path to take (ID 44).”

Finally, some providers wrote that they want more information on how they can help carry this work forward by becoming teachers themselves and helping integrate this information into supportive care bundles in hospitals.

Discussion

This open feasibility pilot study is the first to evaluate the Birth Trauma Training Program, an evidence-based, needs-informed online training designed to help perinatal physicians, nurses, and midwives recognize and respond to birth trauma. Mixed-methods findings showed that multidisciplinary providers perceived the training as feasible, acceptable, and appropriate, with a clear preference for the interactive, applied learning format. Findings also generated actionable feedback to improve the training materials. They provided preliminary evidence of improvements in providers' knowledge and perceived ability to recognize and respond to birth trauma and CB-PTSD. The findings in this pilot study inform important clinical and policy implications that could improve care experiences and mitigate the risk of CB-PTSD and its impacts on females and their families.

Feasibility

Overall, findings regarding recruitment uptake, completion rates, attrition, time burden, and integration into workflow supported the feasibility of this intervention. The recruitment strategy used in the present study was feasible, as 58.67% of possible participants enrolled in the

Study, which is within the established benchmark of $\geq 50\%$ recruitment uptake (Hides et al., 2007; Mitchell et al., 2022). Providers were recruited from a list of participants from Study 1 who previously consented to be contacted about related research. This suggests that creating an email listserv of providers interested in birth trauma and related studies may offer a feasible strategy for recruiting larger samples. This suggestion is supported within similar studies evaluating trauma-informed care training programs for providers (Powers et al., 2024; Ross et al., 2025, 2026). Additionally, both completion rates and attrition were within the established benchmarks of $\geq 65\%$ (Doi et al., 2025; Ross et al., 2026) and $\leq 30\%$, respectively (Doi et al., 2025; Hides et al., 2007). Taken together, these findings suggest that the intervention and questionnaires were feasible for providers to complete.

The time burden of participating in this study and completing the training was found to be feasible, meeting the established benchmark of less than 5–10 hours (Ross et al., 2026). Providers favoured the brief online, asynchronous training design because it reduced barriers to access, in line with findings from similar studies (Powers et al., 2024; Ross et al., 2025). While most providers (74.19%) endorsed that the training length felt sufficient, some used qualitative items to describe additional content and cases they would like incorporated into the next iteration of the training. The training length is currently well below the established benchmark for feasible training interventions, paired with the finding that most providers in this pilot completed the training faster than anticipated (51.61% finishing within 40 – 60 minutes versus expected completion of 60 – 90 minutes), suggests that both more cases and challenging cases could be added without sacrificing feasibility. This is further supported by the Study 1 needs assessment, where most providers indicated they could dedicate 1 – 3 hours to this training.

The majority (70.97%) of providers were found to complete the training at home rather

than at work, suggesting a need to address organizational barriers to ensure training can be integrated within providers' workflow. This need is not unfounded, with studies in trauma-informed care training broadly reporting similar barriers from the perspective of providers and leadership (Nation et al., 2021; Bruce et al., 2018; Chokshi & Goldman, 2021; Huo et al., 2023; Novilla et al., 2024; Ross et al., 2025b). Importantly, qualitative findings show that educators, management, and directors need to understand the importance of this training to support its integration into providers' workflows. Conversations with such stakeholders are needed to inform how this training could be integrated within existing learning systems and opportunities, as providers highlighted this as a strategy to mitigate barriers and maximize facilitators to accessing training. Providers reported low levels of barriers (25.81%) and accessibility concerns (12.90%), suggesting good feasibility of the intervention (Proctor et al., 2011; Ross et al., 2026). Further, qualitative results extend existing research on organizational readiness and barriers to implementing trauma-informed care (Huo et al., 2023) by clarifying how to facilitate training access and integration into workflow. Strategies include ensuring the training is housed in a platform that providers can access flexibly, save progress, and track completion to count toward continuing education requirements.

Acceptability

Quantitative and qualitative findings showed that providers were satisfied with the training intervention and offered suggestions to strengthen the next iteration of the program. The training met providers' expectations, meeting the benchmark of $\geq 70\%$ (Alhalal, 2026; Cain & Held, 2026; Doi et al., 2025; Ross et al., 2026), with 96.77% of providers endorsing that the training met or exceeded their expectations. The training being succinct while prioritizing interactive, case-based, applied learning with opportunities for self-assessment and self-pacing

was regarded across qualitative responses as the greatest strengths of the program. Further, 80.65% of providers regarded the training as useful to their clinical practice, exceeding the related benchmark of $\geq 70\%$. Providers' willingness to recommend the training also met the benchmark of $\geq 70\%$ (Mitchell et al., 2022; Ross et al., 2026), with 74.19% endorsing that they were 'very' or 'extremely' likely to recommend the training. However, providers' perception of how engaging the training was did not meet the benchmark $\geq 70\%$ (Ross et al., 2026), with only 64.52% of providers saying it was 'very' or 'completely' engaging. Providers' qualitative responses offered adaptations to improve providers' perception of how engaging the training is.

Qualitative responses indicated that the program's primary weaknesses related to platform usability, formatting, and accessibility challenges, alongside a desire for more interactive, realistic, and clinically challenging content. Quantitative findings further showed that providers strongly preferred active, applied, and visually supported learning formats over passive reading or introspective reflection, suggesting that engagement may be maximized through interactive, visually structured training approaches. Providers specifically recommended incorporating additional interactive cases involving emotionally distressed patients and partners, more patient- and provider-centred real-world examples, and expanded content addressing vicarious trauma. Participants also expressed interest in peer discussion opportunities, live case-based question-and-answer sessions, and ongoing follow-up resources such as emailed practice tips. Similar strategies have been identified as feasible and acceptable approaches for healthcare provider education in prior trauma-informed care training research (Ross et al., 2025).

Appropriateness

Overall, the *Birth Trauma Training Program* was found to be both clinically relevant and to result in actual behavioural change among providers. Providers (93.55%) endorsed that no

topics were irrelevant to them or their practice, exceeding the benchmark of $\geq 75\%$ agreement that the intervention was clinically relevant (Alhalal, 2026; Cain & Held, 2026; Doi et al., 2025). Multidisciplinary providers regarded the content within the Birth Trauma Training Program as informative, patient-centred, and applicable to everyday practice, aligning with training needs expressed in prior studies and a needs assessment specific to birth trauma and trauma-informed care (Mota et al., n.d.; Pierce, In Progress). The results extend literature on implementing trauma-informed care in clinical settings (Berring et al., 2024) by informing nuances needed to do so for birth trauma and perinatal contexts. Qualitative responses suggested additional content areas for future iterations to support further clinical relevance, including responding to vicarious trauma, patient accounts of how this training affects their care experience, and resources for patients and providers who have experienced birth trauma. Providers also emphasized that information must be relevant to their care context, including how settings may shape traumatic birth experiences (e.g., the Neonatal Intensive Care Unit) and how much time providers have with patients to implement the training.

Importantly, this study addressed unmet training needs identified in prior literature by offering a solution to incorporate real-world applicability of trauma-informed care skills through the incorporation of simulations within online, flexible, asynchronous training (Brown et al., 2021; Dublin et al., 2021; Forkey et al., 2021; Pierce, In Progress). In doing so, not only did a large proportion of the sample (74.19%) intend to change their care provision as a direct result of taking this training, meeting the benchmark of $\geq 70\%$ (Alhalal, 2026; Cain & Held, 2026; Doi et al., 2025), but many described actual changes made one month after taking the training. Providers' qualitative responses indicated that the training led to meaningful changes in care provision, including increased awareness and recognition of birth trauma, implementation of

trauma-informed practices such as the 5A's, more compassionate and confident patient interactions, greater collaboration and support among colleagues, and increased recognition of vicarious trauma. Thus, the findings indicate that the training is appropriate and shows promise in improving knowledge and confidence and eliciting behaviour change.

Perceived Ability to Recognize and Respond to Birth Trauma Improved

Quantitative findings suggest that the training significantly improved providers' ability to recognize and respond to birth trauma, including their confidence in using the 5A's of trauma-informed care to facilitate conversations with patients across all timepoints. Similar evaluations of trauma-informed care training interventions suggest that the significant change in perceived ability is another indicator that the training is acceptable (Alhalal, 2026; Cain & Held, 2026; Powers et al., 2024). Further, significant improvements from pre- to post-training suggest that even a brief asynchronous intervention may meaningfully improve providers' perceived ability to recognize and respond to birth trauma and CB-PTSD. These findings matter because healthcare providers frequently report limited training and low confidence in delivering trauma-informed care in practice (Bruce et al., 2018; Ross et al., 2025).

Follow-up Wilcoxon Signed-Rank Tests indicated that providers reported significantly greater perceived ability immediately following the training and at one-month follow-up relative to baseline. Importantly, improvements in providers' perceived ability to recognize signs, symptoms, and risk factors and engage in trauma-informed conversations with patients were maintained one month following training, suggesting that gains in perceived competence were not limited to short-term post-training effects. This finding aligns with prior research showing that interactive, applied online healthcare education can support sustained learning and confidence over time (Alhalal, 2026; Cain & Held, 2026; D. A. Cook et al., 2008; Powers et al.,

2024; Ross et al., 2026). Notably, providers' perceived ability to respond using the 5A's and trauma-informed principles continued to improve significantly one month after training, suggesting ongoing integration and application of trauma-informed skills in practice.

This finding may be partly explained by the interactive and applied structure of the training, as providers demonstrated clear preferences for visually supported and case-based learning formats. Prior healthcare education literature suggests that multimedia and active learning approaches enhance learner engagement, retention, and self-efficacy relative to passive educational methods (Cook et al., 2008). Another explanation could be that trauma-informed communication skills became increasingly integrated through ongoing clinical application and reflection after training completion. Unlike knowledge acquisition alone, applying trauma-informed approaches in real-world clinical interactions may require experiential learning and repeated practice to build confidence. This interpretation aligns with prior literature emphasizing the importance of simulation, applied learning, and reflective practice in trauma-informed healthcare education (Kononowicz et al., 2019).

Knowledge Trajectories for Recognizing and Responding to Birth Trauma

Qualitatively, providers' knowledge trajectories showed that most providers gained and maintained knowledge of how to recognize and respond to birth trauma using a trauma-informed approach from pre-training to one month after training. These improvements align with extant findings showing that training in the 4R's of trauma-informed care improves providers' knowledge and comfort (Chin et al., 2024; Choi et al., 2024; Powers et al., 2024). Moreover, these findings support the effectiveness of teaching trauma-informed care in the context of birth trauma to mitigate gaps in understanding how providers' care during the perinatal period influences CB-PTSD risk (Elmir et al., 2010; Ford & Ayers, 2011; Gokhale et al., 2020; Isobel,

2023; Tham et al., 2010). Further, this study extends the extant literature by informing the preliminary effectiveness of online training that uses simulation to teach trauma-informed care through knowledge application, which has been called for previously to reduce providers' hesitancy to employ trauma-informed care (Powers et al., 2024).

Interestingly, comparing providers' qualitative knowledge trajectories for recognizing birth trauma versus responding to birth trauma, more providers had trajectories where they gained knowledge regarding responding to birth trauma ($n = 22$) than recognizing birth trauma ($n = 15$). Providers' format preferences may explain this finding, as interactive, case-based learning was used to teach responding to birth trauma, which may have made providers more interested in and attentive to this content. Additional explanations could be that providers may have more knowledge of how to recognize birth trauma pre-training than how to respond. This could be plausible, as providers' responses across both the needs assessment and pilot study suggested that some have learned to recognize signs from experience within the field, though are hesitant to respond due to fear of perpetuating harm (Bruce et al., 2018; Mota et al., n.d.; Ross et al., 2025). Alternatively, providers' prior training experiences were more related to recognizing than responding to mental health concerns. This difference in baseline knowledge may be explained by recognition being learnable through individual observation of cases, whereas responding relies on providers overcoming fear of perpetuating harm before they can gain experience responding. This finding suggests that brief trainings in trauma-informed care for birth trauma should emphasize the application of knowledge to help providers reduce emotional barriers to responding to birth trauma, which is similarly supported within the extant literature (Huo et al., 2023; Kim et al., 2020).

Ongoing Training Needs

Regarding ongoing training needs, providers' qualitative responses informed a need for ongoing refresher sessions and suggested various formats and frequencies. These findings suggest that live case discussions may help to further providers' learning. Live sessions were recommended multiple times throughout the year or as an annual refresher. Some providers suggested sending periodic emails reminding them of information from the training to help them solidify and expand their knowledge. Providers' desire for more information about tangible resources and supports that they could connect patients to in their area suggests the need for a national resource hub for birth trauma to be developed. Such a hub could provide information to both providers and patients on how to recognize birth trauma and where to go for support based on the impact of birth trauma on the persons' and families' wellbeing.

Limitations

The results of this work should be considered in the context of the study's limitations. First, given that this study involved a small sample ($N = 31$), statistical power to assess for whom the training was most effective was not achieved. Differences across sex, gender, age, race and occupational experience should be considered and analyzed within a future full trial to inform for whom the training is most effective. The full trial will further establish the training's effectiveness and for whom it is effective (i.e., differences across professions and provider diversity). Second, this convenience sample reflects providers who are interested in the topic and participated in Study 1, which may impact the generalizability of the results. For example, the sample may not reflect the voices of those who may be interested in the topic but face significant barriers to participating in such research. This underscores the importance of including a wide variety of perspectives in future randomized controlled trials. Further, this pilot study only includes the voices and perspectives of providers. Additional perspectives from other interested

parties need to be incorporated to inform successful implementation of this training and improve patient outcomes, namely managers, educators, and patients' perspectives, respectively. Third, training adherence and time spent completing the training could not be analyzed objectively because the training program's software did not allow participant profiles to be created to collect this data. Efforts were made to still inform these areas of feasibility by embedding the link to the training at the end of the pre-questionnaire so that the pre-questionnaire completion time could be used as an indication of opening the training, and embedding the post-questionnaire at the end of the training so that opening the post-training questionnaire could be used as an indication of completing the training. Fourth, the last level of Kirkpatrick's training evaluation model, assessing whether the training solved performance issues, could not be assessed within the present training based on the study design and time point of the follow-up evaluation being only one month after training. Additional research testing implications of the training on the performance issue of providers not initiating conversations about birth trauma and making appropriate referrals due to lack of training should be conducted. Finally, the follow-up timeline was limited to one month, which limited the ability to assess long-term benefits for knowledge, confidence, and care provision. Future trials should assess long-term benefits.

Implications

Despite these limitations, this research has several important theoretical and practical implications. Theoretically, this study extends the growing literature demonstrating that trauma-informed care education can improve healthcare providers' confidence, perceived preparedness, and care practices (Chin et al., 2024; Choi et al., 2024; Powers et al., 2024). Importantly, the findings suggest that applied and interactive learning approaches may be particularly important for supporting sustained improvements in trauma-informed communication skills, as perinatal

providers continued to report increased confidence in applying the 5As with patients who experienced birth trauma one month after training. This pattern raises important questions regarding how experiential learning, reflection, and clinical practice contribute to the consolidation of trauma-informed skills over time. Methodologically, this study also extends qualitative longitudinal research by demonstrating a novel application of deductive trajectory analysis grounded in both QLR and framework methodology to evaluate qualitative change across multiple time points using a priori implementation outcomes.

Practically, this study moves beyond identifying the need for birth trauma education by offering preliminary evidence that a brief, asynchronous, evidence-based, and needs-informed intervention may meaningfully influence providers' knowledge, confidence, and care provision. Importantly, the findings offer concrete guidance for refining and implementing future interventions. Providers consistently preferred interactive, visually supported, and case-based learning formats over passive educational approaches, suggesting that engagement in online provider education may depend less on content depth and more on opportunities for applied learning and emotionally realistic clinical scenarios. Further, while providers viewed the training as highly useful and satisfactory, many completed it outside of work hours, highlighting that organizational barriers may represent a key obstacle to sustainable implementation of trauma-informed training in perinatal care settings. As such, future work should focus not only on evaluating intervention effectiveness, but also on determining how healthcare organizations can integrate trauma-informed education into existing workflows, continuing education structures, and interdisciplinary training systems to support sustained practice change in perinatal settings. Doing so may improve care experiences for patients who experience birth trauma and decrease their risk of CB-PTSD.

Future Directions

This work highlights next steps to address the providers' lack of training further to support people who have experienced birth trauma. First, we will incorporate revisions suggested by providers to ensure alignment with their expressed preferences. Specific changes based on results include more emphasis on teaching concepts through quotes and interactive cases to increase perceptions of how engaging the training is while focusing on the content providers favoured. Additional interactive cases will be developed and incorporated to address nuances in providers' clinical settings and roles (e.g., NICU can see parents for days to months, whereas labour and delivery nurses see parents for a few hours post-delivery).

Following revisions, another trial will be run to ensure that the materials remain feasible, acceptable, and appropriate while addressing limitations within this first feasibility pilot. In additional trials, follow-up timepoints will be extended to assess better the program's long-term (e.g., six-month) impacts on knowledge, confidence, and care provision. A larger sample size will also be recruited to assess whether providers' ratings of feasibility, acceptability, and appropriateness differ by profession, which may inform specific revisions. Additionally, a larger sample size would allow assessment of whether years of practice influence providers' knowledge trajectories. Beyond recruiting a larger sample, the perspectives of other perinatal providers (e.g., pelvic floor physio, dietitians, lactation consultants, occupational therapists, doulas, ultrasound techs, anesthesiologists, lab techs) will be gathered to ensure that the training meets the needs of all those who support patients who experience birth trauma. Patients' perspectives will also be gathered to inform the impact on their interactions with their care providers. Management and educator perspectives will also be gathered to inform how the training can be made accessible to all perinatal providers within their organizations. The findings from these pilot studies will then

inform future effectiveness and scalability studies to establish the training and ensure it is accessible to Canadian providers. Doing so may help to improve females' perinatal care experiences, reducing their risk of CB-PTSD and the associated adverse health outcomes for females and their infants.

Chapter 5: General Discussion

The present dissertation addresses a critical gap in maternity care by developing and evaluating an evidence-based and needs-informed training program in trauma-informed care for birth trauma. There has been increasing recognition of the importance of employing trauma-informed care for birth trauma given the impact of provider-patient interactions and obstetric care experiences on the risk of birth trauma and CB-PTSD (Ayers et al., 2024; Elmir et al., 2010; Ford & Ayers, 2011; Gokhale et al., 2020; Tham et al., 2010). Medical perinatal providers are well positioned to employ secondary prevention by identifying birth trauma and connecting patients to appropriate supports early (Ayers et al., 2024). However, perinatal providers in Canada lack training opportunities in secondary prevention of birth trauma through trauma-informed care and the resources to access such training (DeAndrade et al., 2025; Long et al., 2022). As a result, many providers report feeling hesitant to initiate conversations with patients about birth trauma, among other barriers such as time-limited interactions, fear of perpetuating harm by saying the wrong thing, and not knowing what to do once they recognize birth trauma has occurred (Bruce et al., 2018; Mota et al., n.d.; Ross et al., 2025). Developing training that is responsive to stakeholder needs and grounded in empirical evidence is therefore a critical step to improving practice and care experiences (Elmir et al., 2010; Ford & Ayers, 2011; Gokhale et al., 2020; Tham et al., 2010).

This dissertation employed a three-stage research program to address this gap by developing and evaluating an evidence-based, needs-informed training program. First, Study 1 assessed perinatal providers' unmet training knowledge gaps, barriers, and priorities. The findings from this study informed the development of the *Birth Trauma Training Program*. Finally, Study 2 evaluated the feasibility, acceptability, appropriateness, and effectiveness of the

training through an open feasibility pilot study, providing preliminary evidence of its practicality and potential value. Together, these studies represent a sequential approach to developing and evaluating a training in trauma-informed care for birth trauma. This chapter examines how the results collectively contribute to a deeper understanding of how to address Canadian perinatal providers' lack of training in secondary prevention of birth trauma and CB-PTSD through trauma-informed care.

Integrated Interpretation of Findings

Integrating the findings of these sequential studies illustrates how understanding providers' unmet training gaps can inform the development of an evidence-based training program that shows promise as a feasible, acceptable, and effective solution to improve providers' preparedness and care provision around birth trauma.

Understanding the Training Gap

A key contribution of this dissertation is elucidating Canadian physicians', nurses', and midwives' unmet training needs in trauma-informed care for birth trauma across content, format, and access. Findings from the pan-Canadian needs assessment in Study 1 identified key gaps in knowledge, skills, and resources that providers perceived as barriers to them effectively contributing to secondary prevention of birth trauma and CB-PTSD. These findings supported developing training grounded in the 4R's of Trauma-Informed Care (Substance Abuse and Mental Health Services Administration, 2014). Further, providers' unmet content needs paired with their preference for interactive formats that allow them to practice knowledge application supported the need for training in trauma-informed care to be tailored to the context of birth trauma and obstetric care, as existing training in trauma-informed care does not adequately prepare providers for the complexities of this area of practice (Isobel, 2023). Additionally,

identifying providers' barriers and facilitators to accessing training was integral to ensuring the design considered future implementation and scalability to address providers' lack of training. As such, the findings of Study 1 provided an important empirical foundation for the subsequent studies in this dissertation to ensure providers' training needs are met.

Translating Needs into Program Design

Informed by the unmet training needs identified in Study 1, an asynchronous, brief, online training program was systematically developed to be evidence-based and needs-informed. Several themes from Study 1 directly informed the content and design of the *Birth Trauma Training Program*. First, real-world quotes and cases were included to ensure the content is practical and applicable to the nuances of obstetric care and traumatic birth experiences, rather than overly theoretical. Second, various formats for engaging with content were included to help make the training engaging, as identified by providers. Further, the development of an interactive case simulation demonstrated a method to directly address providers' hesitancy to initiate trauma-informed conversations with patients about birth trauma, thus supporting the translation of knowledge to action. Third, considering barriers and facilitators to providers accessing this training during development was critical to ensuring the resulting program was feasible. It could be scaled to fill this gap in providers' training further. Finally, the program design models trauma-informed care by building trauma-sensitivity features into the program's foundation, including self-pacing, self-reflection, and guided opportunities for mindfulness and grounding.

By linking the training's design to the needs identified in Study 1, the development process sought to ensure the resulting intervention would be both relevant and responsive to participants' real-world experiences. This approach aligns with broader recommendations in intervention development research emphasizing the importance of participant and other

interested parties' engagement and needs-driven program design (Cho et al., 2022; Mitchell et al., 2022). As a result, the training program is not only a theoretically informed intervention, but also one grounded in the priorities and experiences of its intended audience.

Early Evidence of Program Feasibility, Acceptability, Appropriateness and Effectiveness

Following the development of the *Birth Trauma Training Program*, Study 2 examined the preliminary feasibility, acceptability, appropriateness, and effectiveness of the training in improving providers' knowledge, confidence, and care provision. In doing so, this pilot evaluation provided important preliminary insights into how providers engaged with the training and whether the program addressed the needs identified in Study 1.

Overall, the findings of Study 2 suggested that the training was feasible, acceptable, and appropriate to providers, while elucidating important nuances across domains. Feasibility was supported by recruitment uptake (58.67%), completion rates (70.45%), and attrition (29.55%), all of which met the benchmarks established in similar evaluations (Doi et al., 2025; Hides et al., 2007; Mitchell et al., 2022; Ross et al., 2026). The average completion time of 40–60 minutes, along with providers' endorsement that the training length felt sufficient (74.19%), further supported feasibility when compared to benchmarks in a similar study (Ross et al., 2026). Importantly, 25.81% of providers reported barriers to completing the training and 12.90% reported accessibility concerns. These were primarily related to workflow integration and technical limitations, and most providers completed the training at home rather than during protected work time. Despite this, flexibility and asynchronous access were identified as key facilitators to participation. Regarding acceptability, satisfaction (96.78%), perceived usefulness (80.64%), and willingness to recommend (74.19%) met benchmarks from similar evaluations (Alhalal, 2026; Cain & Held, 2026; Cho et al., 2022; Doi et al., 2025; Mitchell et al., 2022; Ross

et al., 2026). However, providers' perception of training engagement (64.52%) fell below established benchmarks (Ross et al., 2026). Qualitative findings suggested that although providers valued the relevance and real-world applicability of the content, engagement could be improved through more interactive and clinically complex learning formats. Finally, appropriateness findings were strong: 93.55% of providers reported no irrelevant content, and 80.64% endorsed clinical applicability, meeting benchmarks from similar studies (Alhalal, 2026; Cain & Held, 2026; Doi et al., 2025).

Quantitative analyses demonstrated significant improvements in providers' perceived ability to recognize birth trauma and engage in trauma-informed conversations immediately post-training, with gains largely maintained at one-month follow-up. Providers' qualitative knowledge trajectories informed greater knowledge gains across time for responding to birth trauma ($n = 22$) than recognizing birth trauma ($n = 15$), suggesting that emphasizing content on responding is most supportive of providers' knowledge gaps. Notably, quantitative findings showed that providers' perceived ability to apply trauma-informed approaches (e.g., the 5A's) continued to improve over time, suggesting ongoing integration of skills following training completion. Consistent with these findings, 74.19% of providers reported intentions to change their practice, and follow-up qualitative data indicated reported behaviour changes, including increased recognition of birth trauma and greater use of trauma-informed communication strategies. Overall, these findings support the value of a needs-informed, evidence-based training in trauma-informed care for birth trauma, while highlighting opportunities to enhance engagement and strengthen workflow integration. The results provide preliminary evidence that a brief asynchronous intervention can improve provider knowledge, confidence, and behaviour in recognizing and responding to birth trauma and warrants further evaluation with larger samples

and more diverse perinatal professions.

Summary

Taken together, the findings across the three studies illustrate the value of a sequential, needs-informed approach to evidence-based training development. The needs assessment provided critical insight into the challenges and priorities experienced by participants, which directly informed the design of a tailored training program. The subsequent pilot evaluation demonstrated that the resulting intervention was feasible to complete and well received by participants. Collectively, these findings suggest that grounding training development in participant and relevant parties' needs may enhance the relevance, feasibility, acceptability, and effectiveness of training interventions and provide a strong foundation for future effectiveness and scalability evaluations.

Implications

By systematically identifying training needs, developing a targeted intervention, and evaluating its feasibility, acceptability, appropriateness, and preliminary effectiveness in improving providers' knowledge, confidence, and provision of trauma-informed care for birth trauma, the present dissertation has several implications for research, practice, and policy.

Contribution to Training Development and Evaluation Research

The findings across the three studies in this dissertation contribute to the extant literature on trauma-informed care training by empirically identifying providers' training gaps, systematically developing evidence-based, needs-informed training, and informing the feasibility, acceptability, and preliminary effectiveness of the program. The systematic process contributes a training intervention that is both relevant and implementable to address Canadian providers' lack of training in this area. Further, the analytic approach taken to evaluate the

training's effectiveness in Study 2 illustrates a novel method for qualitatively assessing training outcomes. Specifically, the study employed a deductive, trajectory analysis informed by qualitative longitudinal research and framework analysis to qualitatively evaluate the impact of training programs on knowledge and confidence.

Practice and Policy Implications

The collective findings of these three studies have implications for provider preparedness, patient outcomes, provider-patient interactions, provider wellbeing, healthcare organizations and systems, and policy. First, a central practice implication of this work is that by directly developing a training intervention that targets gaps identified by providers themselves, this training has the potential to improve provider preparedness and confidence in recognizing and responding to birth trauma in clinical practice. Second, the training may improve interactions between perinatal providers and patients. This is integral, given that prior research has demonstrated that patient-provider interactions and the maternity care that patients receive significantly shape whether they will perceive their birth as traumatic and their risk of developing CB-PTSD (Elmir et al., 2010; Ford & Ayers, 2011; Gokhale et al., 2020; Tham et al., 2010). Ensuring providers have training in trauma-informed birth care has the potential to improve patient satisfaction, reduce the likelihood of traumatic birth experiences, and protect psychological wellbeing following childbirth.

Third, the training program may also benefit providers' psychological wellbeing. Perinatal providers are frequently exposed to distressing or traumatic clinical situations, including complicated births, medical emergencies, and patient distress. Over time, repeated exposure to such events may contribute to vicarious trauma, emotional exhaustion, and burnout among providers. Further, some providers across these studies expressed that they have had

personal experiences with birth trauma. The training program developed in this dissertation includes content aimed at helping providers recognize the potential impact of vicarious birth trauma and identify strategies for supporting their own well-being and that of their colleagues. Further assessment of the long-term impacts of this training on providers' wellbeing following exposure to birth trauma is warranted. Also, considering trauma sensitivity within the training design offers providers control over the pace at which they complete the training, establishes safety, trust, and transparency through providing content summaries before all modules and empowers providers to choose when they would like to review the content. In these ways, the training may help foster a more supportive work environment for perinatal healthcare providers and protect providers' psychological wellbeing.

At the organization level, the findings of this dissertation also have implications for healthcare organizations responsible for training and supporting perinatal care providers. The feasibility findings from the pilot evaluation suggest that the training program can be implemented within real-world clinical settings and may represent a practical approach for improving provider capacity to address birth trauma and CB-PTSD. Additionally, by grounding the design in providers' access preferences, the training was developed to integrate within existing learning management systems, supporting the program's potential scalability.

Considering the broader system level, the findings highlight the potential impacts of integrating trauma-informed approaches into perinatal care systems. Although increasing attention has been directed toward maternal mental health in recent years, training related to birth trauma and CB-PTSD remains limited in Canadian providers' education (Bruce et al., 2018; DeAndrade et al., 2025; Long et al., 2022; Ross et al., 2025). Expanding access to training programs through dissemination pathways such as professional organizations, professional

training programs, and hospital learning management systems may represent an important step toward strengthening the capacity of perinatal healthcare systems to recognize and respond to trauma-related experiences during childbirth. Efforts to improve provider training in this area may ultimately contribute to more comprehensive, patient-centred perinatal care that addresses both the physical and psychological aspects of childbirth. Further, given the substantial healthcare and societal costs associated with adverse perinatal mental health outcomes, trauma-informed maternity care may improve maternal–infant outcomes and reduce downstream economic burden.

Finally, the findings have policy implications. Pending findings of additional pilot and full trials to establish the training effectiveness and implementation, this dissertation informs how recommendations within the providers’ access preferences suggest a need for training in trauma-informed care for birth trauma to be mandated for all and integrated into existing learning management systems to ensure scalability, recognition from management, and remuneration in the forms of free access, time to complete training at work, and continuing education credit. By doing so, this program of research stands to address the global consensus recommendation for mandatory trauma-informed care training to support secondary prevention of birth trauma in a way that supports providers’ expressed training access needs (Ayers et al., 2024). Further, the training could be integrated within professional training programs to support preparedness early in providers’ careers.

Limitations of this Program of Research

Despite these important implications, the program of research should be considered with its limitations. First, studies need additional perspectives from relevant parties. Gathering the unmet needs of patients, managers, and other professions involved in perinatal care may clarify

additional content, format, and access considerations to integrate into future versions of this training. Second, the generalizability of the findings may be limited because the unmet needs of providers were assessed in Canadian territories and some East Coast provinces, and the evaluation used convenience sampling. Third, the sample size was small, limiting the ability to determine for whom the training is effective and for whom it is not, which would further inform revisions to future renditions of the training. Finally, because the evaluation included three time points spanning from before training to one month after training, the long-term effects of the training on providers' knowledge, confidence, and care provision, as well as patients' experience of care from providers who have received training, could not be assessed.

Next Steps

To carry forward this research, next steps will involve disseminating the knowledge gained to researchers, providers, and organizational leadership. Additionally, future directions are identified to address the limitations of this work and inform additional pilot studies that should be run before full trials to establish the effectiveness and scalability of this training.

Knowledge Dissemination

Several strategies will be implemented to disseminate the findings of this research program. Each study will be submitted to a peer-reviewed journal relevant to obstetric care with a primary audience of perinatal providers. An infographic summarizing the findings for each study will be disseminated to perinatal healthcare providers through the professional organizations that were recruitment sources. Further engagement with these organizations may also facilitate opportunities for larger-scale evaluation and implementation of the training program in diverse clinical settings. Finally, international policy will be informed by presenting the findings and policy implications at conferences such as the International Marce Society

Conference in Perinatal Mental Health. Such policy development would build upon my policy development work with the Daymark Foundation, an organization that advocates for national and provincial strategies to address perinatal mental health in Canada.

Future Research

Beyond disseminating the findings of this program of research, additional steps will be taken to address the limitations of these studies and further establish the effectiveness and scalability of this training. First, the training materials will be refined based on feedback from this non-randomized feasibility pilot. Once revised, a second feasibility pilot trial should be run to ensure that the revisions are feasible and acceptable. Within this, the perspectives of additional relevant groups, including patients, educators, and management, should be sought to further evaluate the alignment of the content with patients' experiences and the format with management's perspectives on how to facilitate access to such training within their organizations. Next, a randomized pilot trial should be run to determine for whom the training is effective, when it should be delivered, and its longer-term impacts (e.g., a six-month follow-up). Pending positive results, these pilot studies should inform a future randomized controlled trial and scalability study to establish the training's effectiveness. Additionally, partnering with professional and health care organizations will help facilitate implementation and scalability across Canadian learning management systems.

Final Takeaways

Taken together, the findings of this dissertation highlight the potential value of investing in training initiatives that equip perinatal healthcare providers with the knowledge and skills necessary to recognize and respond to birth trauma and CB-PTSD. By grounding the training program in empirically identified provider needs and demonstrating its feasibility in a real-world

context, this research provides a practical foundation for integrating trauma-informed approaches into perinatal care settings. At both the organizational and policy levels, expanding access to training that addresses the psychological dimensions of childbirth may represent an important strategy for preventing birth trauma and improving maternal mental health outcomes. Supporting provider education in this area may not only enhance the quality of patient–provider interactions but also contribute to more comprehensive and patient-centred perinatal care systems that recognize the importance of both physical and psychological safety during childbirth.

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Appendix A

Study 1 Materials

- 1) Study 1 Recruitment Materials
 - a. Recruitment Sources
 - b. Recruitment Poster
 - c. Social media ad series
 - d. Email scripts
- 2) Study 1 Informed Consent Forms
- 3) Study 1 Questionnaires
 - a. Demographic Survey
 - b. Prior Training Experience
 - c. Personal Birth Trauma Experience
 - d. Training Needs Assessment Survey
 - e. Gift Card Entry

1. Recruitment Materials

1a) Recruitment Sources for Study 1 and Study 2

- Canadian Neonatal Follow-up Network
- Canadian Perinatal Mental Health Trainings newsletter
- Women’s Health Research Cluster email listserv
- The Society for Obstetricians and Gynaecology Canada
- The Canadian Association of Midwives
- The Canadian Association of Perinatal and Women’s Health Nurses
- Training and residency programs for the included professions through major provincial or territorial institutions
- Daymark Foundation
- Women’s Hospital, Manitoba
- Winnipeg Breastfeeding Centre
- Dragonfly Program
- Heartland Infertility Clinic
- Nurse Practitioners’ Association of Canada (NPAC)
- Canadian Pediatric Society - Neonatal-Perinatal Medicine section
- Canadian Association of Neonatal Nurses
- Canadian Neonatal Network
- College of Family Physicians of Canada - Research department
- Canadian Federation of Nurses Unions (CFNU) - Media
- Canadian Nurses Association
- Canadian Nurses Foundation
- The Canadian Fertility & Andrology Society
- Postpartum Support International
- The Pregnancy and Infant Loss Network
- The Child Development Clinic
- Pregnancy, Infant & Child Loss Support Centre
- The Family Medicine Obstetrics Network
- Manitoba College of Family Physicians
- Regina Perinatal Health Network
- Maternal Mental Health Saskatchewan Advisory Group
- NICU clinics across Canada
- Neonatal clinics across Canada
- Infertility clinics across Canada
- Perinatal health clinics across Canada
- Family residency program at Kildonan Medical Centre

1b) Recruitment Poster

Study Participants Needed

Have you ever wanted
training in how to
recognize and **respond** to
birth trauma?



Who:

**Physicians, Nurses, Midwives,
or students** who provide care
to perinatal people who may
have had traumatic birth
experiences



What:

- **Complete a 15-30 minute online survey** to identify your training needs
- Partner with us to develop a brief training to help you recognize and respond to your patients' needs after birth trauma
- Participants have the chance to win one of four \$25 Amazon gift cards

Interested or have questions?



Health
Information
Exchange
Lab

Contact Shayna Pierce at
Birth.Trauma.Training@umanitoba.ca



University
of Manitoba

UNIVERSITY OF MANITOBA(UM)REB APPROVAL HE2024-0067
CO-SUPERVISED BY

Dr. Kristin Reynolds, UM, Kristin.Reynolds@umanitoba.ca
Dr. Leslie Roos, UM, Leslie.Roos@umanitoba.ca

1c) Social Media Advertisement

University of Manitoba REB Approval XXXX

Are you a physician, nurse, midwife, or student who works with pregnant and postpartum people?

Join to help us investigate health professionals' ability to **recognize and respond to birth trauma**

Learn more >





Health Information Exchange Lab

University of Manitoba REB Approval XXXX

Who can participate?

- Physicians, Nurses, Midwives, or students in these fields who provide care to perinatal people who may have had traumatic birth experiences

What will I do?

- Partner with us to develop a brief training to help you recognize and respond to your patients' needs after birth trauma
- Complete a 15-30 minute online survey** to identify your training needs
- Participants have the chance to win one of four \$25 Amazon gift cards





Health Information Exchange Lab

University of Manitoba REB Approval XXXX

Interested or have questions?

Contact Shayna Pierce at
Birth.Trauma.Training@umanitoba.ca





Health Information Exchange Lab

CO-SUPERVISED BY
Dr. Kristin Reynolds, UM, Kristin.Reynolds@umanitoba.ca
Dr. Leslie Roos, UM, Leslie.Roos@umanitoba.ca

Text: Now recruiting physicians, nurses, and midwives across Canada who are interested in sharing their training needs regarding recognizing and responding to birth trauma! To participate, please email Shayna at Birth.Trauma.Training@umanitoba.ca.

1d) Recruitment Email TemplatesInitial Email Template

Subject: Research Participation Request

Hello,

Please see below for information about a new project being conducted by the Health Information and Exchange Laboratory and the Hearts and Minds Laboratory at the University of Manitoba.

The purpose of this study is to understand better the training needs of physicians, nurses, midwives, and students in these fields involved in perinatal care in recognizing and responding to their patients' needs after birth trauma.

We are interested in hearing about the training needs of physicians, nurses, midwives, and students involved in perinatal care in recognizing and responding to their patients' needs after birth trauma. You will be asked to complete a 15 – 30 minutes online survey asking about your background and training needs such as content priorities and format. Those who complete the online survey will be entered into a raffle for one of four \$25 e-gift cards to Amazon. The findings will be used to inform the development of a training intervention that is tailored to the overall needs of physicians, nurses, midwives, and students in these fields.

To participate in the survey, please click on here [hyperlink].

If you have any questions, please email the Principal Investigator, Shayna Pierce, at Birth.Trauma.Training@umanitoba.ca

Thank you for considering participating in this research project!

Best,

Shayna Pierce, MA
University of Manitoba

Participant Withdrawal Request

Subject: U of M Research Follow-Up

Hi (Name),

We are sorry to hear that you are withdrawing from our study. It would be greatly appreciated if you could provide us with a brief reason as to why you're ending your participation. This information may help us improve our service for future users.

Wishing you all the best!

Shayna Pierce, MA
University of Manitoba

Honorarium Email

Hi (Name),

Thank you for completing all components of the Birth Trauma Training Study. Your feedback will be integral to ensuring that the developed training materials are tailored to the needs of health care providers like yourself who work with those who experienced birth trauma.

You were randomly selected as one of the four participants to receive a \$25 electronic gift card to Amazon.

Please find below a link to your gift card.

[Insert Link]

**If checked at the end of REDCap survey that they would like to be emailed a summary of the results, the following statement will be added. **

As per your request, a summary of the findings will be emailed to you by December 2026.

We wish you all the best!

Regards,

Shayna Pierce, MA
University of Manitoba

2. Study 1 Consent Forms



Informed Consent for Study 1

Recognizing and Responding to Birth Trauma: The Development and Pilot Evaluation of a Brief Online Training Intervention for Canadian Health Care Providers

Research Team:

Principal Investigator: Shayna K. Pierce, MA,

Co-Supervisors: Dr. Kristin A. Reynolds, C. Psych., and Dr. Leslie E. Roos, C. Psych.

We strongly recommend that you print this page and keep it for your records. If you are unable to print a copy, an electronic version can be made available upon your request. This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

About this study:

The purpose of this study is to understand better the the training needs of physicians, nurses, midwives, and students involved in perinatal care in recognizing and responding to their patients' needs after birth trauma. We want to identify content priorities (e.g., diagnostic criteria, principles of trauma-informed care), and preferences regarding (b) training format (e.g., length), and (c) delivery (e.g., self-guided modules).

What will you be participating in today?

You will be completing a series of online questionnaires that ask about your demographics and prior training experiences related to working with people who have had traumatic birth experiences. You will also be asked about your training needs across content, format, and delivery and be given opportunities to write to elaborate on your responses. These are expected to take about 15-30 minutes.

Do I have to participate?

No. Your participation is voluntary, and you may end your participation at any time without penalty. If you begin the survey and wish to no longer continue, you can exit the browser at any time. If you would like to participate, you may still decline to answer any question.

Compensation:

Participants who complete the online survey will be asked whether they would like to be entered into a draw to win one of four CAD \$25 electronic gift certificates to Amazon. Winners will be randomly selected at the end of data collection.

How will your privacy (or confidentiality) be protected?

Because your honest answers are so valuable to us, we will do everything we can to keep your information confidential (e.g., private). Here is how we will protect your privacy: Your data collected today will be stored according to our research protocol. Your data will be stored on a

protected secure REDCap server through the Max Rady College of Medicine. All responses are anonymous. The only time you will be asked to enter any identifying information is your email address at the end of the survey so that you can be entered into the gift card draw or to let us know if you would like to be contacted for future projects. However, you will be directed to a page outside of the survey and your email address will never be attached to your responses. The data file with the email addresses will be destroyed immediately after the draw. The anonymous survey responses will be stored for five years after all stages of the study are complete (roughly 12/2031). All those with access to the survey results have completed TCPS Core ethics training and additional training on the Public Health Information Act to ensure confidentiality.

What are the possible benefits and risks?

Some of the questions that we ask you may remind you of challenging experiences, which can sometimes elicit negative emotions. There are no direct benefits to you for participating. However, the indirect benefit of participating in this study is that you will have the opportunity to ensure that the training developed based on these findings are tailored to your needs, which in turn will help to ensure that the training is feasible and contains content that is most helpful to your patient interactions. Additionally, all participants will receive a link to a list of online mental health and stress-management resources at the end of the survey.

What will be done with the results of this project?

The results of this study will aid in developing a training that meets the needs of physicians, nurses, midwives, and students in these fields who work with individuals who have experienced birth trauma. We will study the data for the whole group and not for any one individual. In explaining the results, we may use direct quotes from survey responses. However, direct quotes will be referred to using a general descriptor (e.g., one health care provider, or one physician, nurse, midwife, or student). We may share the results in psychological presentations, books, and articles. In addition, the data collected will be used in students' theses/dissertations.

If you have questions

If you have any questions, please do not hesitate to contact the principal investigator, Shayna K. Pierce, at Birth.Trauma.Training@umanitoba.ca.

The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way. This research has been approved by the Fort Garry Research Ethics Board. If you have any concerns or complaints about this project, you may contact the above-named person(s) or the Human Ethics Coordinator at 204-474-7122 or humanethics@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

Withdrawing

You are free to refrain from answering any questions you prefer to omit, without prejudice or consequence. Should you wish to withdraw from the study, you must do so before submitting your survey and should also check "disagree" to the question below asking whether you consent to us using your partial responses. Once you have submitted your survey, you will be unable to withdraw as we will not have a way of identifying your survey responses.

Consent:

By clicking “Agree” below you have indicated that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities.

Agree: ☐ Decline: ☐

If you end your participation before completing the survey, your partial responses will only be used if you give us a permission to use your data by clicking ‘Agree’ below. Do you consent to us using your partial survey responses being used?

Agree: ☐ Decline: ☐

Would you like to be contacted for future studies related to this project? Please check one of the following boxes:

Yes: ☐ No: ☐

If yes, please write the email that would be best to contact you: _____

Would you like to receive a summary of research results via email (you will enter your email at the end of the survey)? If yes, you will receive an email from Birth.Trauma.Training@umanitoba.ca with a visual and written summary of the findings by 12/2026. Please check one of the following boxes:

Yes: ☐ No: ☐

If yes, please write the email that would be best to contact you: _____

3. Study 1 Questionnaires

- a. Demographic Survey
- b. Prior Training Experience
- c. Personal Birth Trauma Experience
- d. Training Needs Assessment Survey
- e. Gift Card Entry

3a) Demographic/Background Survey**1. What is your gender?**

- ☐ Woman ☐ Man ☐ non-Binary ☐ Other ☐ Prefer not to answer

1a. If other, please describe your gender. _____

2. What is your biological sex?

- ☐ Female ☐ Male ☐ Prefer not to answer

3. Age: _____

4. Race: In our society, people are often described by their race or racial background. These are not based in science, but our race may influence the way we are treated by individuals and institutions, and this may affect our health. Which category(ies) best describes you? Check all that apply:

- ☐ Black (African, African Canadian, Afro-Caribbean descent) (1)
☐ East Asian (Chinese, Japanese, Korean, Taiwanese descent) (2)
☐ Indigenous (First Nations, Inuk/Inuit, Metis descent) (3)
☐ Latin American (Hispanic or Latin American descent) (4)
☐ Middle Eastern (Arab, Persian, West Asian – Afghan, Egyptian, Iranian, Kurdish, Lebanese, Turkish descent) (5)
☐ South Asian (Bangladeshi, Indian, Indo-Caribbean, Pakistani, Sri Lankan) (6)
☐ Southeast Asian (Cambodian, Filipino, Indonesian, Thai, Vietnamese, or other Southeast Asian descent) (7)
☐ White (8)
☐ Another race category (9) Please describe _____
☐ Do not know (10)
☐ Prefer not to answer (11)

5. Education Level:

- | | |
|---|---|
| ☐ Some high school | ☐ Master's Degree |
| ☐ High school diploma | ☐ Professional Degree |
| ☐ College/Technical school | ☐ PhD |
| ☐ Bachelor's degree | ☐ Prefer not to answer |

6. Employment Status:

- | | |
|--|---|
| ☐ Full-time | ☐ Not employed |
| ☐ Part-time | ☐ Prefer not to answer |
| ☐ On some type of leave | |

7. In what province or territory do you work?

- | | |
|---|--|
| ☐ British Columbia | ☐ Nova Scotia |
| ☐ Alberta | ☐ Newfoundland & Labrador |
| ☐ Saskatchewan | ☐ New Brunswick |
| ☐ Manitoba | ☐ Prince Edward Island |

- | | |
|----------------------------------|---|
| ☐ Ontario | ☐ Yukon Territory |
| ☐ Quebec | ☐ Northwest Territory |
| ☐ Nunavut | ☐ Prefer not to answer |

8. Do you work with patients (select all that apply)?

- ☐
- Locally
- ☐
- Provincially
- ☐
- Nationally
- ☐
- Online
- ☐
- Prefer not to answer

9. Do you work in a rural or urban based setting?

- ☐
- Urban
- ☐
- Rural
- ☐
- Prefer not to answer

10. In what healthcare setting do you work?

- ☐
- Hospital-based
- ☐
- Community-based
- ☐
- Private Practice
- ☐
- Prefer not to answer

11. In what organization do you work? _____**12. What profession do you work in?**

- ☐ Family Doctor
- ☐ Family Medicine Resident
- ☐ OB-GYN
- ☐ OB-GYN Resident
- ☐ Pediatrician
- ☐ Pediatric Resident
- ☐ Neonatologist
- ☐ Neonatology Resident
- ☐ Nurse
- ☐ Nursing student or resident
- ☐ Midwife
- ☐ Midwifery student or resident
- ☐ Other
- ☐ Prefer not to answer

12a. If other, please write your profession. _____**13. How long (in years) have you worked in your profession? _____****14. How many patients/clients do you see per year on average? _____****15. Of those patients/clients, what percentage would you estimate involve traumatic birth experiences (birth experiences where there were unexpected medical complications or interventions for the birthing person or infant, where the health of the birthing person or infant were perceived to be threatened, or where the birthing person felt they lost autonomy, dignity, or control during labour and delivery)?**

- ☐ 0 – 10%
- ☐ 10 – 20%
- ☐ 20 – 30%
- ☐ 30 – 40%

- ☐ 40 – 50%
- ☐ 50 – 60%
- ☐ 60 – 70%
- ☐ 70 – 80%
- ☐ 80 – 90%
- ☐ 90 – 100%

16. In what language do you provide services?

- ☐ English ☐ French ☐ Other ☐ Prefer not to answer

3b) Prior Training Experiences

17. Have you received formal training in birth trauma (i.e., through your training program or a professional organization)?

- ☐ Yes ☐ No ☐ Unsure ☐ Prefer not to answer

17a. If yes, did this training cover the symptoms of and helpful treatments for childbirth related posttraumatic stress?

- ☐ Yes ☐ No ☐ Unsure ☐ Prefer not to answer

17b. If yes, what formal training did you receive?

- ☐ Postpartum Support International's (PSIs) 2-Day Training
☐ Training during Residency
☐ Other. Please Specify: _____
☐ Prefer not to answer

17c. Can you tell us more about the training you received (e.g., the length, source, topics included, resources needed to participate, etc.).

17d. What has or would facilitate you receiving training in birth trauma (check all that apply)?

- ☐ Considered as continuing education
☐ Low cost or free
☐ Was told about a training by colleagues
☐ Was told about a training by my professional organization
☐ Believe this training would help my patients
☐ Generally interested
☐ Other. Please Specify: _____
☐ Prefer not to answer

17e. What has or would prevent you from receiving training in birth trauma (check all that apply)?

- ☐ Not enough time
☐ Not provided in my education/residency
☐ Too costly

- ☐ Unsure where to access training
- ☐ Unsure of the benefits
- ☐ Not interested
- ☐ Do not believe that I need training in perinatal mental health
- ☐ Other. Please Specify: _____
- ☐ Prefer not to answer

18. Have you sought informal training in birth trauma through any of the following source (check all that apply):

- ☐ Personal readings
- ☐ Podcasts
- ☐ Consultation with other professionals
- ☐ Resources in Trauma-Informed Care broadly (i.e., not specific to birth trauma)
- ☐ Other. Please Specify: _____
- ☐ Prefer not to answer

19. What knowledge gaps exist for you regarding recognizing and responding to birth trauma and childbirth-related posttraumatic stress?

3c) Personal Birth Trauma Experience

Health professionals' mental health can be impacted by being present during traumatic birth experiences as part of their job. Further, some health professionals may have had personal experiences with birth trauma. Research shows that our own personal experiences with traumatic events can impact our interest in and application of trauma-informed care. We are hoping to learn more about our sample's personal experience with birth trauma. If you feel comfortable answering these questions, please do. If not, please select "Prefer not to answer."

1. Have you experienced birth trauma in your personal life (birthing or non-birthing parent)?

- ☐ Yes ☐ No ☐ Prefer not to answer

2. Have you received therapy for your personal experience with birth trauma?

- ☐ Yes ☐ No ☐ Prefer not to answer

3. Have you experienced vicarious trauma at work?

Note, vicarious trauma is defined as experiencing symptoms of posttraumatic stress after witnessing traumatic birth experiences.

- ☐ Yes ☐ No ☐ Prefer not to answer

4. There are several reasons why we may want to receive training on a topic. Are you interested in this research because of personal or professional reasons?

- ☐ Personal ☐ Professional ☐ Both ☐ Prefer not to answer

5. In your own words, why are you interested in receiving this training?

6. How do you believe receiving training in recognizing and responding to birth trauma and childbirth-related posttraumatic stress would impact your care provision?

3d) Training Needs Assessment

1. How important do you feel it is that the training cover the following topics?

	Not at all important (1)	Somewhat important (2)	Moderately important (3)	Very important (4)	Critical (5)	Refuse to answer (6)
Definition of birth trauma	1	2	3	4	5	6
Types of birth trauma	1	2	3	4	5	6
Diagnostic criteria for CB-PTSD	1	2	3	4	5	6
Case examples demonstrating how CB-PTSD presents	1	2	3	4	5	6
Risk factors for birth trauma and CB-PTSD	1	2	3	4	5	6
Protective factors for birth trauma and CB-PTSD	1	2	3	4	5	6
Screening process and tools	1	2	3	4	5	6
Pharmacological treatment options	1	2	3	4	5	6
Psychological treatment options	1	2	3	4	5	6

Combination of psychological and pharmacological treatment	1	2	3	4	5	6
What occurs during psychological treatment	1	2	3	4	5	6
Effectiveness of treatment options	1	2	3	4	5	6
Advantages and disadvantages of treatment options	1	2	3	4	5	6
Self-help options	1	2	3	4	5	6
Trauma-informed care for birth trauma	1	2	3	4	5	6
Equity and diversity concerns related to birth trauma experiences	1	2	3	4	5	6
Provider's experience of being present for patients' birth trauma	1	2	3	4	5	6
Vicarious trauma among providers and management	1	2	3	4	5	6

2. Is there any other information you think would be helpful for the training to address?

3. How much information would you find helpful to receive regarding the following content areas?

	None (1)	Minimal (key points or a	Moderate (1-page fact sheet)	A lot (2 pages of detailed	A great deal (3-6 pages of detailed	Refuse to
--	-------------	--------------------------------	------------------------------------	----------------------------------	---	--------------

		summary paragraph) (2)	(3)	information) (4)	information) (5)	answer (6)
Definition of birth trauma	1	2	3	4	5	6
Types of birth trauma	1	2	3	4	5	6
Diagnostic criteria	1	2	3	4	5	6
Case examples demonstrating how childbirth-related posttraumatic stress presents	1	2	3	4	5	6
Risk factors for birth trauma and childbirth-related PTSD	1	2	3	4	5	6
Protective factors for birth trauma and childbirth-related PTSD	1	2	3	4	5	6
Screening process and tools	1	2	3	4	5	6
Pharmacological treatment options	1	2	3	4	5	6
Psychological treatment options	1	2	3	4	5	6
Combination of psychological and pharmacological treatment	1	2	3	4	5	6
What occurs during psychological treatment	1	2	3	4	5	6
The effectiveness of treatment options	1	2	3	4	5	6

The advantages and disadvantages of available treatment options	1	2	3	4	5	6
Self-help options	1	2	3	4	5	6
Trauma-informed care for birth trauma	1	2	3	4	5	6
Equity, diversity concerns related to birth trauma experiences	1	2	3	4	5	6
Provider's experience of being present for patients' birth trauma	1	2	3	4	5	6
Vicarious trauma among providers and management	1	2	3	4	5	6

4. There are several ways to provide content within a training program. Please select how you would prefer to receive the content.

	Not preferred (1)	Somewhat preferred (2)	Moderately preferred (3)	Preferred (4)	Strongly Preferred (5)	Refuse to answer (6)
Written chapters	1	2	3	4	5	6
Infographics	1	2	3	4	5	6
Online modules with written text & infographics	1	2	3	4	5	6
Written case examples	1	2	3	4	5	6
Video or audio case examples	1	2	3	4	5	6
Audio recording (e.g., podcast)	1	2	3	4	5	6
One pre-recorded	1	2	3	4	5	6

presentation (30-60min)						
One pre- recorded presentation (60-90min)	1	2	3	4	5	6
Pre-recorded lecture series (10-15min for each topic)	1	2	3	4	5	6

5. Are there any other formats that you would find helpful if you were receiving this training?

6. What features would make the training most engaging for you?

7. What would make the training not engaging for you?

8. What is the maximum amount of time you feel the training should take to complete?

9. What is the minimum amount of time you feel the training should take to complete?

10. What would motivate/help you to complete a training to improve your recognition of symptoms and helpful treatments for people experiencing birth trauma or childbirth-related posttraumatic stress?

11. What barriers to completing a training to improve your recognition of symptoms and helpful treatments for people experiencing birth trauma or childbirth-related posttraumatic stress might you experience?

12. Do you have any accessibility needs that we should consider in designing this training?
If yes, please explain: _____

13. To what extent were you being careful and honest in answering the questions in this survey?

- ☐ Not at all honest and careful (1)
- ☐ Slightly honest and careful (2)
- ☐ Mostly honest and careful (3)
- ☐ Completely honest and careful (4)

☐ Refuse to answer (5)

3c) Gift Card Entry:

If you would like to be entered into a draw for one of four \$25 e-gift card to Amazon, please click this link to be redirected to a secured form to submit your email address: (link to be inserted)

*[*Redirected and asked]*

Please enter the email that would be best to reach you at should you be one of four participants randomly selected to win one of four \$25 electronic gift cards for Amazon.

Email: _____

If you are a winner, you will receive an email from [insert generic UM study email] to notify you and coordinate providing you the e-gift card.

Thank you for completing our survey! If you would like, you can click the link provided below to access a resource list for you and the people you may work with. The link will open in a new tab and you will be able to save the pdf to your computer

[Attachment: "Resource List.pdf"]

Appendix B

Table 1

Study 1 Supporting Quotes

Why are you Interested in Receiving This Training?	
Subtheme	Supporting Quotes
Professional Reasons	“I am an advocate for health equity, and women in this country are not receiving high quality care around birth. The fact that mental health, lactation services and physio are all largely uninsured and underfunded is one way our society does not prioritize mothers. When birth is traumatic, it destabilizes how we relate to our new roles and our infants which can affect not only our own health but the health of the new human and our partners. The way we deliver health care in this country needs to change and it can start with more women's health research and improving the user experiences and access to care. The needs of birthing people should be integrated and fully insured (ID 86).” “Because I know providers can cause trauma / be the cause of obstetrical violence and I've witnessed colleagues causing trauma and I want to be better educated so I can educate them as well. The population we work with is also likely to have had some form of trauma in the past from sexual violence to intimate partner violence, so understanding trauma as a whole is also helpful to help clients that have gone through different types of traumas (ID 36).” “So many people are not trusting of the delivery process in hospitals, or they have no idea what happened to them and they spread misinformation to other people. I want people to feel empowered during a hospital delivery and know what happened so that they can process the experience, minimize ongoing trauma, and avoid sharing horror stories with friends to spread further misinformation that leads to a lack of trust with especially OBGYN providers (ID 97).” “The impact of trauma on the body, mind, and health of the family is profound. understanding trauma, recognizing trauma, and approaching conversations in health care from a trauma centered approach would facilitate relationships and experiences that bridge providers and patients into a partnership (ID 44).”

Supportive to all Involved	“Working in labour and delivery offers a window into one of the most challenging, most profound experiences in birth givers' lives - for better or worse. The lack of control over the process (whether that is due to medical intervention or the natural process itself) can be so disorienting. I am interested in this training because I want mothers and birth givers to move through the experience of birth in ways that are empowering, providing the foundation for their parenting journeys (ID 48).” “I witnessed multiple traumatic events in my final year of midwifery school, and it influences my practice to this day. I believe having more tools to help patients could help me cope with my own vicarious trauma (ID 50).” “Because birth is the blueprint for an infant's future and life changing for anyone who births - if it is traumatic it again has life long, lasting results. When many of the traumatic experiences could be prevented if more time, patience, and actual informed CHOICE was practiced by all in the world of maternity (ID 146).”
Personal Reasons	“I feel unequipped to help my clients identify and navigate their birth trauma. I no longer provide birth care as we are an Indigenous Midwifery Program, so I see people postpartum when they tell their birth stories. I feel like I'm in a very privileged position to be able to help my clients work through the birth trauma that they experienced and learn ways that I can work to help prevent it in the future. I think that every prenatal, birth and postpartum care giver should take this training so that they can identify the ways that they can improve their approach to care in order to not contribute to the high rates of birth trauma (ID 53).” “Knowledge is power. Often as healthcare providers, if we do not have structure or case examples, we do much impromptu language. This can go either way. If I know that I have 5 things to cover in a caring and empathic way, I feel more confident in my communication with a family that I know I'll be impacted forever by the words I choose (ID 87).”

How do you Think Training Would Impact Your Care Provision?

What They Know	“Nothing should ever be done without education and consent (ID 6).” “I am a leader in my team, and I would like to know better how to model this behaviour to my families and teams (ID 19).”
Better Outcomes	“Better knowledge leads to change of behaviour and would eventually improve outcomes (ID 21).”

“Better recognition of these factors would allow me to manage my personal issues (including trauma) which would then allow for this to not be a factor in how we work with patients and coworkers. We would be better able to work based on evidence without emotional factors playing as big of a roll in decision making (ID 119).”

Training Content Preferences

Understanding Birth Trauma	“Many! I don't even know where to start with this. I assume all parents have experienced it to some degree if their baby needed NICU but recognizing which families this is a significant issue for and which ones are coping well is difficult. Once I can recognize the need to respond then I feel like I don't know what to say or offer (ID 47).”
Recognizing Birth Trauma	“I'm not sure how to recognize it early, it is always evident when they come back to follow up clinic but, in the moment, it can be difficult to recognize. I also don't know the best approach to be helpful (ID 90).” “I do not know how to assess if birth trauma has occurred. In my practice, there is no 'space' or tool for us to intentionally explore whether a birth is traumatic- we only go by what the patient tells us, and I have seldom had patients tell me outright that their birth was traumatic. In the very small amount of cases that we have suspected birth trauma has occurred, there were no protocols or resources to refer to or refer the patient to in order to address the trauma that occurred (ID 14).”
Responding to Birth Trauma	“Working in labour and delivery there is rarely an opportunity to verbally process the birth experience with a patient - we transfer them up to the mother-baby unit usually within 2 hours (ID 49).” “A framework for bringing up the subject with families in a way that doesn't scare them but also doesn't denounce the importance (114).” “Not sure what helps vs retraumatizes people. Not sure how to approach topics, especially with being newborn nurse not adult nurse (ID 107).” “Where our role as midwives would end and when we should consult mental health specialists (ID 36).”
Preventing Birth Trauma	“What can I practically do in a traumatic birth event to attempt to reduce the long-lasting emotional impact of events (ID 62).”

What Features would make the training not engaging?

“Reading material. It is difficult to get through hours of reading material when working more than full time hours as a primary care provider. Reading often ends up getting pushed to the wayside (ID 91).”

“Too many words on a page and not enough personal stories and anecdotes. I love hearing and learning from other people's stories and experiences. Expert advice and follow up is important (ID 6).”

“If it is all "textbook" information and not real-life examples and application (ID 14).”

What would motivate you to access the training?	
Internal motivators	“Knowing my patients, myself, and my coworkers would be helped by the recognition of birth trauma (ID 49).”
Training Design	“Covers the entire scope of content from definition/risk factors/symptoms - pathophysiology - to diagnosis and management - to healthcare providers experiencing vicarious trauma - to how to address systemic/institutional/policy change (ID 92).”
Accessibility	“Combination written/audio or written/video with subtitles as I often have trouble focusing too long on written work but I also struggle to understand spoken instruction only (ID 54).” “In keeping with the consideration of diversity and equity risk factors, it would be good to include some language that not all birth givers are women or consider themselves women (ID 48).” “The ability to go at my own pace. I have PTSD myself, as I am sure other providers do. This topic is crucial but the information may be triggering depending on someone's own trauma history (ID 26).” “Having had my own birth trauma experiences relatively recently, a breakdown of what to expect in each section would be valuable (ID 63).”

Table 2*Study 2 Supporting Quotes*

<i>Why are you Interested in Receiving this Training?</i>	
Subtheme	Supporting Quotes
Professional Reasons for wanting Training	“The care and teaching I provide can greatly impact their trauma response (ID 12).”
	“I know I can do better. I worry I’m currently creating more harm and retraumatizing people when I debrief with them (ID 18).”
	“I want to learn how I’m contributing to birth trauma and decrease any trauma that I may inflict (ID 11).”
	“Sense of injustice that health providers are not educated (ID 5).”
	“The area does not receive the attention it deserves. Patients don’t arrive for deliveries with enough knowledge and prep for the experience (ID 6).”
	“As a neonatologist, ALL of my patients’ parents are at a very high risk of experiencing birth trauma. Especially for the families with a prolonged hospital stay with multiple traumatic experiences compounding, the effect on parenting style, coping, family dynamics, and that effect on child development could be huge! Recognizing and responding to birth trauma from the beginning and supporting families through their whole NICU journey including antenatal counselling, birth/resuscitation, admission, discharge, and developmental follow-up is what I strive to do and to do it well in the most family-centred way possible (ID 33).”
	“Better equipped to recognize birth trauma (ID 5).”
	“Able to offer evidence-based approaches to support patients and families who experience birth trauma (ID 21).”
	“There is a lot of vicarious trauma that occurs from clients/patients birth experiences that should be talked about more openly in a safe environment (ID 1).”
	“I had not been aware of vicarious trauma before the survey. Now I want to learn more (ID 34).”
<i>Feasibility</i>	
	“Many of us are short for time, I feel that there was enough covered to get a good grasp of the material, a longer course could have us rushing through steps too fast to complete the course quickly (ID 23).”

“I was putting off doing it because it felt like a big time commitment but once I started doing it, it was faster than I expected (ID 18).”

“It is hard to fit in training. My caseload has been very full lately. I am not sure if I would want it too much longer. It was nice to go and come back to the program when time allowed (ID 30).”

“I think it would be beneficial to have more interactive cases, and perhaps some Ted talks or interactive videos to demonstrate some of the knowledge for different learning styles (ID 21).”

“I would have liked it to be longer although I imagine with more clinical scenarios this would have been sufficient (ID 14).”

“Maybe 2-3h. There is even more material that could be covered but at the same time, making it too long would deter people from participating (ID 41).”

Acceptability

Biggest “Accessible for busy providers who may not have time for long courses (ID 2).”

Strength “Review section for associating 5As with their description (ID 32),”
 “Clear summarization of objectives before and after each module (ID 5).”
 “Very patient-centred focused on patient experience (ID 22)”
 “Step by step, clear progression between topics (ID 23).”

Biggest “Last sorting game had numbers beside that didn’t match which was confusing (ID 12).”
 Weakness

“Percent of each part was confusing – I thought I had not completed some parts. (ID 22).”

Access “My computer restarted which closed the browser and had to start again rather than at the module I was on. Might be
 Barriers better to have all the content "unlocked" or at least be able to save and return (ID 33).”

Access “I work part time and I am very interested in this topic (ID 15).”
 Facilitators

“This topic is somethings that impacts my daily work and the experiences of clients I work with. I want to support my clients and patients as best as possible and provide safe environments that promote choice and advocacy to reduce the risk of CB-PTSD. I also want to help clients who have experienced trauma in previous births be able to reclaim choice and reduce the chance of further trauma (ID 29).”

What Refinements do Providers Want Made to the Training?

“The information was really clear and concise and was a good amount for the "mandatory" amount of information for the training. It would have been great to have some optional content for more in-depth information, more case examples, and more personal testimonies of people who have been through birth trauma (birthing person, support person, vicarious) and their stories of what made a difference to them for coping and recovery (ID 33).”

“I could have done more work on the 5 As. I liked the matching but maybe a second set or real examples, rather than descriptions could have been matched. And more scenarios (ID 6).”

“The definition of birth trauma seemed to encompass a NICU admission but it was never stated whether it was included or not, or the fact that NICU brings about its own forms of trauma and risk for PTSD. With high-risk deliveries associated with NICU stays, it would make sense to touch on that (not just procedures and interventions, but potentially being separated from baby, beeping machines, cords and lines, bright lights, not being able to "parent" right away, etc.; ID 8).”

“Get it on LMS and make it mandatory and it will get done. If it is not mandatory, but advertised, even if not paid, I think many nurses would do it. We don't get paid for it unless it is done at work and no one has time for that anyways so reaching out to unit managers about accessibility and benefits to patients may be all that is needed (ID 11).”

“We need to inform management/ education departments at my work that this training is available and important for staff to receive for the benefit of both patients and staff. We also need to inform management/education departments at my work of this study and its findings (ID 5).”

Impact of Training on Care Provision

Interactions
with
colleagues

“I have come to notice many of my coworkers and I have all been involved with the care of patients who had traumatic birth experiences and these experiences stick out in our minds for a long time thereafter. There have been conversations at the nursing desk about how certain patient situations will make us more 'on edge' or fearful to experience similar situations again and make us more diligent in ensuring situations like these don't happen again. It seems it is helpful to talk these situations out, but it is still difficult to know for sure if other coworkers have ongoing vicarious trauma if they do not verbally describe that that's what they're experiencing. It is hard to pinpoint whether agitated behaviour by a colleague in the workplace is due to vicarious trauma or some other factor (ID 5).”

“Not feeding into dismissive or harmful comments (ID 44).”

“Had open door policy for colleagues to feel safe to come to me, offered more intentional conversations to demonstrate to colleagues that it is ok to be met with challenges and have feelings following caring for others who experience trauma (ID 21).”

	“I will continue to educate colleagues about how to recognize, empathize and support families who have experienced birth trauma and encourage them to remember that our NICU parents have been through a trauma (ID 13).”
Care provision	“In the process of participating in this study, I have cared for a client who experienced a traumatic birth and have supported her through talk therapy. Her biggest feedback to us as care providers was that we remained advocates for her and respected the choices she made and proceeded with until other options for birth were necessary. Collaboration, education and advocacy was necessary in this scenario (ID 29).” “I think I am more aware of patient's experience instead of looking through the lens of the health care provider. I have more empathy for situations that I used to think weren't traumatic but actually are for the patients. For example, a precipitous delivery seems like a quick and easy way to have a baby. For the patient, having a fast delivery without having any analgesia can actually be traumatizing for them (ID 44).”
Interactions with Patients	“More confidence in the support they could provide (ID 29).” “More stories of what to say and what to not say in various conversations. More stories of what support looks like and what sort of things can be offered to help (ID 33).”
Ongoing Training Needs	“I would love to repeat this course in a few months to a year to help solidify the knowledge and skills after having implemented some key takeaways into my practice (ID 14).” “Interpersonal therapy, learning tools to manage anxious physical symptoms, how to teach to others (ID 12).” “Tools to help clients come out of dissociative states (ID 43).” “How to regulate nervous systems so we can be effective advocates (ID 29).” “How we could make it part of supportive care bundles in hospitals for reproductive health, L&D, postpartum, prenatal care and ongoing follow-up for obstetricians in postpartum (ID 1).”

Appendix C

Study 2 Materials

- 1) Study 2 Recruitment Materials
 - a. Recruitment Poster
 - b. Social media ad series
 - c. Email scripts
- 2) Study 2 Informed Consent Form
- 3) Study 2 Questionnaires
 - a. Pre-Training Questionnaire
 1. Demographic Survey
 2. Past Training Experience
 3. Personal Birth Trauma Experience
 4. Knowledge Check
 - b. Post-Training Questionnaire
 1. Knowledge Check
 2. Feedback Form
 - c. One-Month Follow-up Questionnaire
 1. Impact of Training
 2. Knowledge Check

1. Study 2 Recruitment Materials

1a) Recruitment Poster

Study Participants Needed

Have you ever wanted training in how to **recognize** and **respond** to **birth trauma**?



Who:

Physicians, Nurses, Midwives, or students who provide care to perinatal people who may have had traumatic birth experiences



What:

- Partner with us in testing a brief training to help you recognize and respond to patient needs after birth trauma
- Participants will **test an online training module and complete questionnaires before and after**
- Your participation will take approximately 2-3 hours total
- Receive a \$20 Amazon gift card

Interested or have questions?



Health
Information
Exchange
Lab

Contact Shayna Pierce at
Birth.Trauma.Training@umanitoba.ca



University
of Manitoba

UNIVERSITY OF MANITOBA REB APPROVAL XXX

CO-SUPERVISED BY

Dr. Kristin Reynolds, UM, Kristin.Reynolds@umanitoba.ca
Dr. Leslie Roos, UM, Leslie.Roos@umanitoba.ca

1b) Social Media Ad Series

University of Manitoba REB Approval XXXX

Are you a physician, nurse, midwife, or student who works with pregnant and postpartum people?

Join to help us investigate health professionals' ability to **recognize and respond to birth trauma**

Learn more >





Health Information Exchange Lab

University of Manitoba REB Approval XXXX

Who can participate?

- Physicians, Nurses, Midwives, or students in these fields who provide care to perinatal people who may have had traumatic birth experiences

What will I do?

- Partner with us in testing a brief training to help you recognize and respond to your patients' needs after birth trauma
- Participants will **test an online training module and complete questionnaires before and after**
- Participation will take approximately 2-3 hours total
- Receive a \$20 Amazon gift card





Health Information Exchange Lab

University of Manitoba REB Approval XXXX

Interested or have questions?

Contact Shayna Pierce at
Birth.Trauma.Training@umanitoba.ca





Health Information Exchange Lab

CO-SUPERVISED BY
Dr. Kristin Reynolds, UM, Kristin.Reynolds@umanitoba.ca
Dr. Leslie Roos, UM, Leslie.Roos@umanitoba.ca

Text: Now recruiting physicians, nurses, and midwives across Canada who are interested in testing and providing feedback on a brief training on recognizing and responding to birth trauma!

To participate, please email Shayna at Birth.Trauma.Training@umanitoba.ca

1c) Recruitment Email Templates

Initial Email Template

Subject: Research Participation Request

Hello,

Please see below for information about a new project being conducted by the Health Information and Exchange Laboratory and the Hearts and Minds Laboratory at the University of Manitoba. The title of this Study is Partnering to increase Health Professionals' Capacity to Recognize and Respond to Birth Trauma: The Development and Pilot Evaluation of a Brief Online Training

The purpose of this study is to determine the feasibility and acceptability of a brief online training that aims to inform physicians, nurses, and midwives how to recognize and respond to symptoms of childbirth-related posttraumatic stress. We also aim to gather feedback to refine the training materials and preliminary evidence for the effectiveness of the training.

As a participant, you would be asked to complete the brief online training and complete a set of questionnaires before and after. The pre-training questionnaires will ask you about your demographics, experience with birth trauma, and your base knowledge of how to recognize and respond to birth trauma. The post-training questionnaires will assess your knowledge of how to recognize and respond to birth trauma after completing the training and for your feedback on how the training could be improved. You will be given opportunities to elaborate on your responses. Your participation is expected to take a maximum of 2 - 3 hours and does not need to occur in one sitting.

As a thank you for participating in this study, you will receive a \$20 electronic gift card.

To participate or learn more, please email the Principal Investigator Shayna Pierce at Brith.Trauma.Training@umanitoba.ca

Thank you for considering participating in this research project!

Best,

Shayna Pierce, MA
University of Manitoba

Follow-up Email for Interested Participants

Subject: U of M Research Follow-Up

Hi (Name),

Thank you for choosing to participate in this study. Your feedback is valuable and will help us improve the training intervention, to meet the needs of physicians, nurses, and midwives who provide care to patients who had traumatic birth experiences.

Your participant ID is: (ID #)

Below you will find a link to a brief questionnaire that gives us basic information about you:

[Link to questionnaire]

At the end of this questionnaire, you will be directed to a link where you can access and complete the online training.

At the end of the training, you will find a link to the final brief questionnaire where you can provide feedback on your experience completing the training.

After completing the initial questionnaire, training, post-training questionnaire, and one-month follow-up questionnaire, you will be able to enter your preferred email and location for your \$20 electronic gift card.

If you have any questions along the way, please email the Principal Investigator, Shayna Pierce at Brith.Trauma.Training@umanitoba.ca.

Thank you for your participation in this study!

Shayna Pierce, MA
University of Manitoba

Has not completed pre-training survey

Subject: U of M Research Follow-Up

Hi (Name),

We noticed that you have not yet completed the pre-training survey for the Birth Trauma Training Study. We hope you're doing well. If you are experiencing any difficulties accessing the survey, please let us know. Below you can find a direct link to the survey:

Survey link: [hyperlink]

As a reminder, your participant ID is Participant ID.

We hope you have a wonderful week!

Regards,

Shayna Pierce, MA
University of Manitoba

Participant Withdrawal Request

Subject: U of M Research Follow-Up

Hi (Name),

We are sorry to hear that you are withdrawing from our study. It would be greatly appreciated if you could provide us with a brief reason as to why you're ending your participation. This information may help us improve our service for future users.

We wish you all the best!

Regards,

Shayna Pierce, MA
University of Manitoba

Honorarium Email

Hi (Name),

Thank you for completing all components of the Birth Trauma Training Study. Your feedback will be integral to ensuring that the developed training materials are feasible, acceptable, and effective for health care providers like yourself who work with those who have experienced birth trauma.

Please find below a link to your \$20 electronic gift card to Amazon.

[Insert Link]

**If checked at the end of REDCap survey that they would like to be emailed a summary of the results, the following statement will be added. **

As per your request, a summary of the findings will be emailed to you by December 2026.

We wish you all the best!

Regards,

Shayna Pierce, MA

University of Manitoba

2. Consent Forms



Informed Consent for Study 2

Recognizing and Responding to Birth Trauma: The Development and Pilot Evaluation of a Brief Online Training Intervention for Canadian Health Care Providers

Research Team:

Principal Investigators: Shayna K. Pierce, MA,

Co-Supervisors: Dr. Kristin A. Reynolds, C. Psych., and Dr. Leslie E. Roos, C. Psych.

We strongly recommend that you print this page and keep it for your records. If you are unable to print a copy, an electronic version can be made available upon your request. This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

About this study:

The purpose of this study is to understand better the training needs of physicians, nurses, midwives, and students involved in perinatal care in trauma-informed care and childbirth-related posttraumatic stress. We want to identify to what extent will a trauma-informed training intervention improve physicians', nurses', midwives', and students' in these fields ability to recognize and respond to birth trauma. We also want to better understand whether the developed training is feasible and acceptable to interdisciplinary health professionals involved in perinatal care.

What will you be participating in today?

You will be asked to go through a trauma-informed training in how to recognize and respond to birth trauma experienced by your patients. You will also be asked to complete a series of questionnaires before and after the training. The pre-training questionnaires will ask you about your demographics, experience with birth trauma, and your base knowledge of how to recognize and respond to birth trauma. The post-training questionnaires will assess your knowledge of how to recognize and respond to birth trauma after completing the training and for your feedback on the content, format, and delivery of the training. You will be given opportunities to write to elaborate on your responses. Your participation is expected to take a maximum of 3 hours to complete the study including pre-training questionnaires (30-45min), going through the online training (1 – 1.5h) and the post-training questionnaire (30-45min).

Do I have to participate?

No. Your participation is voluntary, and you may end your participation at any time without penalty. If you begin the survey and wish to no longer continue, you can exit the browser. If you would like to participate, you may still decline to answer any question.

Compensation:

Participants who complete the pre-training questionnaire, training, and post-questionnaire training will be offered a \$20 electronic gift certificate to Amazon as ‘a thank you’ for participating. This honorarium will be provided to you via email.

How will your privacy (or confidentiality) be protected?

Because your honest answers are so valuable to us, we will do everything we can to keep your information confidential (e.g., private). Here is how we will protect your privacy: Your data collected will be stored according to our research protocol. Your data will be stored on a protected secure REDCap server through the Max Rady College of Medicine. You will be given a participant ID that will be linked to your responses. A master list kept separate from your survey responses will link your name to your participant ID to allow our team to ensure that you have received both the pre-training and post-training questionnaires and your honorarium. The anonymous survey responses will be stored for five years after all stages of the study are complete (roughly 12/2031). All those with access to the survey results have completed TCPS Core ethics training and additional training on the Public Health Information Act to ensure confidentiality.

What are the possible benefits and risks?

Some of the questions that we ask you may remind you of challenging experiences, which can sometimes elicit negative emotions. By participating in this study, you will directly benefit by receiving training in how to recognize and respond to birth trauma in the patients that you work with. You will also indirectly benefit by providing feedback to help inform further revisions to help ensure the feasibility and acceptability of the training to health professionals like yourself. Additionally, all participants will receive a link to a list of online mental health and stress-management resources at the end of the survey.

What will be done with the results of this project?

The results of this study will aid in developing a training that meets the needs of physicians, nurses, midwives, and students in these fields who work with individuals who have experienced birth trauma. We will study the data for the whole group and not for any one individual. In explaining the results, we may use direct quotes from survey responses. However, direct quotes will be referred to using a general descriptor (e.g., one health care provider, or one physician, nurse, midwife, or student). Finally, we may share the results in psychological presentations, books, and articles. In addition, the data collected will be used in students’ theses/dissertations.

If you have questions

If you have any questions, please do not hesitate to contact the principal investigator, Shayna K. Pierce, at Birth.Trauma.Training@umanitoba.ca.

Your personal health information is being collected under the authority of The University of Manitoba Act. The information you provide will be used by the University to provide health care services at University Health Services. Your personal health information will not be used or disclosed for other purposes, unless permitted by The Personal Health Information Act (PHIA). If you have any questions about the collection of your personal health information, contact the Access & Privacy Office (tel. 204-474-9462), 233 Elizabeth Dafoe Library, University of Manitoba, Winnipeg, MB, R3T 2N2. The University of Manitoba may look at your research

records to see that the research is being done in a safe and proper way. This research has been approved by the Fort Garry Research Ethics Board. If you have any concerns or complaints about this project, you may contact the above-named person(s) or the Human Ethics Coordinator at 204-474-7122 or humanethics@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

Withdrawing

You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Should you wish to withdraw your responses after completing the questionnaires, you should contact the principal investigator, Shayna Pierce, by e-mail at Birth.Trauma.Training@umanitoba.ca. Should you complete the survey and later wish to withdraw your responses, you will be able to withdraw your responses at any point prior to data analysis, which will begin in July 2025.

Consent:

By clicking “Agree” below you have indicated that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities.

Agree: ☐ Decline: ☐

If you end your participation before completing the survey, your partial responses will only be used if you give us a permission to use your data by clicking ‘Agree’ below. Do you consent to us using your partial survey responses being used?

Agree: ☐ Decline: ☐

Would you like to be contacted for future studies related to this project? Please check one of the following boxes:

Yes: ☐ No: ☐

If yes, please write the email that would be best to contact you: _____

Would you like to receive a summary of research results via email (you will enter your email at the end of the survey)? If yes, you will receive an email from Birth.Trauma.Training@umanitoba.ca with a visual and written summary of the findings by 12/2026. Please check one of the following boxes:

Yes: ☐ No: ☐

If yes, please write the email that would be best to contact you: _____

3. Study 2 Questionnaires

- a. Pre-Training Questionnaire
 - 3. Demographic Survey
 - 4. Past Training Experience
 - 5. Personal Birth Trauma Experience
 - 6. Knowledge Check
- b. Post-Training Questionnaire
 - 7. Knowledge Check
 - 8. Feedback Form
- c. One-Month Follow-up Questionnaire
 - 9. Impact of Training
 - 10. Knowledge Check

**Note – email script to coordinate honorarium provision can be found in the Study 2 email scripts attachment.*

Pre-Training Questionnaire**3a) Demographic Survey****1. What is your gender?**

- ☐ Woman
- ☐ Man
- ☐ non-Binary
- ☐ Other. Please Specify: _____
- ☐ Prefer not to answer

2. What is your biological sex?

- ☐ Female
- ☐ Male
- ☐ Prefer not to answer

3. Age: _____

4. Race: In our society, people are often described by their race or racial background. These are not based in science, but our race may influence the way we are treated by individuals and institutions, and this may affect our health. Which category(ies) best describes you? Check all that apply:

- ☐ Black (African, African Canadian, Afro-Caribbean descent) (1)
- ☐ East Asian (Chinese, Japanese, Korean, Taiwanese descent) (2)
- ☐ Indigenous (First Nations, Inuk/Inuit, Metis descent) (3)
- ☐ Latin American (Hispanic or Latin American descent) (4)
- ☐ Middle Eastern (Arab, Persian, West Asian – Afghan, Egyptian, Iranian, Kurdish, Lebanese, Turkish descent) (5)
- ☐ South Asian (Bangladeshi, Indian, Indo-Caribbean, Pakistani, Sri Lankan) (6)
- ☐ Southeast Asian (Cambodian, Filipino, Indonesian, Thai, Vietnamese, or other Southeast Asian descent) (7)
- ☐ White (8)
- ☐ Another race category (9) Please describe _____
- ☐ Do not know (10)
- ☐ Prefer not to answer (11)

5. Education Level:

- | | |
|---|---|
| ☐ Some high school | ☐ Master's Degree |
| ☐ High school diploma | ☐ Professional Degree |
| ☐ College/Technical school | ☐ PhD |
| ☐ Bachelor's degree | ☐ Prefer not to answer |

6. Employment Status:

- | | |
|--|---|
| ☐ Full-time | ☐ Not employed |
| ☐ Part-time | ☐ Prefer not to answer |
| ☐ On some type of leave | |

7. In what province or territory do you work?

- | | |
|---|--|
| ☐ British Columbia | ☐ Nova Scotia |
| ☐ Alberta | ☐ Newfoundland & Labrador |
| ☐ Saskatchewan | ☐ New Brunswick |
| ☐ Manitoba | ☐ Prince Edward Island |
| ☐ Ontario | ☐ Yukon Territory |
| ☐ Quebec | ☐ Northwest Territory |
| ☐ Nunavut | ☐ Prefer not to answer |

8. Do you work with patients (select all that apply)?

- ☐ Locally ☐ Provincially ☐ Nationally ☐ Online ☐ Prefer not to answer

9. Do you work in a rural or urban based setting?

- ☐ Urban ☐ Rural ☐ Prefer not to answer

10. In what healthcare setting do you work?

- ☐ Hospital-based ☐ Community-based ☐ Private Practice ☐ Prefer not to answer

11. In what organization do you work? _____**12. What profession do you work in?**

- ☐ Family Doctor
☐ Family Medicine Resident
☐ OB-GYN
☐ OB-GYN Resident
☐ Pediatrician
☐ Pediatric Resident
☐ Neonatologist
☐ Neonatology Resident
☐ Nurse
☐ Nursing student or resident
☐ Midwife
☐ Midwifery student or resident
☐ Other. Please Specify: _____
☐ Prefer not to answer

12a. If other, please write your profession. _____**13. How long (in years) have you worked in your profession? _____****14. In what language do you provide services?**

- ☐ English ☐ French ☐ Other ☐ Prefer not to answer

3b) Prior Training Experiences

Sometimes, trauma reactions can look like other mental health concerns or be accompanied by other mental health concerns. As such, we would like to ask about your

comfortability with and training in recognizing and responding to mental health broadly and specifically related to birth trauma.

15. How comfortable do you feel discussing mental health with your patients?

- ☐ Not at all comfortable
- ☐ Somewhat comfortable
- ☐ Moderately comfortable
- ☐ Very comfortable
- ☐ Extremely comfortable

16. How likely are you to debrief with someone in your workplace after witnessing your patient's traumatic birth experience?

- ☐ Very unlikely
- ☐ Somewhat unlikely
- ☐ Neutral/Neither likely nor unlikely
- ☐ Somewhat likely
- ☐ Very likely
- ☐ Prefer not to answer

17. Have you received formal training in recognizing and responding to the following mental health conditions/reactions? Please check all that apply.

Mental health broadly

- | | | |
|---|---|-----------------------------|
| ☐ Depression | ☐ Yes | ☐ No |
| ☐ Anxiety | ☐ Yes | ☐ No |
| ☐ Anger | ☐ Yes | ☐ No |
| ☐ Borderline Personality | ☐ Yes | ☐ No |
| ☐ Bipolar | ☐ Yes | ☐ No |
| ☐ Substance use | ☐ Yes | ☐ No |
| ☐ Other: | ☐ Yes; Please describe _____ ☐ No | |

18. Have you received formal training in birth trauma (i.e., through your training program or a professional organization)?

- ☐ Yes ☐ No ☐ Unsure ☐ Prefer not to answer

18a. If yes, did this training cover the symptoms of and helpful treatments for childbirth related posttraumatic stress?

- ☐ Yes ☐ No ☐ Unsure ☐ Prefer not to answer

18b. If yes, what formal training did you receive?

- ☐ Postpartum Support International's (PSIs) 2-Day Training
- ☐ Training during Residency
- ☐ Other. Please Specify: _____
- ☐ Prefer not to answer

18c. Can you tell us more about the training you received (e.g., the length, source, topics included, resources needed to participate, etc.).

18d. What facilitated you receiving training in perinatal mental health?

- ☐ Considered as continuing education
- ☐ Low cost or free
- ☐ Was told about a training by colleagues
- ☐ Was told about a training by my professional organization
- ☐ Believe this training would help my patients
- ☐ Generally interested
- ☐ Other. Please Specify: _____
- ☐ Prefer not to answer

18e. What prevented you from receiving training in perinatal mental health?

- ☐ Not enough time
- ☐ Not provided in my education/residency
- ☐ Too costly
- ☐ Unsure where to access training
- ☐ Unsure of the benefits
- ☐ Not interested
- ☐ Do not believe that I need training in perinatal mental health
- ☐ Other. Please Specify: _____
- ☐ Prefer not to answer

19. Have you sought informal training in birth trauma through any of the following source (check all that apply):

- ☐ Personal readings
- ☐ Podcasts
- ☐ Consultation with other professionals
- ☐ Resources in Trauma-Informed Care broadly (i.e., not specific to birth trauma)
- ☐ Other. Please Specify: _____
- ☐ Prefer not to answer

20. What knowledge gaps exist for you regarding recognizing and responding to birth trauma and childbirth-related posttraumatic stress?

3c) Personal Birth Trauma Experience

Health professionals' mental health can be impacted by being present during traumatic birth experiences as part of their job. Further, some health professionals may have had personal experiences with birth trauma. Research shows that our own personal experiences with traumatic events can impact our interest in and application of trauma-informed care. We are hoping to learn more about our sample's personal experience with birth trauma. If you feel comfortable answering these questions, please do. If not, please select "Prefer not to answer."

1. Have you experienced birth trauma in your personal life (birthing or non-birthing parent)?

☐ Yes ☐ No ☐ Prefer not to answer

2. Have you received therapy for your personal experience with birth trauma?

☐ Yes ☐ No ☐ Prefer not to answer

3. Have you experienced vicarious trauma at work?

Note, vicarious trauma is defined as experiencing symptoms of posttraumatic stress after witnessing traumatic birth experiences.

☐ Yes ☐ No ☐ Prefer not to answer

4. Does your workplace create space to debrief or consult with each other to manage vicarious trauma?

☐ Yes ☐ No ☐ Prefer not to answer

5. Are there any changes to your work environment that could be made to help you in managing vicarious trauma? _____

6. There are several reasons why we may want to receive training on a topic. Are you interested in this research because of personal or professional reasons?

☐ Personal ☐ Professional ☐ Both ☐ Prefer not to answer

7. In your own words, why are you interested in receiving this training?

8. How do you believe receiving training in recognizing and responding to birth trauma and childbirth-related posttraumatic stress would impact your care provision?

9. To what extent were you being careful and honest in answering the questions in this survey?

☐ Not at all honest and careful
☐ Slightly honest and careful
☐ Mostly honest and careful
☐ Completely honest and careful
☐ Prefer not to answer

3d) Pre-Training Knowledge Check

1. Please briefly describe your role in responding to birth trauma.

2. How familiar are you with the types of birth trauma and the impact of birth trauma on families?

☐ Not at all
☐ Slightly

- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

3. To what extent are you able to recognize the signs, symptoms, and risk factors of birth trauma?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

4. Please list the signs, symptoms, and risk factors you would look for to recognize whether birth trauma has occurred. If you are unsure, please write unsure.

5. To what extent do you feel able to have trauma-informed conversations about birth trauma with your patients?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

6. To what extent do you feel able to use the 5A's and principles of trauma-informed care in conversations about birth trauma with your patients?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

7. How would you use the 5A's and principles of trauma-informed care to have a conversation about birth trauma and available supports with your patients? You may provide your answer in bullet points or a few sentences.

8. To what extent do you feel able to recognize the signs and symptoms of vicarious trauma?

- ☐ Not at all

- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

9. List the signs and symptoms you would look for to recognize when you or a colleague are experiencing vicarious birth trauma.

10. To what extent do you feel able to have trauma-informed conversations about vicarious trauma with your colleagues?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

11. List some coping strategies that might be helpful in responding to vicarious trauma.

3e) Post-Training Survey: Knowledge Check and Feedback Form

1. Would you like to receive a CE certificate to reflect your completion of the training? If yes, we will send your certificate by email shortly.

- ☐ Yes ☐ No

Knowledge Check

Now that you have completed the training:

1. Please briefly describe your role in responding to birth trauma.

2. How familiar are you with the types of birth trauma and the impact of birth trauma on families?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

3. To what extent are you able to recognize the signs, symptoms, and risk factors of birth trauma?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

4. Please list the signs, symptoms, and risk factors you would look for to recognize whether birth trauma has occurred. If you are unsure, please write unsure.

5. To what extent do you feel able to have trauma-informed conversations about birth trauma with your patients?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

6. To what extent do you feel able to use the 5A's and principles of trauma-informed care in conversations about birth trauma with your patients?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

7. How would you use the 5A's and principles of trauma-informed care to have a conversation about birth trauma and available supports with your patients? You may provide your answer in bullet points or a few sentences.

8. To what extent do you feel able to recognize the signs and symptoms of vicarious trauma?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

9. List the signs and symptoms you would look for to recognize when you or a colleague are experiencing vicarious birth trauma.

10. To what extent do you feel able to have trauma-informed conversations about vicarious trauma with your colleagues?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

11. List some coping strategies that might be helpful in responding to vicarious trauma.

Impact of Training:

1. How do you believe this training will impact your interactions with patients who have traumatic birth experiences?

2. Are there any direct changes you will make to your care provision because of taking this training?

- ☐ Yes ☐ No

2a. If yes, please explain:

3. How do you believe this training will impact your debriefing practices with your colleagues?

Feasibility, Acceptability & Feedback:

The following questions will ask about your overall opinion of this training program.

1. In your opinion, what was the biggest strength of the training?
2. In your opinion, what was the biggest weakness of the training?
3. How engaging did you find the training overall?
 - ☐ Not at all engaging
 - ☐ Somewhat engaging
 - ☐ Moderately engaging
 - ☐ Very engaging
 - ☐ Completely engaging
4. To what extent did this training meet your expectations?
 - ☐ Far below expectations
 - ☐ Below expectations
 - ☐ Meets expectations

- ☐ Exceeds expectations
- ☐ Significantly exceeds expectations
- 5. How useful do you feel this training will be to your practice?
 - ☐ Not at all useful
 - ☐ Slightly useful
 - ☐ Moderately useful
 - ☐ Very useful
 - ☐ Extremely useful

The following questions ask for your feedback on the training materials to inform revisions to future revisions.

Overview of Content Covered in the Training:

The training covered the following topics:

- Module 1: Realize the types, prevalence, and impacts of birth trauma
 - Module 2: Recognize risk factors, signs, and symptoms of birth trauma and vicarious trauma
 - Module 3: Respond using the six principles of trauma-informed care, the 5A's guide to having trauma-informed conversations about birth trauma, and the types of support by symptom and severity level
 - Module 4: Resist Re-Traumatization by accessing resources to continue learning, including infographic for patients, screening tools, and discussion guides.
6. Were there any topics that you wish were included in the training program but were not?
☐ Yes ☐ No
If yes, please describe _____
7. Were there any topics included in the training that you found irrelevant to you and your practice?
☐ Yes ☐ No
If yes, please explain which topics and why they were irrelevant _____
8. Did the amount of information provided on each topic feel sufficient to you?
☐ Yes ☐ No
9. What would you have liked more information on? How much more information?
10. How long did it take you to complete the training?

Less than 40 minutes
40 – 50 minutes
50 – 60 minutes
60 – 70 minutes
70 – 80 minutes
80 – 90 minutes

☐ Home ☐ Work ☐ Other: Please describe:

14. Throughout the training, we presented information in a variety of formats. To what extent did you prefer each of the included formats?

Formats	Strongly Disliked	Disliked	Neutral	Liked	Strongly Liked
Written text	☐	☐	☐	☐	☐
Infographics	☐	☐	☐	☐	☐
Written Quotes	☐	☐	☐	☐	☐
Sorting Games	☐	☐	☐	☐	☐
Flashcards	☐	☐	☐	☐	☐
Multiple Choice Quiz	☐	☐	☐	☐	☐
Matching Game Quiz	☐	☐	☐	☐	☐
Downloadable Summaries	☐	☐	☐	☐	☐
Self-Reflection Prompts	☐	☐	☐	☐	☐
Interactive Case	☐	☐	☐	☐	☐

15. Within this fidelity model, we were unable to include audio and video. To what extent do you feel it is important for future renditions of this training to include audio and video?

Formats	Not at all Important	Slightly Important	Neutral	Important	Very Important
Audio	☐	☐	☐	☐	☐
Video	☐	☐	☐	☐	☐

16. To what extent did you find the following features helpful to you?

[illegible]

17. How helpful did you find the interactive case example?

- ☐ Not at all useful
- ☐ Slightly useful
- ☐ Moderately useful
- ☐ Very useful
- ☐ Extremely useful

18. What types of cases would be helpful to include in future iterations of this training?

Cases	Not at all Helpful	A little bit Helpful	Somewhat Helpful	Quite Helpful	Very Helpful
Patient is dissociative	☐	☐	☐	☐	☐
Patient is angry	☐	☐	☐	☐	☐
Patient is hypervigilant	☐	☐	☐	☐	☐
Case where CPS is involved	☐	☐	☐	☐	☐
Cases with birth trauma & intergenerational trauma	☐	☐	☐	☐	☐
Case where the patient does not have basic needs met	☐	☐	☐	☐	☐
Cases where cultural birthing practices were not able to be followed due to medical setting and/or medical complications	☐	☐	☐	☐	☐
Case where partner is showing emotional distress	☐	☐	☐	☐	☐
Case where the infant is in the Neonatal Intensive Care Unit (NICU)	☐	☐	☐	☐	☐
Case where the birthing person has identified challenges with a substance use	☐	☐	☐	☐	☐
Case where you are discussing birth trauma and support options with someone whose primary language is not English	☐	☐	☐	☐	☐

19. Are there any other cases that would be helpful? Please explain.

20. Are there any changes you would like to see to the format of this training? If so, please explain.

Barriers and Facilitators to Completing the Training

21. What factors were helpful in facilitating you completing the training?
22. What do you believe would be needed to implement this training in your team/workplace?
23. Did you experience and barriers to completing the training?
- ☐ Yes: Please describe: _____ ☐ No
24. Did you have any accessibility concerns that were not met during the training?
- ☐ Yes: Please describe: _____ ☐ No
25. How likely are you to recommend this training to your colleagues?
- ☐ Not at all likely
☐ Somewhat likely
☐ Moderately likely
☐ Very likely
☐ Extremely likely
26. To what extent were you being careful and honest in answering the questions in this survey?
- ☐ Not at all honest and careful
☐ Slightly honest and careful
☐ Mostly honest and careful
☐ Completely honest and careful
☐ Prefer not to answer

3f) One-Month Follow-up Survey

One month ago, you completed an online training in recognizing and responding to birth trauma called the Birth Trauma Training Program. This training is part of our ongoing mission to improve care for patients with traumatic birth experiences. We would like to hear how your clinical practice has changed since taking the training. We are also interested to hear your ongoing training needs. This questionnaire should take 5-10 minutes to complete.

One-Month Follow-up Knowledge Check

Now that you have completed the training:

- 1. Please briefly describe your role in responding to birth trauma.**
- 2. How familiar are you with the types of birth trauma and the impact of birth trauma on families?**
 - ☐ Not at all
 - ☐ Slightly

- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

3. To what extent are you able to recognize the signs, symptoms, and risk factors of birth trauma?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

4. Please list the signs, symptoms, and risk factors you would look for to recognize whether birth trauma has occurred. If you are unsure, please write unsure.

5. To what extent do you feel able to have trauma-informed conversations about birth trauma with your patients?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

6. To what extent do you feel able to use the 5A's and principles of trauma-informed care in conversations about birth trauma with your patients?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

7. How would you use the 5A's and principles of trauma-informed care to have a conversation about birth trauma and available supports with your patients? You may provide your answer in bullet points or a few sentences.

8. To what extent do you feel able to recognize the signs and symptoms of vicarious trauma?

- ☐ Not at all

- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

9. List the signs and symptoms you would look for to recognize when you or a colleague are experiencing vicarious birth trauma.

10. To what extent do you feel able to have trauma-informed conversations about vicarious trauma with your colleagues?

- ☐ Not at all
- ☐ Slightly
- ☐ Somewhat
- ☐ Neutral
- ☐ Moderately
- ☐ Very
- ☐ Completely

11. List some coping strategies that might be helpful in responding to vicarious trauma.

Impact:

Since you took this training last month,

1. What skills that you gained in this training have you implemented into your clinical practice?
2. How, if at all, has your care provision changed since taking the training?
3. How, if at all, has completing this training impacted your interactions with patients who have traumatic birth experiences or childbirth-related posttraumatic stress disorder?
4. How, if at all, has completing this training impacted your interactions with your colleagues who support patients who have traumatic birth experiences or childbirth-related posttraumatic stress disorder?
5. What further training would you like to receive related to recognizing and responding to birth trauma?
6. To what extent were you being careful and honest in answering the questions in this survey?
 - ☐ Not at all honest and careful
 - ☐ Slightly honest and careful
 - ☐ Mostly honest and careful
 - ☐ Completely honest and careful
 - ☐ Prefer not to answer

Thank you for taking the time to complete this final survey of our study. We understand that your time is valuable, and we truly appreciate your contribution. As a token of our gratitude, we will email you to coordinate your receiving a \$20 e-gift card to Amazon.