UNDERSTANDING MATERNAL PERSPECTIVES OF SKIN-TO-SKIN CONTACT FOR THE MANAGEMENT OF ACUTE PAIN IN VERY AND EXTREMELY PRETERM INFANTS

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Abstract

Skin-to-skin care (SSC) and skin-to-skin contact for pain (SSCP) offer physiological and emotional benefits in the neonatal intensive care unit (NICU). However, little is known about how birthing parents of very and extremely preterm infants (V/EPT; < 32 weeks gestation), a significantly more challenging preterm infant population to enact SSCP, perceive this intervention. This study explores birthing parents' experiences and perceptions of SSC and SSCP in the NICU through virtual interviews with 38 mothers of V/EPT infants admitted to Canadian NICUs within the past five years. Data was synthesized around eight themes relating to SSC and SSCP. Mothers also evaluated *a priori* concepts and proposed interventions. Although most described their experiences rewarding, barriers such as inconsistent staff support, practical challenges, and emotional strain often hindered use of SSCP. Findings suggest staff training, standardizing protocols, mental health support, and flexible, family-centered policies appear key to improving SSCP engagement with V/EPT infants.

Keywords: Infant Pain; Very and Extremely Preterm Infants; Neonatal Intensive Care Unit; Skin-to-Skin Care; Skin-to-Skin Contact for Painful Procedures

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Chapter 1: Introduction

Introduction to Skin-to-Skin Contact for Very and Extremely Preterm Infants

About 1 in 12 Canadian children are born preterm (< 37 weeks gestational age [GA]) annually (Chawanpaiboon et al., 2019; Shah et al., 2018). Preterm birth often results in prolonged stays in Neonatal Intensive Care Units (NICU) and long-term adverse effects on the infant and their family, including issues with physical, cognitive, and emotional development (Woodward et al., 2009). As a leading cause of infant mortality, cerebral palsy, and disability, preterm birth is estimated to annually cost the Canadian healthcare system more than $8 billion (Rios et al., 2020; Rolnitsky et al., 2021).

Preterm infants in the NICU frequently endure between 7-17 painful procedures daily (Cruz et al., 2015). Repeated exposure to pain and distress early in life can significantly impact the biopsychosocial development of the infant (Vinall & Grunau., 2014), contributing to impaired neurodevelopment (Chau et al., 2019; Duerden et al., 2018), altered pain sensitivity, and challenges in emotional, behavioural, and cognitive functioning (Schneider et al., 2018; Shiff et al., 2021; Ranger et al., 2015). Unmanaged pain in preterm infants may also contribute to chronic health conditions such as respiratory problems, highlighting the critical importance of implementing evidence-based approaches for pain management in the NICU to support both immediate and long-term well-being (Taddio et al., 2015). This issue is further emphasized by research exploring the concept of 'iatrogenically prolonged' pain, where repetitive individual medical procedures in the NICU create a cumulative burden of pain whose sum is greater than the whole of its parts (Ilhan et al., 2022). This may result in a unique pain state where the infant endures ongoing acute pain from new procedures before recovering from the previous painful experiences (Laudiano-Dray et al., 2020). Given the prevalence and profound impact of preterm

birth, prioritizing effective interventions to minimize pain and distress in the NICU is essential to promote the long-term health and developmental outcomes of these infants (Hashemi et al., 2023).

Skin-to-Skin Contact for Pain Management in Infants (SSCP)

In 2023, the World Health Organization (WHO) issued a call to action, advocating for a fundamental restructuring of NICU care to ensure all preterm infants receive at least eight hours of daily skin-to-skin care (SSC) with their parents, with the infant wearing only a diaper is held upright on the caregiver's bare chest at an angle of about 60°, maximizing SSC (Darmstadt et al., 2023). This simple, low-cost intervention yields profound benefits: stabilization of infant heart rate and temperature, encouragement of breastfeeding, and promotion of neurodevelopmental outcomes in childhood (Artese et al., 2021; Beaumont et al., 2025). Large-scale benefits of SSC, such as a 32% reduction in neonatal mortality, improved brain development, and lower rates of parental depression, have further bolstered these efforts to integrate SSC into routine NICU care (Darmstadt et al., 2023).

Distinct from SSC is skin-to-skin contact for pain (SSCP). This refers to the use of SSC specifically during or prior to an acutely painful procedures, such as a heel lance. Numerous national and international organizations, including the Cochrane Review (Johnston et al., 2017), the Canadian Pain Society (Trottier et al., 2019), and the American Academy of Pediatrics (Baley et al., 2015), have strongly recommended SSCP as a safe, non-pharmacological method of neonatal pain management. During SSCP, the infant remains in the SSC position while undergoing a painful procedure, allowing for continuous regulation (Shiff et al., 2021). SSCP has been extensively studied as an accessible, non-pharmacological approach to pain relief in the NICU (Hashemi et al., 2023). Research indicates that SSCP offers neuroprotective benefits by

dampening the brain's response to painful stimuli (Jones et al., 2021). In their 2017 Cochrane Review, Johnston and colleagues synthesized data from 25 randomized controlled trials and found that infants who received SSCP exhibited reduced pain behaviors both immediately and throughout recovery from invasive procedures. Subsequent analyses have similarly affirmed the effectiveness and safety of SSCP for both full-term and preterm newborns (Cleveland et al., 2017; Pados & Hess, 2019). However, absent from all these discussions was a disaggregation of age groups within preterm infants.

Although SSCP has shown promise as a non-pharmacological intervention, evidence for its effectiveness in very and extremely preterm infants remains mixed and inconsistent (Cohen et al., 2025 submitted). Some studies have reported positive outcomes for SSCP in very and extremely preterm infants. SSCP has been associated with sustained analgesic effects across repeated procedures, improved cerebral oxygenation (Wang et al., 2023), and reduced biobehavioural pain responses during painful procedures (Olsson et al., 2016, Cong et al., 2009; Cong et al., 2012). These findings suggest SSCP may support both immediate pain relief and neurodevelopmental protection for very and extremely preterm infants. However, other studies have reported no significant benefit, such as no added soothing effect compared to other nonpharmacological methods (Nanavati et al., 2013) or no improvement in pain outcomes compared to standard care (Kristoffersen et al., 2019). Together, evidence for benefits of SSCP in the very and extremely preterm infant population is mixed.

It is critical to examine interventions for very and extremely preterm infants (≤ 31 weeks and 6 days gestational age) separately than older preterms. This group endures more painful procedures and longer hospital stays compared to infants who are born full-term. These infants are often less physiologically stable compared to those born at later GAs, making it challenging

for parents to provide even routine SSC shortly after birth. Additionally, the extensive use of necessary medical support devices (e.g., ventilation, heart rate monitor, feeding equipment) adds additional practical barriers to implementing SSCP (i.e., specifically for acute pain management).

Therefore, parents of preterm infants often face a more difficult and stressful scenario when attempting SSCP which can lead to a lack of distress regulation with their infant, compromising dyadic regulation attunement. Regulation attunement, where a parent and infant show similar trajectories towards regulation before, during, and after a stressful event, is a proven way that parent-infant dyads effectively function during distressing events (Di Lorenzo-Klas et al., 2023). Therefore, a lack of regulation attunement can lead to less effective distress regulation for the infant while in SSCP in the NICU and during pain and/or distressing experiences later in childhood (Di Lorenzo-Klas et al., 2023; Suga et al., 2019; Campbell et al., 2013; McMurtry et al., 2015; Pillai Riddell et al., 2011). Thus, understanding the parent emotional context to SSCP, is a critical aspect to understanding SSCP effectiveness in the NICU.

Experiences of Birthing Parents in the NICU

In addition to having to recover from a labour and delivery that is often extremely physically challenging, birthing parents of very and extremely preterm infants in the NICU often encounter profound emotional turmoil. The constant hum of monitors, persistent alarms, and glaring overhead lighting create an environment that many describe as overwhelming and disorienting (Fróes et al., 2019; Torbert et al., 2022). Yet, for many birthing parents, the most difficult aspect is the enforced physical separation from their infant, which interrupts the expected caregiving role they anticipated upon delivery (Fróes et al., 2019; Lee & Huang, 2022). This disruption in early interaction can cause a range of negative feelings, guilt, shock,

depression, heightened anxiety, diminished self-confidence, and despair, as well as behavioural responses such as powerlessness, alienation, and ambivalence, which together can ultimately hinder the natural progression of parent–infant bonding and precipitate intense feelings of helplessness and anxiety (Poehlmann et al., 2009; Feeley et al., 2011; Dressler, 2024).

Birthing parents in the NICU frequently report heightened stress linked to the loss of their perceived primary caregiving role. They may feel powerless when unable to breast/chest feed directly, perform routine caretaking tasks independently, or comfort their child as they wish (Al Maghaireh et al., 2016). Indeed, research indicates that birthing parents who are unable to engage in SSC with their infants exhibit higher levels of anxiety compared with those who have had the opportunity for SSC (Cong et al., 2021). The necessity of conforming to unit protocols and adapting to the infant's fluctuating medical condition further compounds stress, forcing birthing parents to renegotiate their parenting identity within a highly medicalized context (Al Maghaireh et al., 2016). In addition, the complex and unfamiliar NICU setting can intimidate parents. The sight of numerous tubes, wires, and machines may instill fear of inadvertently causing harm, leading some parents to hesitate before touching or holding their fragile newborns (Ncube et al., 2016; Valizadeh et al., 2013).

Simultaneously, infants contend with their own stressors, disrupted sleep due to alarms and vital checks, pain and discomfort from painful procedures, and the stark transition from the warmth of the womb to a technologically regulated environment, the discomfort of breathing tubes often secured by adhesive tape on their delicate skin, abrupt temperature shifts, the sensation of clothing and diapers, and even their first clinical washings (Coughlin et al., 2018; Maghaireh et al., 2016; Torbert et al., 2022). Although care teams work to create a soothing atmosphere, the reality of bright lights, relentless alarms, and routine procedures makes the

NICU inherently demanding for both infants and their families (Torbert et al., 2022). This collective stress places parents at increased risk for perinatal post-traumatic stress and postpartum depression (Ionio et al., 2016; Lefkowitz et al., 2010; Lorié et al., 2021).

Family-Centered and Family-Integrated Care Models

In recognition of the challenges posed by the traditional NICU environment, healthcare providers have embraced models that actively involve parents in their infant's care. Family-centered care (FCC) emphasizes collaboration between medical teams and families, recognizing parents as essential contributors to their child's well-being (Ramezani et al., 2014). Studies comparing FCC to more paternalistic care models demonstrate reductions in infant morbidity and mortality, as well as enhancements in cognitive development among preterm infants (Artese et al., 2021; Beaumont et al., 2025). By reframing parents from passive observers to empowered partners, FCC aims to mitigate the emotional distress associated with parent–infant separation (Waddington et al., 2021; Beaumont et al., 2025).

Building on these principles, Family-Integrated Care (FICare) was pioneered in Canada to further solidify parental involvement. FICare establishes four core pillars: creating a NICU environment conducive to prolonged parental presence (O'Brien et al., 2018; Broom et al., 2017); educating staff on coaching and supporting parents (Macdonell et al., 2013); providing parents with tailored bedside and group learning to bolster confidence and caregiving skills (He et al., 2018); and delivering structured psychosocial support (Enke et al., 2016). Through FICare, parents assume active roles, participating in rounds, performing routine care under guidance, and making informed decisions alongside clinicians, thereby reducing parental stress, and fostering stronger parent–infant bonding (Waddington et al., 2021; Lorié et al., 2021).

Among the practices central to FCC and FICare is SSC (Lee, 2023). For birthing parents, SSC provides a tangible means to fulfill their caregiving role, attenuating feelings of helplessness and enhancing maternal self-efficacy (Herizchi et al., 2017; Buil et al., 2018). However, this thesis will distinguish the practice of SSC from the practice of SSCP- i.e., engaging in the practice of skin-to-skin contact before, during, and after a painful procedure. Moreover, there will be a specific focus on very and extremely preterms, as opposed to preterms broadly.

Challenges of Skin-to-Skin Contact for Pain in Very and Extremely Preterms

Birthing parents' thoughts and feelings towards their experience of SSCP with their very and extremely preterm infants have never been studied. SSCP is more stressful for parents of very and extremely preterm infants since they face a heightened stress burden when contemplating SSCP due to their infant's medical fragility and their infant is exposed to more extensive iatrogenic painful experiences (such as painful medical treatments including but not limited to Intubations, Suctions, Eye examinations, Heel lances, Intramuscular injections, Lumbar punctures and Nasal prongs insertion for CPAP) (Shiff et al., 2021; Phuwayanon et al., 2025; Laudiano-Dray et al., 2020). These painful procedures are not only distressing to the infant but to the parent as well.

It is important to understand that infants born at < 32 weeks typically face more complex medical challenges compared to late preterm infants (32 to 37 weeks). They are most often fed through a feeding tube, about 90% are on ventilation support (e.g., CPAP), many have venous catheters, they are often more physiologically unstable when transferred out of the incubator and have more fragile skin in the first week of life (Stoll et al., 2010; Oranges et al., 2015). These factors make SSC more complex to execute for both parents and clinicians as they need to consider equipment displacement, desaturation, and bradycardia with transfers (Phuwayanon et

al., 2025). Therefore, parents and clinicians may be more cautious about initiating SSC right after birth with very and extremely preterm infants, making SSCP more stressful for these caregivers as they have less SSC experience broadly.

Considering the well-established developmental need for physical proximity between birthing parents and infants in early infancy (Bowlby 1969/1982), the limited opportunities for such contact during a NICU stay, the layers of stress NICU parents face that may impact their ability to self-regulate distress, and the constant barrage of painful procedures facing their very and extremely preterm infants, it is critical to understand birthing parents' experience and perceptions surrounding SSCP in the NICU. This understanding can help identify ways to support families and caregivers of very and extremely preterm infants in the NICU, empowering them to feel better equipped to support their infants.

The Current Study

Grounded in this literature gap, Chapter 2 is the submitted manuscript of a national research initiative in partnership with the Canadian Premature Babies Foundation. This study explores the specific perspectives of mothers of very and extremely premature born infants regarding skin-to-skin contact for painful procedures or SSCP.

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Chapter 2[1]: Understanding Maternal Perspectives of Skin-to-Skin Contact for the Management of Acute Pain in Very and Extremely Preterm Infants

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Abstract

Skin-to-skin care (SSC) and skin-to-skin contact for procedural pain (SSCP) are recognized for their physiological and emotional benefits in the neonatal intensive care unit (NICU), including pain reduction in preterm infants. However, little is known about how birthing parents of very and extremely preterm infants (V/EPT; born < 32 weeks gestational age), a significantly more challenging preterm infant population to enact SSCP, perceive this intervention. This study aimed to explore birthing parents' experiences and perceptions related to the use of SSC and SSCP in the NICU with their very and extremely preterm infants. In partnership with a national preterm parent organization, virtual interviews were conducted with 38 mothers of very or extremely preterm infants from across Canada, who had been admitted to the NICU within the past five years. Data was synthesized around eight primary themes relating first to SSC broadly and then SSCP. In addition, mothers' opinions about *a priori* concepts and potential interventions (generated from pilot data) were also vetted. Important actionable facilitators and barriers related to fears and interventions to support SSCP with parents of V/EPT infants were discerned. Although most found their experience rewarding, barriers such as limited instruction, inconsistent staff support, procedural challenges, and emotional strain often hindered use of SSCP. Enhancing staff training, standardizing protocols, offering mental health support, and adopting flexible, family-centered policies appear key to improving SSCP engagement with the youngest preterm infants.

Introduction

Each year, approximately 1 in 10 children worldwide are born preterm (< 37 weeks' gestation), placing them at increased risk for prolonged NICU stays, developmental challenges and higher rates of mortality and disability [34,14,43,52]. In Canada, preterm birth contributes billions in annual healthcare costs [40,41].

In 2023, the World Health Organization recommended that all preterm infants receive at least 8 hours of daily skin-to-skin care (SSC), where infants are held upright on their parent's bare chest [17]. SSC is a simple yet powerful intervention that reduces neonatal mortality and supports brain development [2,4].

Parents of very and extremely preterm infants (V/EPT; born < 32 weeks' gestation) often feel overwhelmed by the NICU environment, and powerless in their caregiving role [20,48,19,18]. Mothers, in particular, report anxiety, guilt, and distress from being separated from their newborn, which can hinder bonding and contribute to postpartum depression [20,26,37,19,18]. The sight of their infant's fragility and medical equipment can contribute to parental stress and make them hesitant to initiate SSC, despite its known benefits [31,50].

To address these challenges, Family-Centered Care (FCC) and Family-Integrated Care models have emerged, emphasizing parental involvement and collaboration with healthcare teams [38,33,7]. SSC, a core component of FCC, benefits both infants and parents, with mothers reporting reduced anxiety and stronger emotional bonds [27,23,9].

Preterm infants in the NICU often undergo 7-17 painful procedures daily, exposing them to repetitive pain that can impair neurodevelopment and emotional regulation [16,51,8]. Untreated pain is associated with altered pain sensitivity, chronic health issues, and lasting cognitive, emotional, and behavioral effects [42,44,39].

In addition to SSC is the recommended practice of SSC surrounding an acutely painful procedure, such as a heel lance. Organizations, including the Cochrane Review, the Canadian Pain Society, and the American Academy of Pediatrics, describe skin-to-skin contact for pain (SSCP) as a safe, non-pharmacological method of neonatal pain management [24,49,3]. SSCP can dampen infants' pain responses, stabilizes heart rate and oxygenation, and offers long-term neuroprotective benefits [24,29].

However, SSCP is more difficult with V/EPT infants due to physiological instability and dependency on medical equipment, complicating the logistics of holding them during painful procedures [31,50]. While research supports SSCP with preterms broadly [24] critical age analyses for V/EPT infants remain limited. Thus, current recommendations for SSCP are being promulgated without clear developmentally attuned evidence for the youngest preterms. Notably, recent studies on V/EPT infants suggesting mixed SSCP efficacy [11,25].

Moreover, parental perspectives of SSCP for V/EPT infants remain unexplored, despite the heightened stress of infant's medical fragility [45]. Watching painful procedures is distressing for most NICU parents, but those with V/EPT infants may experience unique challenges due to complexities of extreme prematurity and require specialized support [36]. Understanding their experiences with SSCP in the NICU is critical to developing interventions that empower parents and optimize pain management for these higher-risk infants. In partnership with a national preterm parent advocacy group, this study explores birthing parents' experiences and perspectives on undertaking SSC and SSCP with their V/EPT infants in the NICU.

Methods

Participants

Recruitment took place from October 2024 to February 2025. Inclusion and exclusion criteria were that birthing parents were able to communicate in English orally (to respond to complex questions in the interview), have a child who was born prior to 32 weeks, 0 days gestational age during the last five years (October 2019 - October 2024) and have experienced a NICU stay. Mothers who participated in a previous study at Mount Sinai NICU in Toronto, Ontario [22] who consented to further contact, were identified using the existing confidential database and were contacted directly via email. In addition, birthing parents of preterm infants with NICU experience across Canada were broadly recruited in collaboration with the Canadian Premature Babies Foundation via flyers, email, and social media posts. If interested, parents received additional information, and a time was scheduled for an interview.

Procedure

Ethical Considerations

Ethics approval for this study was granted from York University (24-0156-E) and Mount Sinai Hospital (MSH; 24-0156-E). Informed consent was obtained from all participants. All data were deidentified.

Interviews were virtual and conducted using a secure patient health information platform (Zoom teleconferencing PHIPA account). Following introductions and the completion of the electronic consent form using REDCap, 30-minute structured interviews were conducted based on the structured interview guide by three clinical psychology graduate students (HH, EC, NG) and one research staff with a bachelor’s degree in psychology (AL). Demographic information was collected at the outset of the interview followed by a series of questions pertaining to their

stay duration and level of involvement in Level 3 NICU (most medically intensive care) and Level 2 NICU (stepped down care to support development before discharge), and stressors and challenges during their NICU stay using the Participant Information Sheet (PIS) REDCap form. Web-based interviews were recorded using PHIPA-compliant web software (Zoom) and stored on a secure server. Field Notes were taken following each interview to supplement transcripts. All participants were provided with an Amazon e-gift card as a token of appreciation. Standards for Reporting Qualitative Research were followed for this paper [32].

Measures

Interview Guide

Using a grounded theory approach [47] the goal of the qualitative interviews was to generate detailed knowledge about birthing parents' experiences and perspectives of engaging in SSC and SSCP in the NICU. The interview guide was developed to address the breadth of experiences and perspectives of birthing parents (See Appendix A: Supplemental Materials – Interview Guide). The interview guide was developed collaboratively by the lead and senior author (HH and RPR), based on pilot interviews conducted by RPR with 7 NICU mothers on SSCP in 2023, whose data was not included in the current analysis. Two types of questions were posed in the current interview guide. First, open-ended discourse questions were posed. Then, after participants were able to express their ideas, the interview guide asked specific opinions about concepts related to fears about SSCP and optimal ways to support parents to enact SSCP that were generated from the pilot data. The guide was reviewed and edited based on the feedback from team members with over 25 years NICU clinical expertise (VS, CC, LJ). The questions were reviewed after the first three interviews to assess if any necessary changes were required based on the participant comprehension and feedback. Based on the review, no

alterations were required. Participants had the opportunity to provide any additional feedback at the end of the interview. Interviews were conducted until saturation was reached [21].

Participant Information Sheet (PIS)

The PIS form includes questions about 1) Birthing parent family and household members, 2) Interactions with their baby during level 2 and 3 NICU stay, 3) Experience with skin-to-skin care with their baby during NICU stay, 4) Potential stressors and challenges they have faced related to their infant's NICU stay, and 5) Birthing parent and partner's demographic background. Questionnaire responses were used to quantify the socioeconomic status, ethnic background, familial characteristics, NICU experience, and skin-to-skin experience of the sample.

Data Processing

The interview audio-recordings were anonymized and transcribed using transcription software [35], and independently double-checked by members of the research team.

Data Analysis

Transcripts were subsequently analyzed using 6 phases of thematic analysis (i.e., familiarization, generating codes, identifying themes, reviewing themes, naming themes, and report writing; [5,6]). Data analyses took place from March to May 2025. There were two analysis leads (HH and RPR) who took primary responsibility for developing the code book, overseeing the coding process, and developing themes based on the codes generated. As a first step, the analysis leads familiarized themselves with the data by reading and making notes on the transcripts. Next, a list of initial codes was generated independently by the analysis leads prior to a consensus meeting. A consensus meeting was held, where all codes were reviewed and agreed upon, and the codebook and coding form were finalized. Subsequently one analysis lead (HH)

ran a two one-hour training session with 6 coders (EC, NG, AL, CC, LJ, VS) to familiarize with the codebook and coding form. All coders (EC, NG, AL, CC, LJ, VS) were members of an interdisciplinary research team (i.e., psychology, medicine, nursing) with research and/or clinical background in NICU care. Each transcript was coded twice. The average percent agreement (i.e., the number of times 2 individuals agreed upon a code divided by the total number of units of observation that were rated) across transcripts between coders was 0.90 (almost perfect agreement; [28]). Next, the analysis leads reviewed the coded transcripts and collated codes for each question. The analysis leads met and generated relevant potential themes and thematic maps based on the data (See Appendix B: Supplemental Materials Table 1 [*Open-Ended Questions- Thematic Analysis Results],* Table 2 [*Closed-Ended Questions- Common Fears or Concerns About Holding Very and Extremely Preterm Infant in SSCP],* Table 3 [*Close-Ended Questions- Opinions on Five Ideas for Supporting SSCP in Very and Extremely Preterm Infants]*). Synthesis of thematic maps follow in the Results section. Summary statistics of all demographic and PIS variables were conducted in SPSS (version 28; IBM Corp).

Results

Contextualizing the Sample

Participants consisted of 38 self-identified mothers who had a child in the NICU (born preterm, less than 32 weeks gestational age). Table 1 summarizes the demographic characteristics of the mothers and Table 2 summarizes the characteristics of their infants' NICU experiences. The majority of mothers were between the ages of 30-49, highly educated (84% held at least a university degree), were predominantly North American (66%), employed (58%) and married or living in a common-law relationship (92%). Overall, infants were born at mean GA of 27.60 weeks (SD = 2.81weeks). Most infants were singletons (87%) and received care in

Ontario NICUs (53%). While mothers reported regular presence and moderate involvement in NICU care, SSC and SSCP were more commonly practiced at level 3 NICUs than level 2, but also infants on average had longer level 3 NICU stays than level 2 NICU stays. Overall, mothers' preparedness' for preterm birth was rated low (M=33.79 [out of 100]; SD = 35.47).

Table 1. Participant Information Sheet - Demographic Characteristics

Characteristics	N (%)
Self-Identified Gender of Birthing Parent	
Male	0 (0%)
Female	38 (100%)
Age	
18-29	3 (8%)
30-49	30 (79%)
Prefer not to answer	5 (13%)
Highest Level of Education	
Graduate School or Professional Training	16 (42%)
University Graduate (4 years)	16 (42%)
Partial University (at least 1 year)	1 (3%)
Trade School/Community College	3 (8%)
High School Graduate	2 (5%)
Self-reported Ethnicity	
North American	25 (66%)
South Asian	1 (3%)
East Asian	4 (11%)
Southeast Asian	2 (5%)
European	4 (10%)
African	2 (5%)
Household Income	
26,000-55,000	1 (3%)
56,000-110,000	5 (13%)
111,000-175,000	16 (42%)
176,000-250,000	6 (16%)
Over 251,000	5 (13%)
Prefer not to answer	5 (13%)
Employment Status	
Employed	22 (58%)
Stay-at-home parent	3 (8%)
Parental leave	11 (29%)
Other	1 (3%)
Prefer not to answer	1 (3%)
Relationship status	
Single	2 (5%)
Married/living common law	35 (92%)

Divorced	1 (3%)

Note. N=Number

Table. 2 Participant Information Sheet - NICU Stay

Characteristics	***M (SD) or N (%)***
Infant GA	27.60 (2.81)
Multiple birth	
Singleton	33 (87%)
Twin	4 (10%)
Triplet	1 (3%)
NICU Location Province	
Yukon	1 (3%)
British Columbia	6 (17%)
Alberta	4 (10%)
Manitoba	3 (7%)
Ontario	20 (53%)
Quebec	3 (7%)
Newfoundland	1 (3%)
NICU Level 3: presence (day/week)	6.65 (1.04)
NICU Level 3: length of stay (days)	59.47 (51.06)
NICU Level 2: presence (day/week)	6.69 (1.03)
NICU Level 2: length of stay (days)	26.30 (21.36)
Level of mothers' involvement in infant's day-to-day care at Level 3 NICU (rating from least involved 1-100 most involved)	75.06 (28.67)
Level of mothers' involvement in infant's day-to-day care at Level 2 NICU (rating from least involved 1-100 most involved)	77.90 (32.48)
Days before first SSC	6.05 (6.32)
SSCP at Level 3 NICU	
Never	15 (39%)
1-5 times	15 (39%)
6-10 times	3 (8%)
11+ times	5 (13%)
Prefer not to answer	0 (0%)
SSCP at Level 2 NICU	
Never	17 (45%)
1-5 times	12 (31%)
6-10 times	1 (3%)
11+ times	3 (8%)
Prefer not to answer	5 (13%)
SSC at Level 3 NICU	
Never	0 (0%)
1-5 times	6 (17%)
6-10 times	8 (21%)
11+ times	21 (55%)
Prefer not to answer	3 (8%)
SSC at Level 2 NICU	

Never	3 (8%)
1-5 times	2 (5%)
6-10 times	3 (8%)
11+ times	24 (63%)
Prefer not to answer	6 (17%)
Lived at home during infant's Level 3 NICU stay	26 (68%)
Lived at home during infant's Level 2 NICU stay	24 (63%)
Level of preparedness for preterm birth (rating from 0 not at all prepared to 100 extremely prepared)	33.79 (35.47)

Note. M = Mean; SD = Standard deviation; N=Number; GA=Gestational age; NICU = Neonatal Intensive Care Unit; SSC = Skin-to-skin care; SSCP=Skin-to-skin contact for pain management

Furthermore, to better understand the NICU stay challenges of the sample outside of the medical status of their infant (to understand the level of stress on the family), participants were also asked in the demographics form to rate the level of difficulty experienced from each stressor (See Table 3). Most mothers reported moderate to high difficulty in several areas during their infant's NICU stay, with mental health challenges, household demands, cost of parking, physical health challenges, and childcare for other children at home being the most frequently reported as highly difficult. In contrast, challenges related to work demands and caring for other family members were less commonly rated by highly difficult.

Table. 3 Participant Information Sheet – Reported NICU Stay Challenges

Challenges	***Percentage of Parents reporting N (%)***
Commuting costs	
Low difficulty	22 (58%)
Moderate difficulty	10 (26%)
High difficulty	6 (16%)
Prefer not to answer	0 (0%)
Cost of parking	
Low difficulty	17 (45%)
Moderate difficulty	11 (29%)
High difficulty	10 (26%)
Prefer not to answer	0 (0%)

Childcare of other children at home	
Low difficulty	17 (45%)
Moderate difficulty	6 (16%)
High difficulty	8 (21%)
Prefer not to answer	7 (18%)
Work demands	
Low difficulty	28 (74%)
Moderate difficulty	5 (13%)
High difficulty	1 (3%)
Prefer not to answer	4 (10%)
Household demands	
Low difficulty	15 (39%)
Moderate difficulty	19 (50%)
High difficulty	4 (11%)
Prefer not to answer	0 (0%)
Caring for other family members	
Low difficulty	26 (68%)
Moderate difficulty	6 (16%)
High difficulty	2 (5%)
Prefer not to answer	4 (11%)
Physical health challenges	
Low difficulty	16 (42%)
Moderate difficulty	7 (18%)
High difficulty	12 (32%)
Prefer not to answer	3 (8%)
Mental health challenges	
Low difficulty	5 (13%)
Moderate difficulty	14 (37%)
High difficulty	17 (45%)
Prefer not to answer	2 (5%)

Note. Participants rated how difficult each of the specific challenges were during their infants NICU stay. Each row represents a specific challenge (e.g., commuting costs, work demands, mental health challenges), and responses are categorized by perceived level of difficulty: *Low difficulty*, *Moderate difficulty*, *High difficulty.*

Thematic Analysis

Themes were collated to illustrate the breadth of maternal experiences in relation to SSC and then specifically for SSCP. While numbers and percentage of mothers who expressed each

theme are included below, these figures are not intended to suggest the importance of one theme over another. The below analysis objectives describe the diversity and complexity of experiences that very and extremely preterm infant mothers' experiences with SSCP rather than to quantify the importance of any theme with statistical certainty. Three sets of syntheses will be provided: the themes from the open-ended questions on SSC and SSCP, the perspectives of the sample on the *a priori* common fears or concerns expressed by the pilot sample, and then finally, the perspectives of the sample on the *a priori* interventions suggested by the pilot sample.

Mothers were first asked about their labour and delivery experiences to contextualize their NICU journey. Participants described a wide range of complications before, during, and after birth, including preterm premature rupture of membranes (PPROM), high-risk pregnancies, infections (e.g., sepsis, pneumonia), gestational diabetes, antepartum hemorrhage, placenta previa, Hemolysis Elevated Liver enzymes and Low Platelet count (HELLP) syndrome, and extended hospitalizations. Some faced rare conditions such as twin-to-twin transfusion syndrome and twin anemia polycythemia sequence (TAPS). Some had to travel, sometimes by emergency transport, to access NICU care, leading to separation from family and limited social support. Deliveries were often unplanned, involving emergency C-sections, spontaneous preterm labour, sometimes with significant complications such as major blood loss and amniotic fluid embolism. Postpartum challenges were also common, including pain, mental health difficulties, breastfeeding complications, wound dehiscence, preeclampsia, and prolonged recovery. A few mothers also reported the experience of infant loss and grief. These experiences highlight the complex and often traumatic nature of preterm birth and NICU experience.

I. Themes From Open-Ended Questions (See Appendix B - Supplemental Materials-Table 1)

Data from the open-ended questions were synthesized under 8 overarching themes: Initial Feelings Towards SSC in the NICU, Feelings towards SSC over time, Main Feelings Towards SSC, Experience with SSCP, Initial Feelings towards SSCP, Feelings towards SSCP over time, Encouragement for SSCP from Others in the NICU, Future Suggestions to Support SSCP. Italicized quotes from participants are included within themes to help exemplify the content.

1. Theme One: Initial Feelings Towards SSC in the NICU

When mothers were asked about their feelings towards their first-time experience with SSC both positive and negative emotions were expressed. Overall, 58% (n = 22) of mothers expressed a mix of both positive and negative emotions, while 29% (n = 11) described only negative emotions, and 13% (n = 5) reported only positive emotions towards their first-time experience with SSC.

1.1. Subtheme: Positive Emotions

Mothers described a range of powerful emotions during their first SSC experience. A large group of mothers expressed deep joy, love, and a sense of bonding, finally feeling like a mom and experiencing SSC as a rewarding and long-anticipated moment as they had to wait an average of 6.05 days (Table. 2 Participant Information Sheet - NICU Stay) before their first SSC with their baby. Several mothers also felt a profound sense of relief, knowing their baby was safe and stable in their arms, with nurses offering encouragement and support. For several mothers the experience brought calm and peace, feeling therapeutic and relaxing, while also highlighting the baby's steady heartbeat and breathing. A small group of mothers felt deep gratitude for being able to hold their baby and for the support from healthcare professionals. A small group of mothers also described the experience as surreal, appreciating its significance of holding their preterm infant.

"The skin-to-skin was absolutely amazing. Like I mentioned telling the nurse that it felt like I'm having some therapeutic session"

1.2. Subtheme: Negative Emotions

Mothers described a range of challenging emotions during SSC, with majority of mothers experiencing fear and anxiety about their baby's fragile state, medical equipment, and doing SSC correctly. A small group of mothers expressed anger and frustration at medical barriers, hospital policies, and inconsistent guidance from healthcare professionals, as well as sadness over lost bonding opportunities and grief about missing a typical newborn experience. Several mothers felt overwhelmed by the NICU environment and responsibilities, physically uncomfortable during SSC, and daunted by managing the baby's fragile state and medical attachments. A small group of mothers also described feelings of guilt about delayed SSC and about only one parent being able to hold the baby first, which added to their emotional burden.

"They want you to hold for a minimum of an hour if not more and they were really pushing doing these very long skin-to-skin sessions, I struggled with anxiety in hospitals so for me staying in the hospital and being stuck there for however long they told me to, was really challenging."

2. Theme Two: Feelings Towards SSC over Time

When mothers were asked about how their feelings toward SSC evolved over the course of their NICU stay, four distinct patterns emerged. Many mothers (55%, n = 21) described an increase in positive emotions toward SSC over time. Conversely, 13% (n = 5) reported an increase in negative emotions. For 23% (n = 9) of mothers, their feelings toward SSC remained consistent throughout their NICU stay. Finally, 8% (n = 3) described an oscillating trajectory in their emotions, changing emotional valences multiple times over their stay.

2.1. Subtheme: Increased Positive Emotions Towards SSC

Several mothers described becoming more comfortable and confident with SSC as they practiced it consistently, received support from nurses, and as their baby became older and stronger. They felt increasingly eager to engage in SSC, drawn by nurses' encouragement, the calming effect on their baby, and its establishment as a cherished routine. Several mothers expressed that SSC fostered a deeper sense of connection and attunement to their baby's cues, providing mutual comfort and meaningful support. Over time, several mothers came to value SSC even more, recognizing its importance for their baby's health and bonding, making it a priority, and giving them a sense of agency in the NICU.

"It just reinforced how important it was to have skin-to-skin every day, whether it was me or my husband, that was the priority every day, to get her on our skin, and that's when she was the most relaxed, most stable. So, it just reinforced how important it was."

2.2. Subtheme: Increased Negative Emotions Towards SSC

A small group of mothers reported increasing negative emotions towards SSC over time, driven by traumatic experiences, such as baby becoming unstable during SSC, and barriers such as managing SSC alone, lack of nursing support, and COVID-19 restrictions. As their baby's condition worsened, mothers felt helpless and less able to provide comfort. They also described heightened discomfort due to the lack of privacy in the NICU, and increased anxiety, especially when their baby became unstable during SSC, intensifying their fear and worry.

"I was really cherishing it at first, but then it got to a point where, sometimes I had him skin-to-skin, and the machines kept beeping repeatedly, so it made me nervous, not knowing how to hold him, or if I'm not holding him correctly, and then he's desatting, I felt like I should just maybe let him be in the crib."

2.3. Subtheme: Feelings did not Change over time Towards SSC

Several mothers described that their feelings toward SSC generally remained positive over time, experiencing happiness, growing attachment, and a sense of contributing to their baby's wellbeing. They enjoyed observing their baby's development, found SSC supportive of breastfeeding, and appreciated it as a comforting routine, even as it became less frequent. At the same time, a small group of mothers noted that their negative feelings of guilt or overwhelm remained constant throughout their NICU experience.

"It just felt like it was the best thing I could do, other than having her inside. Still, it's the next best thing, like the best thing would have been for her to be left inside, but the next best thing was to put her on my chest."

2.4. Subtheme: Oscillation of Feelings Between Positive and Negative.

A small group of mothers described their feelings towards SSC changing over time, feeling more comfortable as the baby improved, but then experiencing renewed fear after baby becoming unstable and health scares. Some also became comfortable with SSC in level 3 NICU but became less eager to do SSC after moving from Level 3 to Level 2 NICU.

"So, I loved it […] because she slept so well […] like she was amazing. […] Once she turned kind of this gray color, she bradyed really badly, and she kind of stopped breathing. […] It was really scary for me. After that, I started worrying a lot doing skin-to-skin for probably about a week. I was terrified to hold her. I still did […] but I was like, oh my God, she's gonna die. Yeah, the evolution was sort of like this, you know, like, oh my God, I love it so much. And then, oh my God, she had an event. And then, oh my God, I love it so much. And then she had an event. Her reaction often coloured the way we felt about it."

3. Theme Three: Main Feelings Towards SSC

When mothers were asked about the primary emotions they associate with their overall experience of SSC, both positive and negative emotions were expressed. An overwhelming majority of mothers (90%, n = 34) described experiencing a mix of both positive and negative emotions, while 10% (n = 4) reported only positive emotions throughout their SSC experience in the NICU. Within the categories of positive and negative emotions, additional subtheme clusters emerged, which are detailed below.

3.1. Positive Emotions

A large group of mothers described SSC overall as a deeply positive experience filled with happiness, joy, warmth, and love, emphasizing the emotional and physical bond with their baby, feeling like a mom, and providing comfort while enjoying the baby's improved health and feeling more connected. Several mothers also reported a sense of security and reassurance, feeling comforted by having their baby close and knowing SSC was beneficial for the baby’s health, fostering a sense of fulfillment and belonging. The majority described SSC as comforting and calming, helping them bond, reduce anxiety, and focus on the present moment with their baby, while fostering confidence and normalcy. A small group described the experience as surreal and awe-inspiring, highlighting their baby’s resilience and development. Some mothers expressed gratitude for the opportunity to be present in the NICU, feeling fortunate for family support, and a few mothers expressed hope that SSC was helping their baby, trusting its benefits outweighed any stress from moving the baby.

“The actual skin-to-skin was like the only time I felt like I was her mom.”

3.2. Negative Emotions

A small group of mothers expressed doubt about SSC overall, questioning its benefits, their technique, and whether it was more for their own comfort than the baby's wellbeing. Several

mothers described guilt during SSC, feeling they burdened nurses, did it incorrectly, prioritized other tasks like pumping, chose between twins, needed medical staff permission, or did not do SSC enough. Several also felt frustrated and overwhelmed by complicated rules, commitment requirements, inconsistent medical staff help, alarms and equipment, uncomfortable chairs, navigating SSC with twins, and COVID-19 restrictions. Several mothers reported discomfort from pain, heat, lack of privacy, masks, breast milk leakage, cords, equipment, and overall fatigue. Most mothers described significant fear and anxiety, worrying about harming the fragile baby, constant monitoring, falling asleep while holding, and future health concerns. Several mothers felt sadness and grief due to the long NICU journey, traumatic birth, longing to take their baby home, and missing the typical birth experience.

"I felt guilty about it, I'm doing this because I need it, maybe not necessarily that's the best for you. I know skin-to-skin is great and there are medical benefits but it's hard to wrap your head around that when they're having five bradycardia events when you're holding them, like "is this really best for you right now?"

4. Theme Four: Experience with SSCP

After broadly, discussing SSC, mothers were then asked about their specific experience with SSCP in the NICU. 39% (n = 15) and 45% (n = 17) of mothers reported that they had not participated in SSCP during their infant's stay at Level 3 NICU and Level 2 NICU respectively. Mothers who did not have experience with SSCP described various clusters of reasons and barriers: lack of awareness and communication (53%, n = 20), active discouragement or restricted access (26%, n = 10), timing and availability barriers (24%, n = 9), medical and procedural factors (24%, n=9), and parent readiness and preference (8%, n = 3).

4.1. Subtheme: Lack of Awareness and Communication

Majority of mothers who did not have experience with SSCP described a lack of awareness and communication about SSCP, with many reporting it was never offered, or they did not know it was an option. Some assumed it was not allowed or appropriate, while others noted that practices varied between hospitals (Level 3 and Level 2 NICUs), and SSCP for pain was not part of the standard hospital protocol.

"It was never an option. Most of the blood draws happened when they were in the incubator. And I guess I never really thought about it. I just assumed they needed it to be on a flat surface."

4.2. Subtheme: Active Discouragement or Restricted Access

Several mothers who did not have experience with SSCP described experiencing active discouragement or restricted access to SSCP, with some being told not to do SSCP during procedures, others being asked to hold only before or after, and being told that only light contact was allowed, and procedures must be done in the cot as part of the hospital protocol.

"I had been trying to like comfort him or distract him during like blood draws and told to like back up or not be in the way and stuff."

4.3. Subtheme: Timing and Availability Barriers

Several mothers who did not have experience with SSCP described timing and availability barriers to SSCP, such as procedures scheduled at inconvenient times (e.g., during night shift) or happening when they were not present. Some noted that the NICU environment was not set up to accommodate parents during procedures, and there often was not enough space for them to be present during procedures, and parents sometimes felt excluded or unaware of when painful procedures were happening.

"They would sort of hide certain procedures from us. [...] they said the babies cry, we don't want you to see this. Okay, but maybe I do want to be there. Maybe I do want to see this. You know what I mean? [...] I hated that."

4.4. Subtheme: Medical and Procedural Factors

Several mothers who did not have experience with SSCP described medical and procedural factors that prevented SSCP during painful procedures, such as the need for the baby to remain still or in the incubator for safety and temperature control. Some were told that SSCP was not possible during certain procedures, like eye exams or PICC (Peripherally inserted Central Catheter) line insertions, or that only hand hugs, not upright SSCP was allowed. Nurses reported to parents that they felt uncomfortable supporting SSCP during procedures due to medical or procedural factors.

"It's also because of the temperature. So, they need to be in that little incubator to maintain their temperature because when you take them out, they get cold unless they're wrapped in a blanket. So, [we were told by nurses] they can't do procedures like that."

4.5. Subtheme: Parent Readiness and Preference

Several mothers who did not have experience with SSCP shared that their own readiness and preference played a role in not doing SSCP during procedures. A few did not want to hold their baby during the procedure, while one mother was too scared to ask, which affected their participation in SSCP.

"I'm sure it would have helped him if I was holding his hand a little bit. But honestly, I couldn't do it. I couldn't do it. So, I left during the procedures. I actually didn't hold him during any of the hard stuff."

5. Theme Five: Initial Feelings Towards SSCP

When mothers were asked about their feelings towards their first-time experience with SSCP both positive and negative emotions were expressed. Overall, 40% (n = 6/15) of mothers with SSCP experience expressed a mix of both positive and negative emotions, while 13% (n = 2/15) described only negative emotions, and 47% (n = 7/15) reported only positive emotions towards their first-time experience with SSCP. Within the categories of positive and negative emotions, additional subtheme clusters emerged, which are detailed below.

5.1. Subtheme: Positive Emotions

Several mothers described SSCP during painful procedures as providing calm and comfort for both them and their baby, appreciating their baby's calm response and wanting to be present to comfort them during distress. Several mothers felt relieved due to feeling capable of calming baby during painful procedures, especially with supportive nurses and study staff present, noting that SSCP went smoothly, their baby reacted less to pain, and they felt empowered to help regulate their baby's distress. A small number of mothers expressed curiosity and were intrigued to see how their calming presence during SSCP might affect their baby's reaction to pain.

"It made me feel nice because I have an older daughter and when she's hurt hugging her makes her feel better. So, I know I couldn't really help her, I'm not a doctor, but I could hold her[...]I wish I could have held her during every painful procedure she had."

5.2. Subtheme: Negative Emotions

Several mothers described feeling sad during SSCP, especially when seeing their baby's fragility and witnessing their baby in pain. They also described frustration, finding it hard to watch their baby in pain, feeling powerless to help, and feeling that procedures, like taking blood, took too long. Additionally, several mothers described fear and anxiety during SSCP, driven by not

knowing how their baby would react, feeling inexperienced in consoling their baby, and being overwhelmed by the medical equipment and their baby's fragility.

"I felt scared because I didn't know how she was going to react and if she was going to cry. The cry is so small and painful to hear."

6. Theme Six: Feelings Towards SSCP over Time.

When mothers were asked about how their feelings toward SSCP evolved over the course of their NICU experience, two distinct patterns emerged. Several mothers with SSCP experience (53%, n = 8/15) described that their feelings toward SSCP remained consistent throughout their NICU stay, while 33% (n = 5/15) reported an increase in positive emotions toward SSCP over time.

6.1. Subtheme: Increased Positive Emotions Towards SSCP

A small number of mothers described becoming more comfortable and confident with SSCP over time as they gained practice, their baby grew bigger and stronger, and their baby's condition stabilized. They became more eager to do SSCP after seeing its calming effect on their baby during painful procedures, making it a cherished daily routine, with some motivated by earlier missed opportunities or positive first experiences. A small number of mothers also described feeling more connected with their baby through repeated contact and shared moments, becoming attuned to their baby's pain cues. As they recognized the importance of SSCP for pain management, they started to value it more, appreciating the baby's positive response during procedures and viewing SSCP as a way to communicate and bond with their baby.

"I wish I had done it more[..]The only time I was given that opportunity was during a study. I would have done it, for sure, because I did feel a difference in his reaction when I was doing skin-to-skin for that study versus every other time he had a blood draw or something like that."

6.2. Subtheme: Feelings did not Change over time Towards SSCP

Several mothers described their feelings about SSCP as consistently positive over time, feeling it helped their baby regulate, contributed to their wellbeing, and provided comfort, with a strong desire to hold their baby during painful procedures and wishing they could do SSCP more often. A small number of mothers consistently felt negatively about SSCP over time, experiencing ongoing stress and guilt when their baby's condition did not improve, finding it painful and sad to watch their baby in pain, and always feeling scared during SSCP. A small number of mothers also reported that their feelings towards SSCP did not change over time, often because they only had one opportunity to try SSCP and could not fully evaluate their experience.

"I wish that I advocated for it more in the NICU, and told them whenever you're going to take blood, please let me know. I'll make sure I'm there and I'd like to hold him."

7. Theme Seven: Encouragement for SSCP from Others in the NICU.

When mothers were asked about the level of encouragement they received from others in the NICU regarding the use of SSCP, their responses revealed a range of experiences. Some mothers (21%, n = 8) described receiving encouragement from medical staff to engage in SSCP, while others (26%, n = 10) noted that medical staff only encouraged general SSC but did not encourage SSCP. A larger group (60%, n = 23) reported that medical staff did not encourage SSCP at all, and some mothers (18%, n = 7) even felt that medical staff actively discouraged its use. Additionally, a significant number of mothers (79%, n = 30) indicated that they were not provided with any information about SSCP, while a smaller group (21%, n = 8) reported that they did receive information about this practice.

"I feel like it was really 50-50. If it was one of our primary nurses, they would always ask. They knew my baby and me very well."

7.1. Subtheme: Health Care Professional Encouragement of SSCP

Several mothers described receiving encouragement for SSCP from various sources in the NICU, including nurses and physicians, though not all medical staff were consistent in their encouragement. A small group of mothers reported that only some nurses or physicians actively promoted SSCP. On occasions a small number of mothers received encouragement from partners, family members, and research staff to engage in SSCP, supporting its use for pain management.

"Their sort of raison d'etre is skin-to-skin is what these babies need. So, from day one, we were told this is so important for your children's development, and it helps to minimizes the trauma associated with painful procedures."

7.2. Subtheme: Health Care Professionals Only Encouraged SSC, Not SSCP

Several mothers described receiving encouragement to practice SSC for their infants' development, with medical professionals emphasizing its benefits and referencing positive factors and programs such as the Newborn Individualized Developmental Care and Assessment Program (NIDCAP). However, those professionals did not encourage them to engage in SSCP. Several mothers also noted variability in the level of encouragement they received across different NICU settings, with SSC being more strongly promoted in Level 3 NICUs rather than in Level 2, and with support varying between individual nurses.

"At our level three site, I haven't really seen any child get skin-to-skin for painful procedure just because of the risk of them moving. So, there's giant posters everywhere where you wash your breast pump parts about facilitated tuck they teach you how to cradle your children. So, I would say that maybe not skin to skin was super encouraged during the actual painful procedure itself

but certainly the physical contact, parental presence, skin to skin before, skin to skin after a procedure was 100% encouraged.”

7.3. Subtheme: Health Care Professionals Did Not Encourage SSCP

Several mothers reported that medical professionals did not mention or promote SSCP, with it only being introduced by research teams, and ward staff generally showing neutrality toward it. Instead, several mothers described being encouraged to use alternative comfort measures, such as holding after the procedure, hand hugging, light touch, or staying in the room to comfort their baby during the procedure. Some staff recommended hand hugging over SSCP. Environmental and practical barriers also prevented SSCP, including procedures scheduled outside parental presence hours, unsuitable NICU setups, and logistical challenges. One mother described COVID-19 restrictions that prevented them from participating in SSCP, while another described medical staff only gradually encouraging SSCP once its benefits for mothers were realized, rather than promoting it from the start.

“Didn't seem like it was a big thing. They didn't really mention it too much[...] I probably thought at the time, that's just what they do, there's no purpose of taking him out to hold him while they do that. But I certainly would have liked to have done it.”

Majority of mothers reported not receiving information about SSCP from medical staff. Instead, they learned about it through research advertisements, their own online research, or social media. Medical staffs often shared general information about SSC for bonding or breastfeeding, but not specifically for pain relief. Some noted stickers for tracking SSC duration, but pain management was rarely discussed.

“Oh, I didn't even know that was an option [for pain management] *at all in our NICU!”*

7.4. Subtheme: Health Care Professionals Actively Discouraged SSCP

A small number reported being explicitly told not to hold their baby during procedures and to hold them afterward instead. Several mothers described procedural and clinical barriers, including being discouraged or asked to leave the room for invasive or distressing procedures, being told not to watch to avoid seeing their baby in pain, and SSCP being discouraged for certain procedures such as retinopathy of prematurity exams. Several also reported hospital or institutional barriers, such as SSCP not being standard practice, lack of private rooms to comfortably engage in SSCP, and on some occasions staff made parents feel like they are in the way of the procedure. Discrepancies in staff opinions also led to inconsistent support for SSCP.

"But if we had a nurse who didn't know [my baby], then no, it wasn't really asked or encouraged. Sometimes they just wanted you out of the way so they could do what they had to do."

7.5. Subtheme: Information Was Provided About SSCP

Several mothers reported that information about SSCP was provided in the NICU, including pamphlets at admission, posters, websites, and online classes. However, the level of information varied between different NICU levels (more information in Level 3 than Level 2), and some parents were also referred to Facebook groups to connect with other NICU moms and learned about SSCP from other mothers' experiences.

"At one hospital, kangaroo care was more about bonding and keeping the baby happy and build a connection. At the higher-level surgical hospital, they talked more about how it could benefit them during painful procedures."

8. Theme Eight: Future Suggestions for SSCP

When mothers were asked for suggestions to better support them in SSCP with their preterm infants, they identified a range of needs. A key recommendation was greater encouragement and

normalization of SSCP (71%, n = 27), by being integrated into routine procedures so that it is expected, encouraged by staff, built into the NICU protocol, and viewed as standard care. Many mothers also highlighted the importance of providing clear information and education about SSCP (66%, n = 25). Several mothers emphasized the need for medical staff training in SSCP and consistency of support for the procedure amongst staff (18%, n = 7), as unit staff appeared to be varied in their training and even their endorsement of SCCP.

A number of practical and environmental supports to facilitate SSCP (55%, n = 21) were offered. A large group of mothers suggested practical and environmental improvements in the NICU to support SSCP, including more comfortable and position-modifiable chairs to support mothers' and nursing staffs' posture as SSCP during a medical procedure can be awkward.

Flexibility and individualization of care (24%, n = 9) were also seen as critical to accommodate SSCP. For example, improving communication and scheduling with parents about timing of skin-to-skin (37%, n = 14) to coordinate SSCP for routine procedures. A few mothers (8%, n = 3) called for stronger parent advocacy and peer support, and some (8%, n = 3) highlighted the need for mental health and emotional support to help support and calm them so they can calm their babies better during SSCP. A number of important suggestions came up in regards to cultural differences in how to support SSCP. A few mothers discussed modesty concerns and in open rooms to have privacy screens for comfort and modesty. They also recommended offering information and resources about SSCP in various formats and languages, as well as optional NICU classes on SSCP for parents to attend.

"There were so many mothers whose language is not English, so even having another nurse who, maybe speaks their language to explain that to those families."

Finally, a small number of mothers suggested fostering parent advocacy and peer support by empowering parents to contribute to their baby's care, connecting them with NICU family community support or parent advocates from their own NICU, recognizing that experiences can vary greatly depending on the hospital and level, and creating common spaces within the NICU where parents can meet and connect outside the bedside.

"I truly believe that the most helpful thing would be having a former parent of that unit as a parent advocate on either volunteer or staff position to speak to the other parents[..]even if it was just, once a week, or once a month, a group session to see this person, or if they were somebody, you could message[..]A doctor can tell you whatever, a nurse practitioner can tell you whatever, but, hearing it from another parent who, lived the same way that you're living it is just so different."

II. Closed-Ended Questions – Perspectives on Five Ideas for Supporting SSCP in Very and Extremely Preterm Infants (See Supplemental Table 3)

In addition, to the open-ended questions, parents were asked about five potential interventions to support SSCP with V/EPT infants in NICUs (generated from pilot work undertaken pre-study). These interventions were having medical staff openly talk about common fears mothers hold about SSCP before it is attempted, having a cheat sheet or how-to card to address how manage parental stress during SSCP displayed around baby's cot, calmly talking about 'what if' scenarios if their child's medical equipment became disconnected during SSCP, enacting a graduated introduction to SSCP with less-intensive parent-led procedures, and teaching parents to relax before SSCP so that baby can be more relaxed during painful procedure. Mothers were asked if these interventions would be helpful or not helpful for them. Please note, some mothers described how a single intervention could be both helpful and unhelpful, depending on

contextual factors. Their reasoning is further organized into themes, with descriptions provided in Supplemental Table 3. This is also why the percentages reported below do not total 100%.

Overall, mothers responded positively to the proposed interventions to support SSCP, though individual variability was clear. The most strongly endorsed intervention was having medical staff talk about common fears mothers hold about SSCP before it is attempted, which 89% of mothers found helpful, while 16% felt it was not helpful. Similarly, calmly discussing "what if" scenarios, such as accidental disconnection of medical equipment, was considered to be helpful by 79% of mothers, though 34% reported it as not helpful.

"I think the hardest thing for me has been when something unexpected happens during skin-to-skin, because that is what really catches me off guard and stresses me out in the moment. And I think, like, why is this happening? What are they doing? What's going on?"

Providing a cheat sheet or tip card to address how to manage parental stress during SSCP was also well received, with 82% of mothers thinking it would be helpful and 37% noting it as not helpful. Fewer mothers endorsed the usefulness of graduated introduction to SSCP with less-intensive parent-led procedures, with 66% finding it helpful and 50% reporting it as not helpful.

"I feel for myself, I would probably want to just jump right in because just watch and not be able to intervene in any way, even to go in and do the hand hugging, I feel would be maybe even tougher to do. I feel it would depend on the personal preference, so maybe giving them those as options for their comfort, but also being allowed to jump those first steps."

Teaching parents' relaxation strategies before SSCP was also considered helpful by 66% of mothers, but 42% still felt it was not helpful. The responses overall suggested that while mothers generally appreciate supportive interventions, individual preferences and perceived relevance can vary and must be considered.

III. Closed-Ended Questions - Common Fears or Concerns about Holding Very and Extremely Preterm Infants in SSCP (See Supplemental Table 2)

Mothers were then asked to opine about five fears or concerns related to SSCP that were generated through pilot data to see if they resonated with a larger sample of mothers (medical fragility of infant impairing SSCP, fear of disrupting infant's medical equipment, not wanting to be associated with pain, fear of SSCP due to a failed attempt at SSC or SSCP, feeling their lack of experience precluded SSCP). Mothers were asked if they felt these concerns not at all, somewhat, or very much.

In terms of medical fragility impacting their ability to do SSCP for pain about 76% of mothers did not agree with that feeling entirely or in part, with about 24% of mothers feeling that this was very much how they felt. Regarding the fear of disrupting medical equipment, around 66% of mothers did not identify with that concern entirely or in part, with around 34% of mothers very much feeling that this was how they felt. In terms of not wanting to be associated with pain, 92% of mothers did not endorse that feeling entirely or in part, with 8% of mothers very much endorsing this fear. In regards to being afraid of SSCP due to a failed attempt at SSC or SSCP, 87% of mothers did not identify with that feeling entirely or in part, with about 13% of mothers very much endorsing that fear. Lastly, regarding feeling their lack of experience precluded SSCP, 84% of mothers did not feel that their lack of experience precluded participation in SSCP, while 16% of mothers reported feeling that this was very much how they felt. This suggests more extreme feelings of fear and anxiety are not experienced by the majority of mothers in our samples but appear to reflect an important minority of around 8-34%.

Discussion

We explored mothers' experiences with SSC and SSCP in the NICU with their very and extremely preterm infants, revealing a multifaceted and deeply emotional process shaped by both positive and negative experiences. Mothers initially described a profound feeling of joy, love and connection with their babies, emphasizing SSC and SSCP as a crucial bonding experience that made them feel like a mother, that it was the most normal they felt in the NICU, despite how unnatural the entire NICU experience felt. These findings build on a growing body of literature documenting parents' emotional experiences with SSCP in the NICU. A systematic review revealed that parents often experience enhanced emotional bonding with their infant during SSC, describing it as empowering and confidence-boosting in their caregiving role [30,36]. Consistent with the barriers identified in our study, research has shown that systemic and logistical obstacles, such as rigid hospital protocols, limited parental presence hours, and restricted access to neonatal units, commonly hinder SSC practices [13,46]. These barriers are often rooted not in survival-based limitations, as seen in low-resource settings, but in institutional priorities that favour medical technology and strict protocols over relational caregiving [36]. Emotional and physical hardships were also common in our study and others. Fatigue, muscle strain, and sleep deprivation, particularly during prolonged SSC sessions were commonly reported by both mothers and fathers [10,36]. Some also experienced emotional fatigue from the pressure to provide extended and uninterrupted care, and from navigating unfamiliar medical environments [1,12]. Despite these challenges, most parents indicated that repeated SSC experiences gradually helped build their confidence and reduced anxiety [10], reaffirming their commitment to their infant's well-being even at personal cost [36].

Taken together, these insights align with existing literature emphasizing the complex emotional experiences of mothers engaging in SSC. However, our study adds to this knowledge by highlighting the specific psychological and systemic barriers faced by parents of V/EPT infants specifically engaging in SSCP. Although the benefits of SSCP have been broadly promulgated [44], there remains a critical gap in understanding the evidence base supporting SSCP and the emotional complexities of parents' experiences during SSCP- particularly when their child is born very and extremely preterm. The current findings underscore the urgent need for trauma-informed, family-centered approaches that validate parental emotions and proactively address medical professionals' opinions on SSCP [4].

Mothers described a sense of relief at being able to support their infant during painful procedures and a feeling of calm and comfort from seeing how soothing SSCP was for their baby. As they engaged in SSCP over time, many mothers reported becoming more comfortable and confident, highlighting the role of practice, supportive staff, and their baby's improving health. However, the findings also underscored significant challenges, including fear of harming their fragile infant, overwhelming environmental and procedural barriers, inconsistent encouragement from medical staff, and profound feelings of guilt and anxiety. Importantly, the study provides rich data on the realities of SSCP in NICUs and clear recommendations for future SSCP practice, including consistent staff training and encouragement, improved communication about infant's procedures, individualized support, and integrated mental health resources for families.

Mothers' experiences revealed that inconsistent messaging from medical staff, hospital policies, and clinical factors (e.g., medical instability, equipment, NICU environment layout) often acted as barriers to effective SSCP. The inconsistency in staff encouragement, particularly

across NICU levels, was a significant source of confusion. One quarter of parents reported that they were actively discouraged from participating in SSCP with their very or extremely preterm born infant, and more than half had no knowledge that SSCP was a possibility. Overall, 45% and 39% of our sample had no experience with SSCP at all during their infants' Level 2 and Level 3 NICU stay respectively. These findings echo those of Coutts et al. (2021), who identified similar barriers to SSC in Canadian NICUs, including inconsistent staff practices and attitudes, and environmental constraints. Their conclusion that no "one size fits all" approach is effective underscores the need for context-specific strategies to normalize SSCP and support parent-infant contact [15]. However, in contrast to SSC, SSCP adds an additional layer of complexity and limitation, as it requires nurses to be comfortable performing medical procedures while the infant is in skin-to-skin position. In these cases, staff hesitation may stem not only from institutional norms but also from legitimate concerns about risk of injury to the infant due to the physical and biomechanical demands of conducting procedures in SSCP.

Conversely, mothers felt empowered when medical staff provided clear guidance, emotional reassurance, and practical assistance during SSC, highlighting the critical role of medical professionals in shaping parents' experiences. Importantly, the emotional readiness of mothers, their past experiences, and the baby's medical stability were key factors influencing their ability to engage in SSCP effectively. Environmental factors, such as comfortable chairs, increased privacy, and flexible scheduling, emerged as practical yet often overlooked facilitators of SSC and SSCP.

Finally, a number of strong emotions and fears were generated in this study that requires attention and intervention. It appears there is a notable minority of study mothers who have more extreme fears and anxiety that should be addressed. Mothers of V/EPT infants often face a longer

and more challenging journey with an infant that is more medically fragile. One quarter of mothers believed their infant was too fragile for SSCP and one-third of mothers lived with constant fear of disrupting their baby's medical equipment.

Implications for Practice and Policy

The findings underscore the need for NICUs to adopt consistent, parent-centered approaches that prioritize both the emotional and practical needs of families. Training programs for medical and nursing staff should emphasize the benefits of SSCP for pain management and include education on which painful procedures can be performed during SSCP, communication skills, and empathy, ensuring consistent messaging and support. NICU policies should be designed to facilitate SSC and SSCP integration into routine care. This includes environmental adjustments (e.g., comfortable seating, privacy screens), ergonomic support for clinician performing painful procedure during SSCP (as appropriate for each procedure), and active communication with parents regarding their infant's procedure schedules and scheduling flexibility to accommodate parents' presence. Moreover, integrating mental health resources, such as counseling and peer support, can help parents navigate the emotional complexities and social isolation of caring for a NICU child and engaging in SSCP, enhancing their confidence and participation. A small minority of parents had notable fears about disconnecting their infant's medical equipment or that their baby was too fragile for SSCP. This is an area where medical staff can pre-emptively dialogue with parents about their fears and allow frank conversations to help manage parental misconceptions that can add even more anxiety to their already highly stressful NICU experience. Calmer, more regulated parents will help to support calmer, more regulated babies.

Limitations & Future Directions

There are several limitations that should be considered when interpreting the findings of this study. The sample was limited in its linguistic diversity, as only English-speaking parents were recruited, and the majority identified as White and Canadian-born. This limits the transferability of findings to more culturally diverse populations, especially given known disparities in neonatal care access and outcomes. Parents in the study were also highly educated, which may not reflect the experiences of those with lower educational attainment-a group also at increased risk for preterm birth. The voluntary nature of participation introduces the possibility of selection bias, as parents who felt strongly about their NICU experience or were more engaged may have been more likely to participate. Furthermore, our study attempted gender neutral recruitment (i.e., birthing parents' perspectives) but only cis-gender mothers responded to our recruitment call. This leaves the experiences of fathers and trans-mothers/birthing parents unexplored. Our study included participants whose NICU experience occurred within the past five years, to ensure accurate recollection of their experiences. However, memory lapses may still be a limitation for participants whose experiences took place closer to the beginning of this timeframe. Lastly, it is important to acknowledge that the COVID-19 pandemic may have shaped parental experiences of SSC and SSCP, due to evolving parental presence restrictions and infection control measures in NICUs during that time.

Conclusion

This study highlights the complex emotional experiences perspectives of mothers engaging in SSCP in the NICU. While many mothers described SSCP as a rewarding and comforting practice that deepened their bond with their baby by empowering them to manage their infant's distress, significant barriers were noted. This study opens dialogue on maternal

negative feelings and experiences of SSCP to give voice to the broad range of experiences. Acknowledging that there is this diversity with parents, may help them feel less isolated in these feelings. Addressing systemic barriers through staff training, consistent unit-wide training and support for SSCP, flexible family centred policies, and mental health support is essential to empower parents to participate meaningfully in their baby's care. Future research should clarify the evidence base for SSCP in very and extremely preterm babies to better understand the discouragement (actively or passively) by medical staff of SSCP that was alluded to many parents. Moreover, this study provides novel parent-ideated interventions that could improve SSCP experiences for parents of very and extremely preterm infants. Ultimately, by integrating parents as partners in the NICU, healthcare systems can foster positive experiences that promote infant and parent health in very and extremely preterm infant populations.

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Conflict of Interest Statement

The authors declare no conflict of interest.

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Appendix A - Supplemental Materials

Interview Guide

Thank you so much for agreeing to participate in our study. We are interested in better ways to support parents and their children during painful procedures in the NICU. We are interested specifically in your opinions and feelings around skin-to-skin and specifically skin-to-skin contact during painful procedures such as a heel lance. We are going to ask you questions surrounding your child's NICU stay. Before we begin do you have any questions for me?

Topic 1: Prior to the NICU.
We are interested in how your physical health was when your infant was admitted to the NICU.

> **Question 1a)** Can you briefly tell us about your labour and delivery? (*Two Necessary Prompts, if not offered:* Was the preterm birth expected? How much physical pain/recovery from the birth did you have? *Note the idea of the second question is to understand if physical reasons may have influenced their ability/feelings about SSC*)
>
> We are going to ask you questions about <u>skin-to-skin care</u> in the NICU (which means any SSC you had with your child) and then specifically <u>skin-to-skin contact</u> for painful procedures (which means SSC during a painful procedure such as blood work). As a reminder, skin to skin care or contact is holding a diaper-clad infant to your bare chest. Your feelings about SSC may have changed over your baby's time in the NICU. So, we will ask you about the first time and then as you had more time in the NICU setting.

Topic 2: Initial feelings towards skin-to-skin care in the NICU

> **Question 2a)** When were you first approached to do SSC with your child- how old was your baby? How did you feel about holding your baby in skin-to-skin for the first time during your baby's stay at the NICU? (*Purpose is to distinguish between INITIAL feelings and evolved feelings over time.*
> *Further prompts if needed. Did you agree right away? What were your feelings that you felt during that first time?)*

Topic 3: Feelings towards skin-to-skin care over time (by the time they left NICU)

> **Question 3a)** Sometimes, parent's feelings about engaging in skin-to-skin care evolve over time. Did your feelings about skin-to-skin change throughout your time in the NICU?
>
> **Question 3b)** What were the main emotions you felt while holding your baby in skin-to-skin?
> *Follow up:*
> - What did you enjoy about holding your baby in skin-to-skin?
> - Was there anything you didn't like about skin-to-skin?

- Was there anything you were scared about when holding your baby in skin-to-skin?

Topic 4: Initial feelings towards skin-to-skin contact for acute pain management.
Now I am going to ask specifically about SSC for painful procedures (SSCP) like a heel lance, not about holding your baby in SSC for long periods of time.

Question 4a) Did you ever hold your baby in SSCP during a painful procedure?

>If ***NO****, GO TO 4b*
>IF ***YES****, GO TO 4c*

Question 4b) What were the reasons this didn't happen (*probe 'never offered' versus 'too nervous')?*
>Proceed to *Topic 5, Question 5b*

Question 4c) How did you feel about holding your baby in skin-to-skin contact for the first time when your baby was undergoing a painful procedure (heel lance/blood work…)?
>Proceed to Topic 5, Question 5a

Topic 5: Feelings towards skin-to-skin contact for acute pain management over time.
It is critical to ensure they answer about skin-to-skin contact for pain NOT SSC generally

Question 5a) Did your feelings towards skin-to-skin contact with your baby when your baby was undergoing a painful procedure change over time? How did it change?

Question 5b) Now that we have your feelings about skin-to-skin contact for pain, we wanted to ask you about specific fears or concerns we have learned from mothers that may or may not apply to you. We are going to ask you if you felt or thought about these thoughts specifically about holding your child in skin-to-skin care for a painful procedure. So for each feeling below, please tell us if reflects your feelings **Not at All** *pause* **Somewhat** *pause* **Very Much** *pause* . So there are three options: **Not at All** *pause* **Somewhat** *pause* **Very Much** *pause* . Please do feel free to elaborate as well

How much did you think or believe that…	Not at All / Somewhat / Very Much (*Add notes if any*)
Baby was too fragile to be held in SSCP during a painful procedure	
Worried about babies monitoring or tubes could come out while painful procedure was going on…	
Did not want to be associated with the painful procedure	

Worried that you already had a failed attempt at SSC (e.g. baby became unstable and had to be put back in incubator) so you were scared to try SSCP during a painful procedure	
Did not feel experienced enough to hold baby in SSCP for painful procedure	

Topic 6: Encouragement for skin-to-skin contact for pain from others in the NICU.
Regardless of whether then did do skin-to-skin contact for pain, ask them:

Question 6a) Did health professionals encourage you to hold your baby in skin-to-skin contact for painful procedures during your stay at the NICU? If yes, who? (nurses, partner, doctors, family, etc.). *After answer, probe if they felt they were actively discouraged from holding baby in skin-to-skin for pain*

Question 6b) Was there any information provided e.g. pamphlets, websites specifically about SSCP for painful procedures?

Topic 7: Future Suggestions

Question 7a) Was there anything that could have been done to support you in doing SSCP for pain with your very or extremely preterm baby?

Question 7a) *Probe.* To prepare for this study, we spoke to mothers about how to support SSCP for pain and they offered the following ideas. I will read their five ideas and would like to ask you what you think about them? If any are better than others? Any ideas about how to best implement them (make them work best with mothers)? Any other ideas you have?

- Have health professionals talk about common fears about SSCP during painful procedures with mothers before your first SSCP attempt for pain. *pause*
- Quick tip card for how to do SSCP for pain that addressed common areas of stress and how to manage it that could be left in the room or downloaded to your phone. *pause*
- Have health professionals talk about what they would do if baby's equipment disconnected during skin-to-skin for a painful procedure. *pause*
- Ease moms into skin-to-skin contact for pain with starting in a graduated way. Watching their baby get a heel lance, then less intensive touching like hand hugging then trying SSCP during procedure. *pause*
- Teaching moms to relax before SSCP (asking them to put on music or meditation). *pause*

Thank you so much for your time. Did you have any other thoughts about skin-to-skin contact for pain in the NICU? May I confirm the email address to which I should send the gift card?

Appendix B - Supplemental Tables

Supplemental Table 1. Open-Ended Questions-Thematic Analysis Results

	Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
1.	Initial feelings towards SSC in the NICU	Positive Emotions	27	Joy & love	22	Mothers expressed joy and love during their first SSC, describing a deep emotional connection and sense of bonding that made them feel like a mom. Some viewed SSC as a rewarding experience, and some described it as a touching moment they had long anticipated. They also highlighted the physical connection, feeling SSC was where their baby truly belonged.	"It was exciting, and I know it's important to do skin-to-skin, so I was happy to finally be able to do it."
				Relief	10	Mothers described a profound sense of relief during their first SSC experience, feeling that their baby was finally brought back to them and that they could support their baby. Many said SSC felt natural and right, offering reassurance that their baby was alive, well, and stable. Nurses were encouraging and made the experience feel special and significant. Mothers also appreciated that SSC went smoothly, knowing they were helping their baby, and felt better having the baby on them.	"I think that reassurance that he was alive." "I loved being pregnant with them and feeling both of them, and when they were put skin-to-skin, it just felt right, like that's where they belonged."
				Peace & calm	5	Mothers described feeling calm and at peace during SSC, knowing their baby was safe and calm in their arms. They felt the baby's steady heartbeat and breathing, and noticed their baby was regulating, their vitals were better and breathing better. The experience felt relaxing, with some mothers even falling asleep. Nurses' help with positioning also added to the comfort	"The skin-to-skin was absolutely amazing. Like I mentioned telling the nurse that it felt like I'm having some therapeutic session."

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
					of SSC.	
			Gratitude	3	Mothers expressed deep gratitude for the experience of SSC itself, being able to hold their baby, and for the support and accommodation provided by medical staff.	"The healthcare team, they were very helpful. So, I was very appreciative of that. I know the benefits of skin-to-skin. You know, I never got my golden hour, which is unfortunate, but I tried to kind of make the most of the opportunity I have given the circumstances."
			Surreal	4	Mothers described their first SSC experience as surreal, appreciating the significance of holding their preterm baby but feeling a strange, almost unreal sensation, "like holding a feather", because their baby felt so fragile and the NICU environment felt abnormal and overwhelming.	"I think it was a very surreal experience in the NICU where they weren't really real to me until I was holding them."
	Negative Emotions	33	Anxiety & fear	29	Mothers described feelings of fear and anxiety during SSC, worrying about their baby's fragile state, the numerous medical devices attached, and whether they were doing it correctly. Many felt anxious about the risk of harming the baby, equipment alarms, and the baby's instability. These worries were heightened by hospital anxiety, medical trauma, and uncertainty about what could happen.	"I had never seen a baby that small in my life." "Scary for the first time because you're like, is all of these wires and stuff going to hurt him, like any movement, you're very worried about anything getting pulled out or discomfort for how he was positioned."
			Anger & frustration	3	Mothers described anger and frustration at the medical barriers, restrictive hospital policies, and the physical setup that required reliance on medical staff to	"They want you to hold for a minimum of an hour if not more and they were really pushing doing these very long skin-to-skin sessions, I

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
					manage the equipment. They felt resentment over missing earlier bonding opportunities and experienced confusion due to inconsistent guidance from the medical staff.	struggled with anxiety in hospitals so for me staying in the hospital and being stuck there for however long they told me to was really challenging."
			Sadness	3	Mothers expressed sadness at seeing their baby's fragility, the many medical attachments, and the intensive care state. They grieved the time lost before holding their baby, compared themselves to parents of healthier infants, and mourned the loss of a typical newborn experience.	"So many sad emotions come with just seeing your baby in such an intensive care state."
			Overwhelm	6	Mothers described feeling overwhelmed by the NICU environment, balancing parental presence with other responsibilities, managing medical equipment, and processing constant health updates. Holding their very small baby for the first time, they worried about "doing it right" and felt daunted by overwhelming involvement of medical staff.	"I felt very overwhelmed in the NICU, because I had to do skin-to-skin, I had to pump, it was every three hours, I had to remember to eat."
			Physical & mental discomfort	7	Mothers described feeling physically challenged and uncomfortable during SSC, noting pain, cramped spaces, lack of privacy, and the discomfort of holding baby while in fragile state with numerous attachments and wires. They also mentioned the difficulty of moving during the hold, the tiring logistics (especially with twins).	"I was so sore still to sit in that chair for two hours not moving, I was pretty uncomfortable. It kind of prevented me from fully enjoying it."
			Guilt	2	Mothers described feeling guilt about not being able to hold their baby earlier and about only one parent getting to hold the	"We had to, it was from like, 8 to 10pm, at the end of a long night, and we had to choose between myself

	Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
						baby first. Some felt the experience wasn't as magical as expected, adding to their guilt.	and my husband, who gets to do this (SSC), this one night? So, I got to be the first one. And even that, you feel a bit of guilt that only one of us gets to (do it)."
2.	Feelings towards SSC over time (by the time they left NICU)	Increased positive emotions towards SSC	21	Became easier and more comfortable	18	Mothers described becoming more comfortable with SSC as they engaged in it consistently, grew more confident and capable with practice, and received support from nurses who adjusted methods to accommodate medical needs. They felt more at ease as their baby became older, stronger, and stable and less dependent on equipment, and as they became more familiar with medical devices and felt reassured by the nurses' encouragement.	"It definitely improved, like the experience for me, I started to look forward to it more. Once I got more used to it, and once I was feeling more comfortable, it felt more natural having him on me." "'like as he got bigger, and we got more comfortable with him having all of his attachments and stuff and being able to be the ones to take him out of his incubator and or isolate and hold him and just maneuver all of his cords and things like that[..]realize that not every sound is detrimental when you're holding them and trying to get them comfortable."
				Became more eager	8	Mothers described feeling increasingly eager to do SSC because of nurses' encouragement, the calming effect on their baby, and the experience becoming a cherished daily routine. They felt a sense of purpose contributing to their baby's care, enjoyed holding their baby, and wanted to hold for longer, making SSC the one thing they could do at the bedside.	"Once I did (SSC) I wanted to do it all the time. Every time I had to put him back, I didn't want to put him back." "I felt like over time, I had a sense of purpose when I came to the NICU every day. And I basically, I just lived every day to just come in and do this thing to spend...But really, it really did get me through." "It just come to be more of a part of the day that I look forward to each day, the best part of the day was

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
						when I get to hold him, and if I don't get to hold him on a day, that brings the whole day down.”
			Felt more connected with the baby	6	Mothers described feeling increasingly connected to their baby through repeated SSC, shared moments, and growing attunement to their baby's cues. SSC brought mutual comfort, made bonding second nature, and allowed them to provide meaningful support that soothed both themselves and their baby.	“I think it calms him in a way. And then it also calms me like it's just, yeah, good for both of us.” “I feel like I'm doing something to help, because that's often the main feeling is that I'm standing there watching these things happen, and I can't do anything. It's just kind of the helpless. So that's kind of one thing that I feel like I can do is provide a little bit of comfort just for him, knowing that I'm there, yeah, and I do see sometimes that he comes down, like, from his arms flailing around to then, settling down a bit.”
			Started to value SSC more	6	Mothers described valuing SSC more as they recognized its importance for their baby’s health and bonding, especially after seeing their baby’s condition improve. They found that SSC became a priority, giving them a sense of agency in the NICU and deepening their commitment to the practice.	“It just reinforced how important it was to have skin to skin every day, whether it was me or my husband, that was the priority every day, to get her on our skin, and that's when she was the most relaxed, most stable. So, it just reinforced how important it was.”
	Increased negative emotions towards SSC	5	Trauma	1	Mothers reported increased negative emotions towards SSC due to traumatic experiences, such as the loss of a twin or a poor prognosis for their child, which dampened their enjoyment and made SSC emotionally challenging.	“The point where I actually became scared to do SSC was actually when my surviving twin was extubated, and he went to NIPPV. We had always done so much skin-to-skin, but when he went to non-invasive, positive pressure ventilation, it was

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
						really hard to get his mask and prongs to fit properly. So, whenever he was doing skin-to-skin with me, he would become very bradycardic and desat to the point where they would just take him off my chest and put him back in his cod and do Neo puff, and it was just so traumatic for me, because he was basically extubated, just a couple of weeks after my other son passed away. I basically was reliving the trauma of just watching them take away my son and then having to do all these interventions that was really, really tough for me."
			Facing barriers for SSC	3	Mothers described increased negative emotions toward SSC due to facing barriers such as difficulty managing SSC alone, lack of nursing support, feelings of helplessness, COVID-19 restrictions, and not being given the opportunity to hold their baby in SSC.	"I was made to feel that like, doing the actual skin-to-skin was a big, huge production and that it was just easier for me to take my baby out wrapped in a blanket or in their onesies and just hold them as opposed to like changing them, changing me."
			Baby got sicker	1	Mothers described feeling increasingly unable to provide SSC as added restrictions, often due to their baby's medical condition, left them feeling helpless and less able to offer the comfort they had hoped to through SSC.	"You would be allowed to hold your baby once for about 20 minutes outside of their incubator. He was on phototherapy. So again, reflecting back, I can see why this might have happened."
			Increased discomfort	2	Mothers described increased discomfort with SSC over time, as feeling self-conscious about the lack of privacy in the NICU.	"So, I did find it a little difficult, like I did skin to skin almost exclusively wearing a bra and then I would have a gown over, but with

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
						the chest open, just because I find it a little self-conscious. Like I never did fully bare chest skin-to-skin. I would say majority, like 95% of his skin contact was still on my skin, but I just didn't feel comfortable. Like there was just a big lack of privacy. So, I wasn't going to be able to do fully nothing on, so I stopped doing skin-to-skin completely.”
			Increased anxiety	1	Mothers described increased anxiety during SSC over time, especially when their baby became unstable during the hold, heightening their worry and fear.	“I was really cherishing it at first, but then it got to a point where, sometimes I had him skin-to-skin, and the machines kept beeping repeatedly, so it made me nervous, not knowing how to hold him, or if I'm not holding him correctly, and then he's desatting, I felt like I should just maybe let him be in the crib or in the incubator.” “At one point, it was to the point where the nurses were coming in and grabbing him off me because he was desatting too much. So, the whole thing just made me really nervous, after a while to take him. I felt like I was more focused on the machines, looking at the numbers, rather than just enjoying the moment, skin to skin.”
	Feelings didn’t change over time towards SSC	9	Stayed positive	7	Mothers reported that their feelings towards SSC generally stayed positive over time, feeling happiness, growing attachment to their baby, and a sense of	“I was always pro skin-to-skin [..] especially since I wasn't staying there 24 hours a day, it was nice, a nice way to be able to bond with

	Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
						contributing to their baby's wellbeing. They cited reasons like closely observing their baby's development, support with breastfeeding, enjoying the practice, and making it a natural routine, even as the baby grew or SSC became less frequent.	her." "It just felt like it was the best thing I could do, other than having her inside. Still, it's the next best thing, like the best thing would have been for her to be left inside, but the next best thing was to put her on my chest."
				Stayed negative	1	Mothers reported that their feelings of guilt remained constant throughout their NICU experience.	___
		Oscillation of feelings between positive and negative	3	____		Mothers described their feelings towards SSC changing in a non-linear way over time, feeling more comfortable as the baby improved, but experiencing renewed fear after the baby becoming unstable and health scares. Some also became comfortable with SSC in Level 3 NICU but became less eager to do SSC after moving from Level 3 to Level 2 NICU.	"So, I loved it […] because she slept so well […] like she was amazing. […] Once she turned kind of this gray color, she bradyed really badly, and she kind of stopped breathing. […] It was really scary for me. After that, I started worrying a lot doing skin-to-skin for probably about a week. I was terrified to hold her. I still did […] but I was like, oh my God, she's gonna die. Yeah, the evolution was sort of like this, you know, like, oh my God, I love it so much. And then, oh my God, she had an event. And then, oh my God, I love it so much. And then she had an event. Her reaction often coloured the way we felt about it."
3.	Main feelings towards SSC	Positive Emotions	38	Joy & love	27	Mothers described feelings of happiness, joy, warmth, and love during SSC, highlighting the emotional and physical connection with their baby, finally feeling like a mom, and being able to provide	"Yeah, it would just take me to a happier place, because as soon as I'd get home, I'd feel like there's a piece of me missing. As soon as I could hold my baby on my chest, life just

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
					comfort. They appreciated being reunited with their baby, seeing the baby's health improve, and spending time together in a way that felt natural and special, enhancing their bond and sense of love.	felt complete." "My body craved it, like absolutely craved to hold my baby." "The actual skin-to-skin was like the only time I felt like I was her mom." "You had all this time to explore her, like little fingers, her little toes, her little, tiny diapers that they provided, just explore her little personality. And I think over time, you just saw how she grew and changed." "'I guess it was the only time that I felt like I could parent him."
			Reassurance	11	Mothers described a sense of security and reassurance during SSC, feeling comforted by having their baby close, knowing they were helping their baby, and seeing that SSC was reassuring that their baby was okay. They expressed a sense of fulfillment and belonging, feeling their baby was finally where they were supposed to be.	"You can feel them, and they can feel you and they sense that security and warmth, like it's like a blanket on them."
			Calm & comfort	30	Mothers described feelings of comfort during SSC, as it helped them form a bond with their baby, see their baby's health stabilize, and experience a calming, anxiety-reducing effect. It fostered confidence, a sense of normalcy, and dyadic comfort, while allowing them to focus on the present moment and feel love and relief.	"As soon as he'd be on my chest, he would just suddenly, you could just feel the calmness, he would just go into deep sleep, there would be no more crying." "Holding him just would reduce my stress levels for sure, and it was the only time I would ever feel at peace in the NICU."
			Surreal	2	Mothers described SSC as a surreal and awe-inspiring experience, amazed by their babies' resilience and development, and	"It's kind of amazing that they were so early, but they were still hanging in there. It's kind of amazing to see

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
					noting that it only felt real once they held them.	them develop.”
			Gratitude	3	Mothers expressed gratitude for the opportunity to spend time with their baby in the NICU, appreciating being able to hold them and feeling fortunate for family support that allowed them to be present in the unit.	“I'm grateful that I get to spend this extra time with him, and I would call it bonus time, because normally he would still be inside growing, whereas I got to watch him grow on the outside, even though it was in the NICU setting, it was still a very positive experience.”
			Hope	1	A mother expressed hope that SSC was helping her baby, trusting that the benefits outweighed any stress from moving the baby for the hold.	“I was hoping that it was beneficial for him.”
	Negative Emotions	34	Doubt	3	Mothers expressed doubt about SSC, questioning whether it was beneficial for their baby, if they were doing it correctly, and whether it was more for their own comfort than the baby's wellbeing. Some felt uncertain about monitoring their baby's status while in SSC and worried about the potential negative effects of not practicing it consistently.	“Am I doing something selfishly because it's making me feel good and it's putting him at a detriment?”
			Guilt	11	Mothers expressed guilt during SSC, feeling they were a burden on nurses, or feeling guilt over doing SSC incorrectly and making their baby unstable. Some felt guilty prioritizing other tasks like pumping, choosing between twins, needing medical staff permission, or not doing SSC	“I felt like I was creating more work for the nurses. They'd have to get me prepared to hold him and get him prepared for me to hold him and then take him out of the incubator and make sure he's still all wired up and they'd have to come

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
					enough, often due to the daunting process of SSC in the NICU, or feeling guilted into doing SSC.	back and check on me. So, it felt like I was creating more work for them. And they're obviously very busy people.” “Sometimes when I was there by myself, I could only hold one at a time, so I felt guilty not being able to hold the other one.” “I felt almost selfish sometimes because I needed to hold him just like I craved. I got one hour a day if I was lucky, and some days I couldn't, just depending on how stable he was. I felt guilty about it, I'm doing this because I need it, may be not necessarily that's the best for you. I know skin-to-skin is great and there are medical benefits but it's hard to wrap your head around that when they're having five bradycardia events when you're holding them, like "is this really best for you right now?”
			Frustration & overwhelm	11	Mothers felt frustrated and overwhelmed by SSC due to complicated rules, the need to commit to a specific duration, and scheduling challenges. Many struggled with medical staff not accommodating their needs, inconsistent help during SSC, and pressure from medical staff to do SSC without adequate support. They also described feelings of dependence, stress from beeping machines, and uncomfortable chairs. Additional challenges included navigating SSC with twins and navigating mixed messages about parent involvement.	“So having to be there at a specific time was really hard. If you're not within those time frames, you can't hold your baby. You have to wait, right? And sometimes you might have to leave in between those times. So definitely it would be times that you had to be there to hold your baby. So even if you ask, they'll say, no, she just ate, you actually can't move her as much.”

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
					COVID-19 restrictions, such as a limit on the number of people in bedside complicated SSC, and the process often felt daunting, leaving mothers feeling inadequate and burdened by the production and timing of SSC.	
			Physical & mental discomfort	17	Mothers described discomfort during SSC, including pain, feeling hot, uncomfortable in the chairs, and challenges in maintaining modesty and privacy and lack of cultural consideration. They also struggled with remaining stationary and limited seating in nursery-style NICUs. Wearing masks during COVID-19, breast milk leakage, and difficulty tending to their own needs (like eating or drinking) added discomfort. Some individuals felt thirsty without access to water and found it challenging to manage cords, equipment, and personal protective equipment (PPE). Issues like taped devices, positioning challenges, numb arms, and overall fatigue contributed to the discomfort.	"I would say the hardest part was trying to remain in modesty while doing skin-to-skin, especially as a Muslim and wearing the hijab. Some days, the RT would be male, and we had said no male practitioners should see me during skin-to-skin. They were generous enough to put partitions and curtains around, and I would double gown, but I still had to be so careful not to show skin to doctors or families walking by. Some days when we wanted to hold, we couldn't, because of the modesty aspect." "Your butt falls asleep, your legs fall asleep, you can't move and adjust[...]I think when people have a typical baby and they get nap trapped, you can still at least adjust yourself a bit, or you can make the decision to stand up and your baby's not going to die. But I can't just stand, so that was hard, eventually having to stop holding her, not because I wanted to, but because, you're in pain now or you just can't anymore."

	Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
				Fear & anxiety	28	Mothers described significant fear and anxiety during SSC, worrying about disrupting their baby's equipment, harming their baby, worry about baby's movement, head position, airway, or accidental extubation. Concerns included pulling wires, baby desats or bratting, fragile skin, and constant monitoring. Additional fears involved putting the baby down, fragile equipment, falling asleep during SSC, and stressful NICU environments. Other worries included not being able to hold due to pumping, unplanned self-extubation, infection during COVID-19, allergies to tape, limbs falling asleep, baby's health and future, needing to sit still, not seeing the baby's face, not being prepared, beeping alarms, and SSC sessions getting cut short.	"There was a couple of days I didn't want to do it because she felt really fragile that day, like she wasn't doing well. And that scared me." "And then after losing Twin A, it was almost like we were scared to put down Twin B."
				Sadness & grief	6	Mothers described feelings of sadness and grief during SSC, stemming from the long journey ahead of them in the NICU, the shock of pregnancy and a traumatic birth, and the longing to take their baby home. They also grieved missing out on a typical birth experience and felt sad when they had to put their baby back after SSC.	"...a sense of sadness, because I knew that we still had a really long road ahead of us." "Kind of a longing too. Because, obviously, you hope to be holding your baby at home. So, it was sad sometimes too."
4.	Experience with SSCP	Experience with SSCP in Level 3 NICU	23	—		—	—
		Experience with SSCP in Level 2 NICU	21	—		—	—

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
	Lack of awareness and communication	20	—		Mothers described a lack of awareness and communication about SSCP, with many reporting it was never offered, or they didn't know it was an option. Some assumed it wasn't allowed or appropriate, while others noted that practices varied between hospitals, and SSCP for pain wasn't part of the standard hospital protocol.	"It was never an option. Most of the blood draws happened when they were in the incubator. And I guess I never really thought about it. I just assumed they needed it to be on a flat surface."
	Active discouragement or restricted access	10	—		Mothers described experiencing active discouragement or restricted access to SSCP, with some being told not to do SSCP during procedures, others being asked to hold only before or after, and being told that only light contact was allowed, and procedures must be done in the cot as part of the hospital protocol.	"When he was having his eyes examined. I was asked not to be there." "Oftentimes we weren't even allowed in the room for that (painful procedures)."
	Timing and availability barriers	9	—		Mothers described timing and availability barriers to SSCP, such as procedures scheduled at inconvenient times (e.g., during night shift) or happening when they weren't present. Some noted that the NICU environment wasn't set up to accommodate parents during procedures, and there often wasn't enough space for them to be present during procedures, and parents sometimes felt excluded or unaware of when painful procedures were happening.	"Blood draws happened in the middle of the night." "They would sort of hide certain procedures from us. [...] they said the babies cry, we don't want you to see this. Okay, but maybe I do want to be there. Maybe I do want to see this. You know what I mean? [...] I hated that."
	Medical and procedural factors	9	—		Mothers described medical and procedural factors that prevented SSCP during painful procedures, such as the need for the baby to remain still or in the incubator for safety and temperature control. Some were told that SSCP wasn't possible during certain	"In the hospital, their definition of skin-to-skin is skin contact. So, for them, hand hugs, when you put your hand over your baby, that is considered skin-to-skin because some babies cannot be pulled

	Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
						procedures, like eye exams or PIC line insertions, or that only hand hugs-not upright SSCP-were allowed. Nurses often felt uncomfortable supporting SSCP during procedures.	upright.” “It's also because of the temperature. So, they need to be in that little incubator to maintain their temperature because when you take them out, they get cold unless they're wrapped in a blanket. So, they can't do procedures like that.”
		Parent readiness and preference	3	—		Some mothers shared that their own readiness and preference played a role in not doing SSCP during procedures. A few did not want to hold their baby during the procedure, while one mother was too scared to ask, which affected their participation in SSCP.	“I'm sure it would have helped him if I was holding his hand a little bit. But honestly, I couldn't do it. I couldn't do it. So, I left during the procedures. I actually didn't hold him during any of the hard stuff.”
5.	Initial feelings towards SSCP	Positive Emotions	13	Calm & comfort	5	Mothers described SSCP during procedures as providing calm and comfort, both for themselves and their baby. They appreciated seeing their baby’s calm response and wanted to be there to comfort them.	“I think he stopped crying a lot sooner when he was being held by me than if he was just lying in there and he got pricked.”
				Relief	5	Mothers described feeling relieved and capable during SSCP, especially with supportive nurses and study staff present. They felt empowered to provide comfort and regulate their baby's distress, noting that SSCP went smoothly, their baby reacted less to pain, and they felt in control in an otherwise overwhelming environment.	“It felt like that was the only way I could be a mom, to protect her, help her, let her know I was there. Just felt like it was the only way I could do something, because there was so much out of my control, but I could do that.” “It was relieving, I guess, to be able to provide him with some comfort and able to listen to my heart and help regulate.”

	Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
				Joy	7	Mothers expressed Joy and happiness during SSCP, feeling good about helping their baby regulate pain and seeing the positive effects. They were grateful for the opportunity, especially since some only had one chance to do SSCP during a procedure. Overall, it was a positive and rewarding experience.	"It made me feel nice because I have an older daughter and when she's hurt hugging her makes her feel better. So, I know I couldn't really help her, I'm not a doctor, but I could hold her[...]I wish I could have held her during every painful procedure she had."
				Curiosity	1	Mothers expressed curiosity and were intrigued to observe how their calming presence during SSCP might affect their baby's reaction during a painful procedure.	___
		Negative Emotions	8	Sadness	2	Mothers described feeling sad during SSCP, especially when seeing their baby's fragility and witnessing their baby in pain.	"It's so sad to see that you're getting pricked"
				Frustration	2	Mothers described frustration during SSCP, finding it hard to watch their baby in pain and feeling powerless to improve their condition. They also felt that procedures, like taking blood, took too long, which added to their frustration.	"It was frustrating because of how long it takes to get the blood sample and I could tell that he was uncomfortable with that and there's just nothing you can do to make them feel better, so that was tough."
				Fear & anxiety	5	Mothers described fear and anxiety during SSCP, driven by not knowing how their baby would react, feeling inexperienced with consoling a baby, and being overwhelmed by the medical equipment and their baby's fragility.	"I felt scared because I didn't know how she was going to react and if she was going to cry. The cry is so small and painful to hear."
6.	Feelings towards SSCP over time	Increased positive emotions towards SSCP	5	Became more comfortable and confident	2	Mothers described becoming more comfortable and confident with SSCP over time as they gained practice, their baby grew bigger and stronger, and the baby's medical condition stabilized, requiring	___

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
					fewer procedures.	
			Became more eager	3	Mothers described becoming more eager to do SSCP after seeing the calming effect on their baby, making it a cherished daily routine. Some felt motivated by not having had the opportunity earlier, while others were encouraged by a positive first experience.	"I wish I had been able to do it more. Like, I definitely saw the value in it after that study was done. I was like, I wish I was able to do it for everything he was going through. But yeah, I was not able to." "I wish every hospital would be more open to it[...]the first hospital that we were at, they always did painful procedures while he was in the incubator. And then the second one, we were able to hold him for some of them."
			Felt more connected with the baby	1	Mothers described feeling more connected with their baby during SSCP, growing attached through repeated contact, shared moments, and becoming more attuned to their baby's cues.	"(SSCP) gave us that time to bond that we wouldn't normally get."
			Started to value SSCP more	2	Mothers described starting to value SSCP more as they recognized its importance for their baby's pain management, saw their baby's response improve during procedures, and appreciated SSCP as a form of communication with their baby.	"I wish I had done it more[..]The only time I was given that opportunity was during a study. I would have done it (more if it was offered), for sure, because I did feel a difference in his reaction when I was doing skin-to-skin for that study versus every other time he had a blood draw or something like that."
	Feelings didn't change over	8	Stayed positive	5	Mothers described their feelings about SSCP remained consistently stayed, feeling	"I still wanted to help her. I felt that I was helping her in some way. I

	Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
		time towards SSCP				it helped their baby regulate, contributed to their wellbeing, and provided comfort. They expressed a strong desire to hold their baby during painful procedures and wished they could do SSCP more often.	really believed that holding her was making her better, even when she was just born, and her breathing wasn't great, I felt that by holding her I was making her breath better, because you'd see her numbers go up. I always wanted to do it."
				Stayed negative	2	Mothers consistently felt negative about SSC, experiencing ongoing stress and guilt when their baby's condition didn't improve. They found it painful and sad to watch their baby in pain and were always scared during SSCP.	"Even if I knew what to expect, I think I was still always scared."
				Other	2	Some mothers reported that their feelings towards SSCP didn't change over time, often because they only had one opportunity to try SSCP, so they couldn't fully reflect on or evaluate their experience.	"I wish that I advocated for it more in the NICU, and told them whenever you're going to take blood, please let me know. I'll make sure I'm there and I'd like to hold him."
7.	Encouragement for SSCP from others in the NICU	Health care professionals encouraged SSCP	8		5	Nurses in the unit encouraged SSCP.	"I feel like it was really 50-50. If it was one of our primary nurses, they would always ask. They knew my baby and me very well. But if we had a nurse who didn't know, then no, it wasn't really asked or encouraged. Sometimes they just wanted you out of the way so they could do what they had to do."
					1	Physicians in the unit encouraged SSCP.	
					3	Some nurses encouraged SSCP but not all.	
					1	Some physicians encouraged SSCP but not all	
					1	Partner encouraged SSCP.	"There was definitely a variety of nurses, and there were some that were pro doing everything you can to hold baby. And there were quite a few that were very much let baby
					1	Family encouraged SSCP.	

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
				1	Research staff encouraged SSCP.	be.”
	Health care professionals only encouraged SSC, not SSCP	10	Encouragement of SSC for infants’ development	4	Encouragement of SSC focused on its importance for infant development, with references to positive factors and programs like newborn individualized developmental care and assessment program. (NIDCAP).	“Their sort of raison d'etre is skin-to-skin is what these babies need. So, from day one, we were told this is so important for your children's development, and it helps to minimize the trauma associated with painful procedures.”
			Variability in the encouragement of SSC across settings	3	Mothers noted variability in the encouragement they received across different NICU settings. SSC was often encouraged in Level 3 NICUs but not in Level 2, and support varied between nurses.	___
	Health care professionals did not encourage SSCP	23	No mention or promotion of SSCP	6	Mothers described that health professionals didn’t mention or promote SSCP; it was only introduced by the research team. Medical staff were generally neutral and did not proactively offer SSCP as an option.	“Didn't seem like it was a big thing. They didn't really mention it too much[...] I probably thought at the time, that's just what they do, there's no purpose of taking him out to hold him while they do that. But I certainly would have liked to have done it.”
			Alternative comfort measures	6	Mothers reported that health professionals encouraged other types of support instead of SSCP. Parents were advised to hold their baby after the procedure but not during, or to use hand hugging or light touch. Alternative comfort measures like staying in the room, singing, giving sugar drops, or stroking were suggested. Some nurses specifically recommended hand hugging over SSCP.	“So, we weren't allowed to hold our babies upright. It's different because I guess this study's definition of skin-to-skin is holding your baby on your chest. But in the hospital, their definition of skin-to-skin is skin contact. So, for them, hand hugs when you put your hand over your baby. That is considered skin-to-skin because some babies cannot be

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
						pulled upright.”
			Environmental and practical barriers	12	Mothers described environmental and practical barriers to SSCP, including procedures scheduled outside parental presence hours, unsuitable NICU setups, and logistical or clinical constraints that made SSCP impractical during procedures.	“I just wasn't present because the timing was unpredictable[...]They said they'd be there between X and X and that happened to be the time I wasn't there. I found a lot of the blood work happened in the middle of the night or really early morning so holding wasn't really an option because I didn't know it was happening.” “I'm pretty sure that their policy currently reflects that, that's just not what they do.”
			Clinical context of baby-specific factors	3	Mothers described how specific clinical factors limited SSCP. Some babies didn’t undergo many procedures that would require SSCP.	___
			Covid-19 and parental presence restrictions	1	Due to COVID-19 restrictions, some parents were asked to leave during procedures to prevent crowding, which prevented them from participating in SSCP.	“COVID became bad at one point in November, where my husband and I weren't allowed. We used to be allowed to be in there together [..] So I think that was heartbreaking, because we did so well. Being there together, my husband would support me, or I would help him, and being there all alone was very (hard) [..] So I think it was very challenging and lonely[..] So I think maybe if we were allowed to be able to have other visitors, and perhaps maybe she would have had more skin-to-

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
						skin. But I think COVID, changed the whole outlook of the NICU, it's already a challenging time, and COVID made it even 1000 times more challenging.”
			Timing and gradual encouragement	1	Mothers described that staff only gradually began encouraging SSCP, after realizing its importance for the mother, rather than promoting it from the start.	“I think they saw how important it was to me and how I was trying not to bother anyone, by asking to hold him, because it would take, sometimes 15-20 minutes just to get him in a good position. So, I limit myself to holding him once a day. And as time went on, some nurses started asking me if I wanted to hold him, and of course, I’d say yes.”
	Health care professionals actively discouraged SSCP	7	Hold only after procedures	3	Mothers reported that they were explicitly instructed not to hold their baby during procedures and were advised to hold the baby afterward instead.	___
			Procedural and clinical barriers	6	Mothers described procedural barriers, including being discouraged or asked to leave the room for invasive or distressing procedures like blood transfusions, and being told not to watch to avoid witnessing their baby in pain. SSCP was discouraged for certain procedures (e.g., ROP exams) due to the challenge of holding the baby immobile during some procedures.	“I've been trying to comfort him or distract him during blood draws and told to back up or not be in the way.”
			Hospital or institutional barriers	6	Mothers described hospital or institutional barriers to SSCP, including that it wasn’t standard practice at their hospital, the environment wasn’t set up for it (e.g., lack of private rooms), and it wasn’t	“Their setting was a little bit different. They didn't have a room. It was just like a curtain separating you from like six other babies in the same room.”

	Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
						encouraged because staff felt parents would be in the way. There were also discrepancies in medical staff opinions, leading to a lack of consensus on its use.	
		Information was not provided about SSCP	30	—		Mothers reported not receiving information about SSCP from medical staff. Instead, they learned about it through research advertisements, their own online research, or social media. Medical staff often shared general information about SSC for bonding or breastfeeding, but not specifically for pain relief. Some noted stickers for tracking SSC duration, but pain management was rarely discussed.	"Oh, I didn't even know that was an option at all in our NICU!"
		Information was provided about SSCP	8	—		Some mothers reported that information about SSCP was provided in the NICU, including pamphlets at admission, posters, websites, and online classes. However, the level of information varied between different NICU levels (more information in level 3 than level 2), and some parents were also referred to Facebook groups to connect with other NICU moms and learned about SSCP from other's experiences.	"At one hospital, kangaroo care was more about bonding and keeping the baby happy and build a connection. At the higher-level surgical hospital, they talked more about how it could benefit them during painful procedures."
8.	Future Suggestions to support SSCP	Encouragement and normalization of SSCP	27		27	More encouragement from medical staff to do SSC and SSCP.	"That would have been really supportive to be like, okay, painful procedure today. Can you come in at X time? We're ready."
					27	Clarify NICU protocols and consistent messaging from medical staff about SSCP; reduce inconsistent information.	"Having everyone on the same page (about recommending SSCP)."

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
				1	Normalizing the experience of SSCP by offering it to parents, while reassuring parents that it won't hurt their baby.	"Just telling the parents that you are free to spend as much time skin-to-skin as you want, and anytime you do feel like doing skin-to-skin, just let us know, and we'll come and help out. I think just hearing that would have helped me feel more comfortable about doing it more often."
	Information and education for parents	25		7	Knowledge is power. Provide parents with accurate, clear information to educate about the benefits of SSCP and how to do it well.	"There were so many mothers whose language is not English, so even having another nurse who, maybe speaks their language to explain that to those families[...]'it should be informed in a way that even the family members who maybe have a different generational understanding should be made to understand the importance of skin-to-skin."
				7	Education on what to expect during infant's painful procedure, including a step-by-step rundown beforehand.	
				2	Adjust SSCP instructions based on the mother's experience and provide links to videos.	
				6	Provide tangible information and resources about SSCP in multiple formats (e.g., discussions, pamphlets, or videos) and languages.	
				1	Offer optional NICU classes on SSCP that parents can attend.	
	Practical and environmental support	21		9	Improve the NICU environment to make SSCP more comfortable, for example provide more comfortable chairs, more privacy screens, cup holders on reclining chairs, encourage moms to bring their robes instead of using isolation gowns,	"Your physical discomfort while it's happening is very, very significant...you should be able to focus more on the experience…"

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
					keeping lights low.	
				1	Help with baby clothing as they get older to support longer SSCP.	
				3	Provide rooming options that allow parents to stay nearby, with privacy, allowing those mothers who need to practice modesty, or feel self-conscious, while at the same time reduced isolation.	
				2	Access to NICU family community/support system for peer support.	
	Flexibility and individualizati on	9		1	Offer flexibility for hold time commitments-parents may prefer shorter or longer periods.	“There were times we wanted to hold, but we couldn’t sit through the amount of time they wanted us to sit through. So, I feel like we missed out on opportunities because we weren't able to meet the time criteria.”
				1	Adjust baby positioning so parents can do SSCP during more procedures.	
				2	Provide the option to opt in or out of SSCP.	“I think they shouldn’t be making parents feel like they're asking for this big favor by asking the healthcare professionals to take their child out.”
				2	Medical staff should be accommodating, taking extra time to support parents as needed.	
				1	Offer SSC before first-time SSCP to build parents’ confidence.	“The way it should be approached, should be more individualized, rather than generic ‘oh, skin to skin is good because it increases your child's immunity’, it should be more like Baby A is going through this. Baby B is going through that. This is how you will directly help your
				1	Give families time to settle into the NICU before diving into SSCP expectations.	

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
						child with skin-to-skin.”
	Medical staff training and consistency	7		3	Train medical staff on how to support parents with SSCP.	“I feel like some of the nurses were hesitant to do it because it's just easier. But I think, sometimes encouraging that and educating staff on the benefits of it as well is important.”
				1	Ensure consistency among medical staff knowledge on SSCP.	
				1	Medical staff should express effective communication, empathy, and understanding of parents’ experiences.	
				1	Medical staff should invite parents to help during painful procedures and support them with preparation.	
				1	Medical staff should be open to discussion about SSCP without any agenda.	
	Communication and scheduling	14		11	Increase communication with parents about when painful procedures are happening so they can participate in SSCP.	“I had a child at home, I have to take care of the child at home. So, if I knew at, say, 8am we're doing blood work, then advising the parents so that they can make sure they're there for 7:30 to take baby out, to have the baby comforted prior to doing the work. So just being kind of more in the know as to when things are going to be done.”
				1	Tailor the timing of procedures to parents’ availability so parents can be present for SSCP.	
				1	Offer SSCP when it's time for the procedure rather than requiring advance scheduling.	
	Parent Advocacy and	3		1	Empower parents to contribute to the baby’s care.	“I truly believe that the most helpful thing would be having a former

Theme	Sub-Theme	N	Sub-Subtheme	N	Description	Sample Quotation
	peer support			1	Connect parents with NICU family community support or NICU parent advocates.	parent of that unit as a parent advocate on either volunteer or staff position to speak to the other parents[..]even if it was just, once a week, or once a month, a group session to see this person, or if they were somebody, you could message[..]A doctor can tell you whatever, a nurse practitioner can tell you whatever, but, hearing it from another parent who, lived the same way that you're living it is just so different."
				1	Create common spaces where parents can meet and connect outside the bedside.	
	Mental health and emotional support	3		2	Provide parents with support from counselors and social workers.	"And I think for a lot of moms and dads, mental health takes a dive when they're put into the NICU. So having that [mental health support] available to them, especially during a difficult procedure or a painful procedure, I think that would definitely help them mentally also prepare for whatever lies ahead. I know my social worker was my knight in shining armour. She saved me from a lot of just dark thoughts that I had after I had my daughter."
				1	Offer reassurance and mental health support to parents, especially during infant's painful procedures.	

Supplemental Table 2. Closed-Ended Questions- Common Fears or Concerns About Holding Very and Extremely Preterm Infant in SSCP

	Concerns	Rating	N (%)	Reasons
1.	Baby was too fragile to be held in SSC during a painful procedure	Not at all	11 (29%)	- If he is not too fragile to be held in SSC, he is not too fragile to be held in SSC for a procedure to be done.
		Somewhat	18 (47%)	- When the baby's monitor numbers were not looking good, did not want to make things worse. - Depended on the age – More so when baby was younger & smaller but changed over time as baby got bigger and seemed like she could handle it better. - It is what she was told.
		Very much	9 (24%)	- In the beginning/first three months. - Depending on how small he was. - Was told that by the medical staff so that is what she believed. - Baby's GA, baby's risk of infection and being intubated were indications of its fragility. - In the beginning due to risk of brain bleed.
2.	Worried about babies monitoring or tubes could come out while painful procedure was going on	Not at all	9 (24%)	- Not more concerned than during regular SSC. - Medical staff were always there during procedures to immediately fix it. - It would have been protective to be in SSC. - Baby was stable.
		Somewhat	16 (42%)	- Did not want baby to get upset while holding them. - Not more concerned than during regular SSC. - Depending on what the procedure was. - That did happen, and it was very scary. - Only in the beginning. - Not concerned about monitors but worried about ventilators, respirators and feeding tubes getting dislodged.
		Very much	13 (34%)	- Always concerned & constantly checking baby's vitals. - That was a risk at any time, not only for painful procedures. - Having to redo the tubes was painful for the baby.

3.	Did not want to be associated with the painful procedure	Not at all	26 (68%)	- SSCP makes baby feel safe and relaxed. - I wanted to be there to comfort. - Babies are more perceptive than that. - Did not have a choice. - Believe that they would be associated with the comfort.
		Somewhat	9 (24%)	- For very invasive procedures, not for heel pricks. - Didn't want to do it but would only for the benefit of baby. - Mixed feelings. - Baby's health is a priority so will do it even though the association might happen.
		Very much	3 (8%)	- But also wanted to be there; the baby would associate mothers' presence with comfort too.
4.	Worried that you already had a failed attempt at SSC so you were scared to try SSCP	Not at all	23 (61%)	- Did not associate the event with the procedure. - Did not experience this. - Never considered SSCP causing infants instability. - Had plenty of experience with SSC before SSCP.
		Somewhat	10 (26%)	- Would be scared if it was offered right after an event. - Would be able to overcome the fear knowing that it would comfort the baby. - Was worried, but also knew the benefit of SSCP. - Trained medical staff helped overcome this fear by offering modifications to SSCP. - Had previous experience with SSC so was not worried a lot. - When baby was younger and less stable. - Experienced this once so was somewhat worried.
		Very much	5 (13%)	- Maybe due to hormones. - Experienced this before during SSC so was worried.
5.	Did not feel experienced enough to hold baby in SSCP	Not at all	20 (53%)	- Heel prick is not complex so was not worried. - Medical staff provided support during SSC which equipped parents well. - Had plenty of experience with SSC before SSCP. - Felt inexperienced only at the beginning. - Long NICU stay allowed for skill development.

			Rating	N (%)	Description
			Somewhat	12 (31%)	- Didn't feel confident in holding in SSC in general. - Felt inexperienced in everything NICU related. - In the beginning but that changed day-by-day. - Had some experience other NICU children, but still worried about it.
			Very much	6 (16%)	- Because a lot of procedures happen mostly in the beginning when the baby is very small, and mother has no experience yet.

Supplemental Table 3. Close-Ended Questions- Opinions on Five Ideas for Supporting SSCP in Very and Extremely Preterm Infants

	Suggestion	Rating	N (%)	Themes	Description
1.	Have health professionals talk about common fears before first SSCP attempt	Helpful	34 (89%)	Reassurance and emotional support	- Provides reassurance that health professionals have done it before and that everything will be okay. - Helps parents feel **understood and validated**, recognizing that fears are normal and valid. - Eases emotional stress and makes the first attempt at SSCP more positive. - Especially important for first-time mothers of preterm babies, who may feel particularly nervous.
				Education and information	- Provides accurate information about the **safety and benefits of SSCP**, as well as how to do it properly. - Prepares parents for what to expect during SSCP. - Knowledge is power: empowering parents through education helps them feel more in control.
				Communication	- Having this conversation provides an avenue for parents to ask questions and share their own fears.

	Suggestion	Rating	N (%)	Themes	Description
					- Helpful if a medical staff can reassure the parent during SSCP.
				Advocacy	- Parents learn what they can advocate for.
		Not Helpful	6 (16%)	Risk of increasing anxiety	- Too much information might feel overwhelming and increase anxiety rather than reducing it. - Mentioning fears the moms hadn't considered might introduce new worries. - Might worsen postpartum anxiety overall.
				Personalization and relevance	- Ask about the parent's specific fears instead of presenting generalized fears or other people's experiences. - Only necessary if parent is already feeling anxious about SSCP.
				Feasibility and practicality	- Medical staff may not be skilled at providing emotional support, making implementation challenging. - Time-consuming; some parents will prefer being asked if they have questions or concerns rather than a lengthy explanation.
2.	Quick tip card for how to do SSCP that addressed common areas of stress and how to manage it that could be left in the room or downloaded to your phone	Helpful	31 (82%)	Empowering parents through accessible guidance	- Helps new moms learn to calm their infants during painful procedures. - Provides easy, on-demand guidance without needing immediate staff assistance. - Simplifies the process with clear, step-by-step instructions. - Gives moms tools to feel more confident. - Allows moms to refer back to the tips as needed and to absorb information at their own pace. - All factual and relevant literature would be helpful for parents. - Should cover benefits, and the do's and don'ts of SSCP during NICU orientation.

Suggestion	Rating	N (%)	Themes	Description
			Flexibility and individual preferences	- Should be optional, letting parents decide whether to pick it up or not. - Avoid overwhelming parents with too many pamphlets. - Recognizes that this may be more useful for some mothers than others (e.g., new moms, those with bigger babies). - Could be even more effective if accompanied by a nurse's explanation or as part of orientation (complement, not replacement). - Could also be provided in video format for those who prefer.
			Strategic placement and accessibility	- Should be placed where parents can glance at it easily (e.g., on the wall or on incubator) since they can feel "stuck" during SSCP and may not be able to hold a card. - NICU parents often have time to read in the pumping room, so placement there would be helpful. - Should include visuals and be simple, with less text, making it accessible for non-English-speaking parents. - Having it in the room is helpful because parents are encouraged to not be on their phones. - Posting it on the walls also offers an avenue for staff-parent conversation.
			Integration with staff support	- Should be coupled with a nurse's explanation and not be a standalone resource. - Should clarify NICU protocols and provide consistency in messaging about SSCP. - Could be included as part of the orientation of new parents arriving in the NICU.
	Not Helpful	14 (37%)	Placement and visibility	- It would be more helpful if information is posted somewhere visible, such as on the wall or on incubator, so parents can glance at it while holding. - There's not much space in the NICU to leave a physical card or pamphlet.

	Suggestion	Rating	N (%)	Themes	Description
				Timing and readiness	- It's hard to retain information in the first few days, so positioning and timing matters. - Written resources may not be useful in the heat of the moment when stress levels are high.
				Information overload	- There's already so much printed information in the NICU; parents may feel overwhelmed and not have time to read everything. - Printed information alone might not be practical or fully capture parents' attention.
				Applicability and personalization	- Make the fact sheet more personable and engaging to encourage parents to read it. - For extremely preterm babies, a handout may not be useful because parents can't hold their baby without the nurse's assistance.
				Resource as a complement, not a standalone tool	- A printed resource is a good additional tool but shouldn't stand alone; it should be integrated with verbal explanation and staff support.
				Delivery format and learning preference	- A video demonstration might be more helpful than a written fact sheet for learning how to do SSC. - Parents would prefer medical staff to explain SSC verbally rather than relying solely on written materials. - Some parents might not pay attention to printed materials and could miss the information.
3.	Have health professionals talk about what they would do if	Helpful	30 (79%)	Education and preparation	- Providing information about what would happen if equipment disconnected helps parents feel prepared and less anxious.

Suggestion	Rating	N (%)	Themes	Description
baby's equipment disconnected during skin-to-skin for a painful procedure.				- Educating parents on the function of the equipment and how it is organized can make the NICU environment feel less intimidating and overwhelming. - Education is important not just for pain related SSCP but in general to help parents feel comfortable and informed.
			Emotional reassurance and support	- Parents need reassurance that everything will be okay and that healthcare professionals are available to help. - Explaining the process can ease mothers' fears and help them feel less isolated. - For parents who are already worried, providing information proactively can help manage their concerns. - Everything in the NICU is new and scary, so clear communication and support can ease parental anxiety.
			Empowerment and advocacy	- Parents should feel empowered to ask for help, knowing the right people are there to support them. - Providing information fosters a sense of agency and confidence in caring for their baby.
	Not helpful	13 (34%)	Potential for added stress or confusion	- Discussing technical details might cause added stress or confusion, especially for parents who aren't already worried about equipment. - Some parents may feel overwhelmed by too much technical information, particularly if they cannot do anything about it.
			Perceived lack of necessity	- Parents assume that medical staff will manage equipment issues automatically, so they don't see the need to be told about it in advance. - If equipment disconnections are rare, parents may feel it's unnecessary to bring it up beforehand. - Some parents prefer to wait and deal with it only if it happens.
			Preferred alternatives	- Parents prefer reassurance that staff are always nearby to help, rather than being asked to learn technical details.

	Suggestion	Rating	N (%)	Themes	Description
					- Parents feel the responsibility for reconnecting equipment lies with nurses and doctors, not them. - Trust in healthcare staff to manage the situation is important.
				Recommendations for communication	- It could be helpful to offer information as an optional NICU class or discussion, rather than requiring all parents to learn it. - Medical staff should first ask about parents' worries, then provide information if needed.
4.	Ease moms into skin-to-skin contact for pain with starting in a graduated way. E.g., Watching their baby get a heel lance, then less intensive touching like hand hugging then trying SSCP during procedure.	Helpful	25 (66%)	Benefits of a graduated approach	- Helps mothers build confidence and comfort step-by-step (desensitization and emotional readiness). - Allows for gradual skill development and increased emotional readiness. - Supports first-time NICU moms who may find the initial experience overwhelming. - Helpful for hesitant or less experienced mothers, particularly those with many procedures. - Helps mothers feel reassured by watching their baby's responses during different levels of contact. - Facilitates a smoother transition into SSCP, especially when starting from immediate SSCP isn't an option. - Watching and learning about the procedures (e.g., instruments) can help moms understand what to expect.
				Importance of parental involvement and empowerment	- Supports moms in being present and involved in all aspects of their baby's care. - Providing the option to participate in graduated SSCP-never forcing-respects individual readiness and preferences. - Explaining the benefits of graduated exposure can help mothers understand its value.
				Flexibility and sensitivity to parents' needs	- Should not be overly regimented; allow parents to choose their level of participation. - The approach should adapt to the baby's medical condition and the number of procedures, rather than being rigidly applied to everyone.

	Suggestion	Rating	N (%)	Themes	Description
					- Acknowledges that the NICU often lacks consideration for parents' emotions, so extra sensitivity is essential.
		Not Helpful	19 (50%)	Individual differences and preferences	- It could be useful for some parents, but not for everyone. - Importance of respecting parents' preference and readiness; provide graduated SSCP as an option, not a rule. - Provide parents with information and choices, some parents want to hold right away, while others may not be comfortable. - Some parents feel stress or pressure to prove themselves ready for SSCP, they worry about doing it wrong. - Some parents felt stress if they are told painful procedures will happen frequently.
				Providing information and preparation	- It's essential to explain what will happen and what to expect during SSCP. - Parents value having the opportunity to prepare and understand the process. - Reading parents' cues and gauging their readiness is important.
				Implementation of graduated SSCP for pain	- Some parents prefer starting SSCP away rather than gradually introducing it ("rip the band aid" approach). - Some parents believe that their general experience with SSC is enough to prepare them for SSCP, gradual exposure isn't always necessary.
				Systemic barriers and considerations	- Not all mothers are allowed to hold their infant for SSC, which can impact their experience and feelings of involvement in SSCP. - Parent's experience depends on the baby's medical condition and the type of procedure being performed.
5.	Teaching moms to relax before SSCP	Helpful	25 (66%)	Importance of parental calmness	- Parents need to be relaxed themselves to transfer the calmness to their baby.

Suggestion	Rating	N (%)	Themes	Description
(e.g., asking them to put on music or meditation).			for SSC and infant well-being	- Being calm improves the SSC experience for the baby. - Practicing relaxation helps parents stay calm not just before but during painful procedures. - Parents should be mentally ready for SSC.
			Staff and NICU support	- Staff should check in regularly to ensure mothers are comfortable and relaxed. - A designated NICU counselor could help teach relaxation techniques. - Consider offering a dedicated class on relaxation and stress management for parents. - Providing a designated space for parents to relax or meditate would be beneficial.
			Use of music and other relaxation strategies	- Music helps parents focus on something other than medical equipment noise. - Reading to the baby or using other personal strategies also helps. - Prayer or other spiritual practices may be preferred by some parents. - Having a cozy, less clinical environment can help parents relax.
			Individual preferences and needs	- Some parents find relaxation strategies helpful, while others do not. - Parents differ in how they receive and process information; resources should cater to diverse learning styles and preferences. - Providing relaxation strategies as an **option (**rather than a requirement) respects individual preference. - Will benefit moms who have higher anxiety.
			Suggestions for implementation	- Include relaxation guidance in a quick tip sheet. - Practicing SSC beforehand would help parents feel more relaxed during SSCP.

Suggestion	Rating	N (%)	Themes	Description
				- Make the NICU environment more relaxing (more comfortable setting). - Ensure support is provided regardless of whether SSC is for pain management or not, as overall parental well-being is important.
	Not Helpful	16 (42%)	Lack of feasibility to implement relaxation/self-care strategies due to:	- Difficult to implement relaxation/self-care due to: - Limited time before SSCP (parents often busy with pumping, using the washroom, etc.). - Lack of privacy and appropriate spaces to relax. - The NICU environment is not always conducive to mental health care or relaxation (e.g., noise, constant medical activity). - Hospital-dependent differences in facilities and support. - **Headphones are required to listen to music privately** but using them means parents can't hear important sounds in the NICU (e.g., alarms, medical staff instructions, their baby crying).
			Individual preferences and needs	- Relaxation techniques (e.g., music, meditation) vary in usefulness depending on individual preferences. - Some parents prefer prayer over music. - Not everyone likes or finds benefit in meditation or being told to relax.
			Effectiveness and relevance	- Relaxation before SSCP may not prevent stress during SSC, especially when unexpected medical situations arise. - Some parents felt they personally didn't need these strategies, but recognized they might benefit others.

Suggestion	Rating	N (%)	Themes	Description
			Broader support considerations	- There is a need for dedicated mental health support for parents outside the NICU (e.g., NICU specialist counselor, and self-care resources at home). - It's important to ensure the mother's physical health and well-being as a foundation for emotional support.