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Cesarean Skin-to-Skin Contact: Who Gets the Experience in the Operating Room?

Jessica S. Junk-Wilson
Missouri State University, jsw9s@MissouriState.edu

CESAREAN SKIN-TO-SKIN CONTACT: WHO GETS THE EXPERIENCE IN THE OPERATING ROOM?

A Master's Thesis

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In Partial Fulfillment

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Master of Science, Early Childhood and Family Development

By

Jessica S. Junk-Wilson

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Childhood Education and Family Studies

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ABSTRACT

For the past decade, skin-to-skin contact immediately after birth has been the general recommendation for all births, as there is evidence that it provides many benefits for mothers and infants. Yet, research has shown that immediate skin-to-skin contact is not the standard practice after most Cesarean births. This study assessed access, incidence, and circumstances surrounding Cesarean skin-to-skin contact (CSSC) in the operating room and examined influencing maternal characteristics of age, education, race, and number of births via a survey of 2327 people. Women who experienced a Cesarean section birth in the past 10 years were recruited through Facebook groups for mothers to take an online survey. Study results found that respondents were offered and experienced CSSC during their most recent Cesarean birth much less often than they would have desired. The study found statistically significant associations with CSSC in older maternal age, having previous Cesarean birth experience, and higher levels of education. Previous vaginal birth experience and race were not statistically significant associations with CSSC based on this study's sample. This study examined access and incidence of CSSC in order to increase awareness and advocacy so that all women having a Cesarean section birth can be given the option of experiencing CSSC.

KEYWORDS: Cesarean birth, Cesarean section, C-section, skin-to-skin, skin-to-skin contact, maternal age, maternal education, maternal race, birth experience, childbirth, birth options

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Approved:

Elizabeth K. King, Ph.D., Thesis Committee Chair

Lindsey M. Murphy, Ph.D., Committee Member

M.H. Raza, Ph.D., Committee Member

Julie Masterson, Ph.D., Dean of the Graduate College

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I dedicate this thesis to all the C-section moms out there. I also dedicate this to my children: Kit, Scout, Mela, Leo, and Malcolm. You are the inspiration for this thesis, and so much of what I do!

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INTRODUCTION

Cesarean sections are the most commonly performed surgeries in the world (Elsaharty & McConachie, 2017). There were over 1.14 million children delivered by Cesarean section birth in the United States in 2020, which accounted for nearly 1/3 of all births (Osterman et al., 2022). While practices surrounding vaginal births have allowed for more options and improvements, Cesarean births have remained relatively unchanged for the past thirty years (Magee et al., 2014). Modern media and society emphasize that a mother's birth choices should be the most important factor in her birth experience, but in practice, decisions are often made that please and cater to the healthcare team and the facilities rather than the mother's wishes (Bergman & Bergman, 2013).

The American Academy of Pediatrics (2012) and the World Health Organization (2009) recommend skin-to-skin contact immediately after birth for all healthy babies to encourage breastfeeding. Skin-to-skin contact is when an unclothed infant is placed on its mother's bare chest after birth (Crenshaw, 2014; Elsaharty & McConachie, 2017; Moore et al., 2012; Vittner et al., 2017). "Immediate" skin-to-skin contact is generally accepted to mean within 5 minutes of birth (Crenshaw, 2014). For this study, the term "Cesarean skin-to-skin contact" or "CSSC" means skin-to-skin contact between a mother and her child within 5 minutes of delivery via Cesarean section. CSSC has many researched benefits for both mothers and infants (Jolien & Yves, 2018; Posthuma et al., 2017; Kameduła et al., 2021). Despite the documented benefits and what is recommended as best practice, CSSC is not happening in most studied facilities for many reasons (Balatero et al., 2019; Carmichael & Matulionis, 2014; Koopman et al., 2016).

It is unknown who is experiencing CSSC, how often it is occurring, and if it is being offered routinely to mothers. The purpose of this study is to explore access and prevalence of skin-to-skin contact after a Cesarean section, comparing by maternal characteristics. By better understanding access and incidence of CSSC, the results can guide healthcare providers, policy makers, and patients towards increased awareness and advocacy so that more mothers may be given the option of experiencing the benefits of skin-to-skin contact during a Cesarean section birth.

LITERATURE REVIEW

Benefits of Skin-to-skin Contact

There are many positive outcomes for both mothers and their infants practicing skin-to-skin contact, including physiological, psychological, analgesic, bonding, breastfeeding, cognitive, and communicative benefits. While few studies have been done, there is research that shows benefits specifically related to Cesarean skin-to-skin contact. Further, the positive outcomes for infants seem to be universal, as skin-to-skin contact has been shown to be beneficial to infants of varying birth ages, backgrounds, and cultures (Gupta et al., 2021). Though benefits for the mother and for the infant are almost inextricably tied, research has indicated specific benefits for both parties that are outlined below.

For the Mother. Mothers report a general feeling of wellbeing while practicing skin-to-skin contact after birth (Koopman et al., 2016). One study found that the blood pressure and the heart rate of mothers decreased when they were practicing skin-to-skin contact with their child (Jones & Santamaria, 2018). Mothers reported less anxiety after skin-to-skin contact, and it is suggested that the practice might also reduce stress and depression (Feldman et al., 2014; Jones & Santamaria, 2018; Zauderer & Goldman, 2012). Further, there has been shown to be a significantly reduced need for pain and anxiety medication in patients who practiced skin-to-skin, as well as less time spent in recovery rooms, and less time spent in the hospital overall (Posthuma et al., 2015; Wagner et al., 2018). Skin-to-skin contact also helps to foster maternal bonding and attachment with a newborn (Carmichael & Matulionis, 2014; Feldman et al., 2014; Jones & Santamaria, 2018; Stevens et al., 2014). Three months after giving birth, mothers who practiced skin-to-skin with their infant immediately after birth were observed to spend more time

looking at and kissing their child (Chateau & Wiberg, 1977). It has been suggested that the extra communication and attention elicited from skin-to-skin contact may lead to more positive parenting (Winberg, 2005).

With Cesarean births specifically, allowing CSSC and keeping a mother and baby together, rather than separated, often results in better breastfeeding experiences (Jolien & Yves, 2018). When compared to mothers who had CSSC, mothers who had Cesarean sections without skin-to-skin contact felt more often that their milk supply was inadequate and increasingly found the need to supplement feedings with formula (Kameduła et al., 2021). Cesarean skin-to-skin has been found to be more likely to prompt vocal communication from parents towards their newborn (Velandia et al., 2010). Mothers who had CSSC were found to be more satisfied in their birth experience, had more overall patient happiness, and reported more confidence and trust in the nursing staff (Kahalon et al., 2021; Zauderer & Goldman, 2012).

For the Infant. Skin-to-skin contact immediately after birth has also been shown to provide many benefits for infants. Some of the studied physiological benefits include higher oxygen saturation, increased/stabilized body temperature, higher glucose levels, and cardiovascular and respiratory regulation/stability (Bier et al., 1996; Feldman et al., 2014; Marín Gabriel et al., 2010; Moore et al., 2012; Gouchon et al., 2010; Guala et al., 2017; Gupta et al., 2021; Huang et al., 2019; Mori et al., 2010; Nolan & Lawrence, 2009). It was also found that newborns practicing skin-to-skin experienced less pain, cried less often, and had lower amounts of cortisol, suggesting a lower stress experience (Gray et al., 2000; Huang et al., 2019; Takahashi et al., 2011). There are cognitive benefits for skin-to-skin too, as research says that it leads to increased brain development, which can be disrupted by mother-infant separation (Bergman & Bergman, 2013; Feldman et al., 2014). Newborns seem to have a general sense of happiness and

satisfaction with skin-to-skin contact and there can even be some long-term benefits (Koopman et al., 2016). Three months after birth, infants that had received skin-to-skin contact were found to cry less and smile more frequently (Chateau & Wiberg, 1977). At ten years of age, children who had received newborn skin-to-skin contact had better sleep, stress reactions, cognitive control, and executive functioning (Feldman et al., 2014).

There have been observed positives specifically with skin-to-skin contact after a Cesarean birth. During CSSC, newborns initiated vocal communication with their parents within 15 minutes of birth (Velandia et al., 2010). Infants that participated in CSSC were less likely to develop infection and less likely to be admitted to the hospital for care (Posthuma et al., 2017). Research has shown CSSC to be related to earlier initiation, and longer duration of breastfeeding, while reducing the need for supplementing feedings with formula (Kameduła et al., 2021; Moore et al., 2016; Nolan & Lawrence, 2009).

The Reality of Cesarean Births

Traditional hospital birthing practices were created to ensure physical safety, but they often fail to provide opportunities for attachment and bonding (Bergman & Bergman, 2013). It is often routine to separate mothers and babies after a Cesarean birth, and skin-to-skin contact is not standard practice in the operating room (Balatero et al., 2019; Moore et al., 2012; Stevens et al., 2014). It is worth noting that there is no evidence to show that there needs to be a separation of mother and child after a Cesarean birth (Crenshaw, 2014). On the contrary, research has shown that physically separating an infant from its mother at birth can have negative effects, such as delayed bonding and brain development (Bergman & Bergman, 2013; Crenshaw, 2014; Moore et al., 2012). Removing the baby from the operating room may contribute to mothers

being more aware of their anxiety, pain, and a desire for medication (Wagner et al., 2018). Physical separation can also affect a mother's responses and reactions to her child (Crenshaw, 2014). It is most beneficial to keep infants and mothers together to provide opportunities for CSSC, and to encourage breastfeeding (Crenshaw, 2014). In a study of skin-to-skin contact after Cesarean births, one nurse said, "To me, first and foremost, it's a patient advocacy issue, and if this is what is right for the patient and what the patient wants, then we need to be advocating for that." (Balatero et al., 2019, p. 141).

Barriers to CSSC in the Operating Room

Even with all the research on the many benefits, skin-to-skin contact after a Cesarean section is not a common practice in studied facilities (Balatero et al., 2019; Koopman et al., 2016). Some of the barriers to CSSC include: environmental risks/safety, logistics, staff support, and knowledge (Balatero et al., 2019; Carmichael & Matulionis, 2014; Koopman et al., 2016). These barriers may leave mothers feeling that they do not have a say in what happens or control in their birth experience.

Environmental Risks/Safety. One relevant environmental factor in CSSC is the use of general anesthesia. The use of general anesthesia for Cesarean section births has been declining over the past 40 years and currently about 6% of Cesarean births are performed while the patient is under general anesthesia (Juang et al., 2017; Ring et al., 2021). In the past, the common use of general anesthesia for Cesarean births often led to a desire for surgeries to be done as quickly as possible to lessen the exposure of the newborn to anesthetics (Smith et al., 2008). That pressure for a swift surgery is much less necessary with modern epidurals and spinal blocks, but still many Cesareans are done with a sense of speed to completion, which does not provide a

supportive environment for CSSC to occur (Smith et al., 2008). Further, when general anesthesia is used in a Cesarean birth, the resulting sedation can be a barrier to CSSC and research has shown that it can interfere with bonding for a mother and her infant (Nitahara et al., 2020).

Because operating rooms typically have lower temperatures than vaginal birthing rooms, there have been concerns over keeping an infant's temperature stable and the risk of developing hypothermia when practicing skin-to-skin contact in the operating room (Balatero et al., 2019; Beiranvand et al., 2014; Brady et al, 2014; Gouchon et al., 2010; Smith et al., 2008; Tillett, 2015). However, studies have shown that average body temperatures are nearly identical or even higher in newborns that practice CSSC comparted to those that receive routine care after a Cesarean section (Beiranvand et al., 2014; Gouchon et al., 2010; Nolan & Lawrence, 2009).

Others have voiced concerns of maternal infections and maintaining a sterile field when the newborn is placed directly on a mother's skin while the incision site is still open (Balatero et al., 2019; Tillett, 2015). However, a large clinical study found no increase in maternal infections with CSSC nor negative neonatal outcomes associated with the practice (Bronsgeest et al., 2019).

Often, a Cesarean section is happening because there is a higher risk for complications with the mother or the baby, presenting potential health barriers to CSSC if immediate medical attention is needed at birth (Balatero et al., 2019). Another safety concern mentioned is the presence of a sterile drape blocking the mother's view of the surgery as potentially blocking the view of a nurse to oversee the safety of the baby during Cesarean skin-to-skin contact and necessitating a nurse be physically very near the mother and baby (Balatero et al., 2019).

Logistics. In an operating room, there is more equipment and more staff than at a vaginal birth, which can lead to some logistical challenges that might require equipment setup modifications for CSSC to occur (Balatero et al., 2019; Brady et al., 2014; Elsaharty &

McConachie, 2017; Koopman et al., 2016; Wagner et al., 2018). The positioning of IV lines and other monitoring devices can also be potential physical barriers to facilitating skin-to-skin contact (Balatero et al., 2019). The compact size of an operating room has also been cited as a barrier (Koopman et al., 2016). A mother's position of being on her back on the operating table, with a drape on her abdomen, unable to move some of her body, can make an awkward position to hand over a tiny newborn (Balatero et al., 2019). Hospital staff members have further expressed challenges in assessing a newborn's health if they are facing downward on their mother's chest (Tillett, 2015).

Staff Support. One of the biggest barriers to implementing CSSC practices have been identified as getting the entire birth team to cooperate (Balatero et al., 2019; Koopman et al., 2016; Smith et al., 2008). It is recognized that there is a need for a staff member to monitor the mother and baby, but because operating room staff members often have many tasks to accomplish to have a Cesarean surgery be successful, there seems to be a lack of staffing available to facilitate skin-to-skin safely between mothers and babies in the operating room (Balatero et al., 2019; Brady et al., 2014; Koopman et al., 2016). One nurse interviewed in a study noted that while the option of CSSC is always discussed with the mother and the entire healthcare team, skin-to-skin never actually happens in the operating room at her facility because they cannot get all the staff on board to implement the practice (Balatero et al., 2019).

A labor-and-delivery nurse in the same study discussed that the workflow of birth procedures after a Cesarean birth make skin-to-skin contact a challenge (Balatero et al., 2019). For example, the participant interviewed described the priorities of the nurse in charge of the baby as getting measurements, weights, and assessments (Balatero et al., 2019). When skin-to-skin happens in the operating room, this can delay and complicate the overall flow of post-birth

processes (Balatero et al., 2019). The nurse said that to delay the standard procedures by even an hour interferes with their traditional nursing workflow (Balatero et al., 2019). Other OB/GYN staff interviewed cited other tasks as a key barrier to CSSC and they said these barriers were more present in Cesareans than vaginal deliveries (Koopman et al., 2016). It can be difficult to persuade care providers to change or give up routine rituals and procedures, which may lead to a resistance from staff members in promoting and facilitating skin-to-skin contact (Smith et al., 2008).

Knowledge. Another barrier to skin-to-skin happening after a Cesarean birth seems to be an overall lack of knowledge, experience, and formal policies (Balatero et al., 2019; Koopman et al., 2016; Wagner et al., 2018). Multiple studies that have shown a lack of clear expectations and patient eligibility standards often lead to a hesitance in nurses to implement skin-to-skin contact (Koopman et al., 2016). One study of labor and delivery nurses found that while they knew about the benefits of skin-to-skin contact and were comfortable implementing it after a vaginal birth, they had never done it after a Cesarean (Redshaw et al., 2014). Participants suggested it would be easier to implement CSSC if plans, protocols, and a flowchart were available to put some structure into place (Koopman et al., 2016). Further, a lack of patient knowledge about the option may also be a barrier to the experience.

Another concern is that normalizing Cesarean deliveries makes them more acceptable and desirable to mothers and healthcare providers, leading to further increased rates of elective Cesareans (Tillett, 2015). And while CSSC may have a lot of benefits, some argue that there should be a greater goal of reducing the overall rate of Cesarean section births (Young, 2011).

Maternal Characteristics Related to Childbirth and Cesarean Section Births

In addition to provider and facility barriers, CSSC may be differentially accessible due to maternal characteristics, which is thus a focus of the current study. Research has shown that rates of Cesarean births differ by a mother's age, race, number of births, and education (Osterman et al., 2022; Qublan et al., 2008; Simmons et al., 2021). Therefore, rates of accessing and experiencing CSSC may also vary by these maternal characteristics. Further, there is no known research on CSSC circumstances surrounding individual characteristics.

Age. In 2020, the mean maternal age of first birth by any mode of delivery was 27.1 years old, which is a record for the highest average age ever in the United States (Osterman et al., 2022). The mean maternal age has been on the rise since 1935, and in the past 30 years, the birth rate for women age 40 – 44 has increased more than 400% (Deatsman et al., 2016; Kirmeyer & Hamilton, 2011; Mathews & Hamilton, 2016; 2002; Martin et al., 2021a; Osterman et al., 2022). This is relevant because Cesarean births increase with age, and Cesarean birth rates for mothers age 40 and over have been more than double the rates for mothers age 20 and under since 2014 (Hamilton et al., 2015; Martin et al., 2021a; 2019; 2018a; 2018b; 2017; 2015; Osterman et al., 2022). No other known studies have examined age as a characteristic related to access to CSSC. Therefore, the current study examined CSSC by maternal age.

Education. In 2020, most mothers that gave birth did not have a college degree (Osterman et al., 2022). A mother's education is related to both maternal and infant health outcomes, as well as family size (Mathews & Hamilton, 2019). The current study measured if CSSC access differs by maternal education level. Some research has shown that lower maternal education was associated with increased rates of Cesarean sections (Cesaroni et al., 2008), yet other research has shown that higher maternal education was related to a higher rate of elective,

repeat Cesarean sections (Gilbert et al., 2010). This is the first known study to examine CSSC by education level.

Number of Births. In 2020, 22% of mothers that had a Cesarean section birth were having a Cesarean section for the first time (Osterman et al., 2022). Of all the births in 2020 (both vaginal and Cesarean), 38% were to first-time mothers (Osterman et al., 2022). Studies in other countries found that an increase in number of births was associated with a higher rate of Cesarean section births (Qublan et al., 2008; Simmons et al., 2021). The United States standard birth form is a certificate of live birth. U.S. birth statistics are taken from these birth certificates, and therefore, the data does not include stillbirths (National Center for Health Statistics, 2003). CSSC incidence may be influenced by mothers' prior birth experiences that may or may not have included skin-to-skin contact, therefore this study will look at CSSC by number of live births, both vaginal and Cesarean. No other known studies have examined number of births as a characteristic related to access to CSSC.

Race. According to the CDC, the highest percentage of Cesarean births in 2020 were for mothers who are Black (36.3%), mothers who are Asian (32.6%), and mothers who are Native Hawaiian or other Pacific Islander (32.3%), followed by mothers who are Hispanic (31.4%), mothers who are White (30.8%), and mothers who are American Indian or Alaska Native (28.8%) (Osterman et al., 2022). The highest percentage of mothers having a child in the 4th or higher birth order in 2020 were mothers who are Native Hawaiian or other Pacific Islander, followed by mothers who are American Indian or Alaska Native, mothers who are Black, and mothers who are Hispanic (Osterman et al., 2022).

Racial bias in the hospital setting is a national health crisis and could be a barrier to CSSC (Kozhimannil, 2021). Research has shown that Black and Latina women report

differences in treatment in childbirth settings that have roots in racism (Janevic et al., 2020). Themes of disrespect, feelings of loss of autonomy or power in decision-making, and a lack of information have emerged from research on birthing women of color (Altman et al., 2019; McLemore, 2018). This is significant because these themes may influence the incidence of CSSC in U.S. hospitals. One study found that healthcare professionals sometimes make stereotypical assumptions about women's cultural backgrounds and birth choices, which can be a barrier to encouraging or offering skin-to-skin contact (Finigan & Long, 2014; Koopman et al., 2016). Existing research has reported rates of Cesarean section births by race, but not CSSC occurrence by race; thus, the current study examined access by race.

Perhaps the biggest barrier for CSSC is that it has not been adequately studied. While there have been some small studies of CSSC at various hospitals, there does seem to be a lack of robust studies of this practice. The current study gives insight into who has access to the experience of CSSC in the United States. Unless medical complications prevent it, CSSC should be an option available to all women having a Cesarean section birth, because of the many studied benefits for both the mother and infant. This study hopes to contribute to the goal that all mothers having a low-risk Cesarean birth may have the option of experiencing CSSC. The study was guided by the following research questions:

1. Do women report being offered CSSC by care providers?
2. What is the prevalence of Cesarean skin-to-skin contact after a child's birth among mothers in operating rooms among women in the U.S.?
3. Are there statistically significant associations between CSSC and age, education, number of births, and race among women in the U.S. who had a Cesarean section over the past ten years?

METHODOLOGY

Previous research shows that there are many benefits to skin-to-skin contact for both mothers and infants, and though not what has traditionally been done, skin-to-skin can be facilitated in the operating room immediately after Cesarean births. The current study utilized quantitative research to better understand the experiences of a large number of women and to examine overall trends in the prevalence of who is being offered and experiencing CSSC. Quantitative research was also chosen in order to examine group differences in maternal age, education, the number of births, and race in accessing and experiencing CSSC. The study used a cross-sectional design to explore current practices surrounding CSSC. Quantitative data was collected through a Qualtrics survey that asked participants about mode of births (vaginal or Cesarean), experience with skin-to-skin contact in the operating room, prior knowledge, circumstances surrounding their most recent Cesarean birth, and characteristics of the mother. The Missouri State University Institutional Review Board approved the study on 12-9-2021, IRB-FY2022-322. The letter of approval is located in Appendix A.

Participants

This study collected a convenience sample from the target population of people who had given birth by Cesarean section. Participants were contacted through Facebook groups related to childbirth, motherhood, and/or parenting. Individuals in these groups who had a Cesarean birth within the last 10 years were invited to take a research survey studying Cesarean sections and skin-to-skin contact. A link to the survey was provided on the post about the research study, and if volunteers chose to participate, the link provided took them to an anonymous survey through

Qualtrics. Group members were told they could share the link to the survey with others that met the survey criteria. This sampling method is based on Allen et al.'s (2019) study in Australia on skin-to-skin contact and breastfeeding.

The method of data collection may have led to systematic sampling error because the sample included only members of Facebook groups where the survey link was posted (or an acquaintance of a group member if the survey link was shared) in order to be invited to participate in the survey. There are many mothers who have had a Cesarean birth, but who are not members of these groups, may not use social media at all, or may not have internet access. Even with the shareable link, participation still required internet access or use of a cell phone data plan, and it is unknown how many participants actually shared the survey with others. Further, mothers who had a traumatic birth or those who may have a child that is no longer living may have been reluctant or unwilling to complete a survey about their birth experience.

Procedures

A survey was created on Qualtrics that asked about birth modes (vaginal and Cesarean section), knowledge of, and experience with skin-to-skin contact in the operating room, circumstances around their most recent Cesarean birth, and characteristics of the mother. The researcher conducted a search on Facebook for groups using the keywords: "moms" "childbirth", "motherhood", and "parenting." The researcher then joined the group in order to create a post. If the group was private, the researcher requested to join the group. If granted permission, the researcher then created a post for the group that explained the research study and included a link to the study survey. The post also invited group members to share the survey link with others who were not members of the group. If the researcher did not meet the criteria to join a group

(e.g. a group for Black mothers), she sent a message to the group administrator, asking if the administrator would create a post with a link to the study survey on the group page.

Measures

Each variable in the research questions in this study was measured though a Qualtrics survey. The survey questions were created to examine the relationships between the independent variables of age, race, education, and number of births and the dependent variables of being offered and experiencing CSSC. Before beginning the survey questions, participants indicated that they read and understood the study consent form, and chose to voluntarily participate by checking a box (see Consent Form in Appendix B). The survey did not continue for participants that did not give consent to participate. Once consent was given, the survey asked participants if they had experienced a Cesarean section birth in the past 10 years. If the participant indicated "no", the survey ended for them. If the participant indicated "yes", they continued the survey.

The first and second research questions about access and prevalence of CSSC were measured by asking if the participant was told about skin-to-skin contact in the operating room as an option for their birth, if they were offered CSSC, and whether or not CSSC occurred. The survey measured the third research question about associations between CSSC and age, education, number of births, or race in the U.S. by asking the participant demographic questions about these maternal characteristics (see the survey in its entirety in Appendix C). For validity, the questions about the mother's characteristics of education and race came from the U.S. Standard Certificate of Live Birth form (National Center for Health Statistics, 2003) and are the same questions the Centers for Disease Control and Prevention use to analyze birth data.

Analyses

The data on CSSC being offered to or requested by women was analyzed by looking at the frequency of distribution and creating frequency tables. To examine relationships between maternal characteristics (the independent variables) and incidence of CSSC (the dependent variable), statistical analyses were computed on SPSS software. Chi-square analyses were used to determine if the nominal data categories of education and race were related to accessing and experiencing CSSC. Binary linear regression analyses were used to examine age and number of births relating to accessing and experiencing CSSC.

RESULTS

This study assessed access, incidence, and circumstances surrounding skin-to-skin contact in the operating room after Cesarean section births. The study also examined the prevalence of Cesarean skin-to-skin contact (CSSC) by comparing maternal characteristics of age, education, number of births, and race. The study found statistically significant predictors of CSSC in previous Cesarean birth experience, level of education, and maternal age. Previous vaginal birth experience and race were not statistically significant predictors of CSSC based on this study's particular sample.The Qualtrics survey was available and recorded responses from December 14, 2021 until January 18, 2022. There were 2653 returned surveys through Qualtrics, and 326 were excluded from the results (n=1 was completed too quickly, n=11 were the same IP address that started and then restarted the survey, n=304 were not completed [less than 30%], n=8 had not had a Cesarean birth in last 10 years, n=2 did not consent). The total number of surveys included in this study were 2327.

Descriptive Information

Participants entered their age at the time of their most recent Cesarean section, and ages ranged from 18 to 53, with a mean age of 30.6, and standard deviation of 4.9. Participants indicated the number of live births they have experienced in their lifetime by birth mode (vaginal and Cesarean). Participants reported that they had experienced 0-8+ live vaginal births, with a mean of 1.35, and standard deviation of .79. Participants reported experiencing anywhere from 1-6 live Cesarean births, with a mean of 2.65, and standard deviation of .87. Respondents reported that their highest level of education at the time of their most recent Cesarean birth was

9-12 grade with no diploma (n = 21, .9%), a high school graduate/GED completed (n = 233, 10.0%), some college credit but no degree (n = 539, 23.2%), an Associate degree (n = 268, 11.5%), a Bachelor's degree (n = 827, 35.5%), a Master's degree (n = 377, 16.2%), or a Doctorate/Professional degree (n = 62, 2.7%). Table 1 shows participants' reported race and Hispanic origin. 96.2% of respondents selected one race, 3.2% of respondents selected 2 races, .5% of respondents selected 3 races, and 1 respondent selected 5 races (.0%).

Before having their most recent Cesarean birth, 62.6% (n=1457) of respondents reported having heard of CSSC as a birth option, and 30.9% (n=1019) of all participants indicated that they were told about the option of CSSC by delivery staff. Of those participants that had prior knowledge of Cesarean skin-to-skin contact, 83.2% (n=1212) said they were planning on having CSSC with their most recent Cesarean birth. Those who had heard of CSSC before their most recent birth indicated that they learned about the practice most often from an OBGYN, social media, a birthing class, and/or articles/magazines. Only 12.7% (n=295) of participants said they had experienced CSSC in the past.

Survey respondents reported having had their most recent Cesarean section birth in hospitals across the U.S., with at least two birth experiences reported from every state, as well as the District of Columbia. The states where the most respondents reported having had their most recent Cesarean birth were Nebraska (11.2%, n=260), Rhode Island (10.7%, n=248), and Utah (10.2%, n=238). 42.5% of respondents said that they had a Cesarean section birth in the past couple years (2020 and 2021), and 76.7% said that they had a Cesarean section birth in the past 5 years (2017-2021).

Table 1. Hispanic Origin and Race of Participants

Hispanic Origin		
	n	%
Not Spanish/Hispanic/Latina	2122	91.2
Mexican, Mexican American, Chicana	88	3.8
Puerto Rican	23	1.9
Cuban	10	0.4
Other Spanish/Hispanic/Latina	80	3.4
Total	2323	

Race		
	n	%
White	2168	93.65
Black or African American	68	2.93
American Indian or Alaska Native	51	2.20
Asian Indian	12	0.52
Chinese	8	0.35
Filipino	17	0.73
Japanese	8	0.35
Korean	9	0.39
Vietnamese	3	0.13
Other Asian	12	0.52
Native Hawaiian	9	0.39
Guamanian or Chamorro	0	0
Samoan	0	0
Other Pacific Islander	4	0.17
Other	51	2.20
Total	2315	

Incidence of Cesarean Skin-to-Skin Contact (CSSC)

Table 2 shows the total participants that requested, were offered, and experienced CSSC, answering the first and second research questions. A similar number of participants requested CSSC (31.4%) and were offered CSSC (31.7%), but a smaller number of participants actually experienced CSSC (29.4%).

Table 2. Cesarean Skin-to-Skin contact (CSSC)

	Requested CSSC (n=2324)		Were Offered CSSC (n=2326)		Experienced CSSC (n=2324)	
	n	%	n	%	n	%
Yes	730	31.4	737	31.7	683	29.4
No	1594	68.6	1589	68.3	1641	70.6

A follow-up chi-square test was calculated to examine incidence of CSSC by four geographic regions of the United States where the Cesarean birth occurred (West, Midwest, Northeast, and South, according to U.S. Census designations for region). A significant result was found among some of the comparisons ($\chi 2 = 16.271$, $p < .05$). Respondents that had a Cesarean section birth in the West were significantly less likely to experience CSSC than respondents who had a Cesarean birth in the Midwest and South regions of the U.S. Respondents who had a Cesarean section birth in the Northeast did not differ significantly in the incidence of CSSC from other regions of the United States.

A chi-square test was calculated to examine whether the participant's most recent Cesarean birth was a planned/elective surgery or an unplanned/emergency surgery and requesting, being offered, and experiencing CSSC. A significant result was found among all comparisons in all tests. When a Cesarean birth was planned, significantly more participants requested CSSC ($\chi 2 = 26.715$, $p < .05$), were offered CSSC ($\chi 2 = 47.889$, $p < .05$), and experienced CSSC ($\chi 2 = 55.097$, $p < .05$).

CSSC by Maternal Characteristics

The third research question in this study examined the prevalence of Cesarean skin-to-skin contact (CSSC) by comparing maternal characteristics of age, education, number of births,

and race. Binary logistic regression and chi-square analyses were calculated to explore differences in CSSC.

Age. A binary logistic regression was calculated to examine the relationship between participants' age and incidence of CSSC. A statistically significant relationship between maternal age and incidence of CSSC was found ($\beta = -.045$, SE = .010, df = 1, p = .000), such that the older a participant at the time of their Cesarean birth, the more likely they were to experience CSSC.

Additional follow-up analyses were calculated to examine how participants' age related to prior knowledge of, requesting, and being offered CSSC. A binary logistic regression was calculated to explore prior knowledge of CSSC by age. A significant relationship was found between age and prior CSSC knowledge ($\beta = -.063$, SE = .009, df = 1, p = .000), such that the older a participant, the more likely they were to have known about CSSC before their most recent Cesarean birth. Binary logistic regressions were also calculated to examine requesting and being offered CSSC by age. A significant relationship was found between age and requesting CSSC ($\beta = -.019$, SE = .009, df = 1, p = .042) and between age and being offered CSSC ($\beta = -.045$, SE = .009, df = 1, p = .000). Results show that the older a participant at the time of their Cesarean birth, the more likely they were to request CSSC, and be offered CSSC.

Education. A chi-square test was calculated to examine incidence of CSSC by education level using a comparison of column proportions and adjusting the significance level for multiple comparisons. A significant interaction was found among some of the variables ($\chi 2 = 25.530$, $p < .05$). Results show that respondents whose highest level of education was a Bachelor's, Master's, or Doctorate/Professional degree were significantly more likely to have CSSC than

respondents whose highest level of education was a high school diploma (or equivalent). Table 3 illustrates the results of the chi-square analyses.

Additional follow-up analyses were calculated to further explore the role of participant education level on prior knowledge of CSSC, requesting CSSC, and being offered CSSC. A chi-square test was calculated to examine prior knowledge of CSSC by education level. A significant interaction was found among some of the variables ($\chi 2 = 65.887$, $p < .05$). Results show that respondents whose highest level of education was a Bachelor's, Master's, or Doctorate/Professional degree were significantly more likely to have heard about CSSC before their most recent Cesarean birth than respondents whose highest level of education was a high school diploma (or equivalent) or who had some college, but no degree (see Table 3). A chi-square test was calculated to examine requesting CSSC, and no significant interactions were found among the variables ($\chi 2 = 10.709$, $p < .05$). A chi-square test was calculated to examine being offered CSSC. A significant interaction was found among some of the variables ($\chi 2 = 20.871$, $p < .05$). Results show that respondents whose highest level of education was a Bachelor's, or Master's degree (but not a Doctorate/Professional degree) were significantly more likely to have been offered CSSC by birthing staff during their most recent Cesarean birth than respondents whose highest level of education was a high school diploma (or equivalent). Table 3 illustrates the results of the chi-square analyses.

Number of Births. Participants indicated the number of live births they had experienced in their lifetime, by method of delivery (vaginal or Cesarean section). A binary logistic regression was calculated to assess the relationship between number of births and CSSC, looking independently at the two methods of delivery. A statistically significant relationship was found between number of Cesarean births and incidence of CSSC ($\beta = –.208$, $SE = .051$, $df = 1$, $p =$

Table 3. CSSC by Education Level

	9th -12th grade, no diploma (n=21)		High school graduate/GED (n=232)		Some college, no degree (n=539)		Associate degree (n=268)		Bachelor's Degree (n=825)		Master's degree (n=377)		Doctorate/Professional degree (n=62)	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Heard of CSSC before birth	11	52.4	116*$^{+\#}$	49.8	290$^{\S€\Omega}$	53.8	158$^{»}$	59.0	567*§	68.6	267$^{+€»}$	70.8	48$^{\#\,\Omega}$	77.4
Had not heard of CSSC before birth	10	47.6	117*$^{+\#}$	50.2	249$^{\S€\Omega}$	46.2	110$^{»}$	41.0	260*§	31.4	110$^{+€»}$	29.2	14$^{\#\,\Omega}$	22.6
Total	21		233		539		268		827		377		62	
Offered CSSC	5	23.8	53*$^{+}$	22.7	158	29.3	76	28.4	281*	34	139^{+}	36.9	25	40.3
Not offered CSSC	16	76.2	180*$^{+}$	77.3	381	70.7	192	71.6	545*	66	238^{+}	63.1	37	59.7
Total	21		233		539		268		826		377		62	
Experienced CSSC	4	19	47$^{\#\,\Omega\S}$	20.3	143	26.5	68	25.4	273$^{\#}$	33.1	123$^{\Omega}$	32.6	25§	40.3
Did not experience CSSC	17	81	185$^{\#\,\Omega\S}$	79.7	369	68.5	200	74.6	552$^{\#}$	66.9	254$^{\Omega}$	67.4	37§	59.7
Total	21		232		539		268		825		377		62	

* $^{+\#\,\Omega\,\S\,€\,»}$ indicates statistically significant differences from one another ($p < .05$)

.000), in that the more Cesarean births a participant had experienced, the more likely they were to have CSSC. There was no significant relationship between number of vaginal births and CSSC ($\beta = .084$, SE = .063, df = 1, p = .182).

Additional follow-up analyses were calculated to examine how participants' method of delivery (vaginal or Cesarean section) related to prior knowledge of, requesting, and being offered CSSC. Binary logistic regressions were calculated to explore prior knowledge of CSSC by method of delivery (Cesarean section: $\beta = .017$, SE = .050, df = 1, p = .737; vaginal: $\beta = .078$, SE = .054, df = 1, p =.147) and requesting CSSC by method of delivery (Cesarean section: $\beta = -.073$, SE = .051, df = 1, p = .154; vaginal: $\beta = .032$, SE = .059, df = 1, p = .581). No significant relationships were found among any of the variables. An additional binary logistic regression was calculated to explore being offered CSSC by method of delivery. A statistically significant relationship was found between number of Cesarean births and being offered CSSC ($\beta = -.172$, SE = .051, df = 1, p = .001), in that the more Cesarean births a participant had experienced, the more likely they were to be offered CSSC. There was no significant relationship between number of vaginal births and being offered CSSC ($\beta = .074$, SE = .060, df = 1, p = .216)

Race. A chi-square test was calculated to examine incidence of experiencing CSSC by race. Results showed that 29.5% of respondents who identified as white experienced CSSC and 28.6% of respondents who identified as a person of color experienced CSSC, but the .9% difference is not a statistically significant relationship ($\chi 2 = .062$, $p < .05$).

Additional follow-up chi-square analyses were calculated to examine prior knowledge of, requesting, and being offered CSSC by race. Results showed that 63.2% of respondents who identified as white knew about CSSC before their recent Cesarean birth, and 58.2% of respondents who identified as a person of color knew about CSSC before their recent Cesarean

birth, but the 5% difference is not a statistically significant relationship ($\chi 2 = 2.074$, $p < .05$). For respondents that identified as a person of color and who reported knowing about CSSC, the most common answer for where they learned about CSSC was from social media. Respondents that identified as white most commonly answered that they learned about CSSC from an OBGYN.

With requesting CSSC, there was not a statistically significant relationship ($\chi 2 = 1.213$, $p < .05$) in the 5% difference between respondents who identified as a person of color (28.2% requested CSSC) and respondents who identified as white (31.8% requested CSSC). Results showed that 31.9% of respondents who identified as white were offered CSSC by birthing staff and 30.5% of respondents who identified as a person of color were offered CSSC by birthing staff, but the 1.4% difference is not a statistically significant relationship ($\chi 2 = .174$, $p < .05$).

DISCUSSION

This study examined the practice of skin-to-skin contact between a mother and child immediately after a Cesarean birth. The study assessed the incidence of Cesarean skin-to-skin contact (CSSC), as well as maternal characteristics of age, education, number of births, and race in order to compare differences in accessibility to the experience. The results found statistically significant differences in incidence of CSSC when a Cesarean section was planned compared to an emergency surgery. There were significant differences in CSSC occurrence based on the region of the United States where the participant gave birth as well. The study also found significant predictors of CSSC based on previous Cesarean section births, education level, and maternal age. In this section, the study results will be discussed as they relate to the following research questions:

1. Do women report being offered CSSC by care providers?
2. What is the prevalence of Cesarean skin-to-skin contact after a child's birth among mothers in operating rooms among women in the U.S.?
3. Are there statistically significant associations between CSSC, age, education, number of births, and race among women in the U.S. who had a Cesarean section over the past ten years?

Incidence of Cesarean Skin-to-Skin Contact (CSSC)

The first research question asked if women report being offered CSSC by their care providers, and this is the only known study to examine this. The study found that only 31.7% of participants were offered CSSC during their most recent Cesarean birth. The study also found significant differences in who was offered CSSC. Participants who had a high school education were significantly less likely to be offered CSSC than those with a Bachelor's or Master's degree. Women having their first Cesarean section birth were less likely to be offered CSSC

(28.0%) compared to women having their second (35.7%) or third Cesarean birth (37.5%). Further, women of color were offered CSSC less often (27.3%) than white women (32.5%), though the results were not significant. These differences are important because they show that CSSC is not being offered as often to certain groups of people, which may be at least in part due to personal bias.

The second research question asked about the prevalence of CSSC. While the many benefits of skin-to-skin contact are well-documented and studied, CSSC is not the standard in most studied facilities (Balatero et al., 2019; Koopman et al., 2016), and many infants are separated from their mother without any evidence to show a need because it is what has traditionally been done (Crenshaw, 2014; Koopman et al., 2016). A recent survey. found that CSSC is happening regularly in about half of hospitals across the U.S (CDC, 2020), but the current study is the first known study to look at incidence of CSSC among individuals. This study found that only 29.7% of respondents actually experienced CSSC. Of the respondents that knew about CSSC, 83.2% said they were planning to experience it with their most recent Cesarean birth. However, less than half of those planning on CSSC actually got to experience it (47.6%), so while patient knowledge may be a factor in experiencing CSSC, it does not seem to be the largest barrier to the experience. Further, 90.3% of all respondents that did not have CSSC said they would have been interested in having the experience. This shows that there is a large disparity in the number of women who desire CSSC and those who actually experience CSSC. These results suggest that CSSC should be a birth option that is more available and explicitly offered to all medically-stable women having a Cesarean section, in order to close the gap between women who want CSSC and women who experience CSSC.

The results of the study found that when a Cesarean section birth was planned or scheduled in advance, participants were significantly more likely to request CSSC, more likely to be offered CSSC by birthing staff members, and more likely to experience CSSC. An emergency Cesarean section birth is more likely to involve medical risks involving the mother or child, which research has shown is a substantial barrier to CSSC (Koopman et al., 2016; Walker & Thornton, 2018). Further, women having an unplanned Cesarean section have increased sedation compared to those having a scheduled Cesarean birth, which is also a barrier to CSSC (Bavaro et al., 2016).

Participants who had a Cesarean birth in the Midwest and South regions of the United States were significantly more likely to experience CSSC than participants who had a Cesarean birth in the West (participants in the Northeast did not differ significantly from other regions). This could be evidence of CSSC being a more popular birth trend in certain regions of the country, or could be due to differences in birth option knowledge, or in provider preferences in birth practices.

CSSC by Maternal Characteristics

The third and final research question asked about associations between CSSC and the maternal characteristics of age, education, number of births, and race among women in the U.S. These findings show that CSSC is significantly more likely to be experienced by certain groups of people. With the exception of medical challenges, there should not be any significant differences in who has access to and who gets to experience CSSC.

Age. This study is the first known to examine age and CSSC, but previous research has shown that Cesarean birth incidence generally increases with age (Osterman et al., 2022).

Cesarean birth rates to mothers age 40 and over are double the rate of Cesarean births of mothers age 20 and under (Osterman et al., 2022). The results of the study found that the older a participant at the time of their Cesarean birth, the more likely they were to have previous knowledge of CSSC, to request, to be offered, and to experience CSSC. This could likely be due in part because the percentage of low-risk Cesarean births also increases with age (Martin et al., 2021a; Osterman et al., 2022). This study finding is important because it highlights that younger participants do not have access to experiencing CSSC as often as older participants, yet 90.9% of participants age 24 and under who did not have CSSC said that they would have interested in having the experience. As long as it is medically possible, mothers of all ages should be able to experience CSSC.

Education. This is the first known study to examine education and CSSC, but previous research has shown that 54% of all births are to mothers who have a high school diploma, some college, or an Associate degree, and only 34% of births are to mothers who have a Bachelor's degree or higher (Martin et al., 2021a; Osterman, 2022). The current study found that mothers with Bachelor's degrees or higher were significantly more likely to know about and experience CSSC, even though their education levels do not represent the majority of mothers. Similarly, mothers with Bachelor's or Master's degrees were significantly more likely to be offered CSSC. The researcher had hypothesized that knowledge of CSSC might be more common among those with college experience due to learning about skin-to-skin contact in postsecondary education courses, but the results do not support that hypothesis. Only 1.8% of survey respondents reported learning about CSSC from a teacher or professor, which was the least common response (n = 41) except for learning about it from a podcast (n = 39). Yet, study results found that respondents were significantly more likely to have heard about CSSC if they had a Bachelor's degree or

higher compared to participants that had some college, but no degree, or a high school diploma/GED. This may warrant further study to explain these results.

Further analysis found that respondents were significantly more likely to have been offered CSSC by birthing staff if they had a Bachelor's or Master's degree (but not a Doctorate/Professional degree) when compared to respondents with a high school diploma/GED. Similarly, respondents were significantly more likely to have CSSC if they had a college degree when compared to those with a high school diploma/GED. This could be because research has shown that higher education levels are related to higher rates of elective, repeat Cesarean sections (Gilbert et al., 2010), which would go along with the current study's results that found planned Cesarean births were significantly more likely to have CSSC. In addition, research has also shown that educational bias, or educationism, which includes negative feelings, attitudes, and actions towards people who are less educated, exists in our society, even though it is not commonly acknowledged (Kuppens et al., 2018). People with higher education often cite personal characteristics as the reason for the life circumstances of people with less education, but do not blame the individual when discussing people with similar or higher levels of education (Kuppens et al., 2018). This is important because hospital birthing staff positions almost always require college education, and therefore, educationism could help to explain some of the results in this area. Further, because a majority of all births are to mothers that do not have a Bachelor's degree or higher, these results are important to try to make CSSC more available for more mothers.

Number of births. This is the first known study to examine CSSC by number of births, but previous research has shown that in 2020, 22% of Cesarean section births were to mothers who were having a Cesarean section for the first time (Osterman et al., 2022). Study results

found that the more Cesarean births a participant had experienced, the more likely they were to be offered and to experience CSSC. There was not a significant relationship between number of vaginal births and CSSC. Again, these results are likely related to the study findings that a planned Cesarean section birth was significantly more likely to include CSSC than an emergency Cesarean section, as a scheduled surgery is more likely to involve fewer medical risks for both the mother and her infant (Salim & Shalev, 2010; Walker & Thornton, 2018). In this study, emergency Cesarean births were the case with 71.9% of mothers who had a Cesarean birth for the first time, compared to only 19.6% for mothers who had their second Cesarean birth, and 13.0% of mothers who had their third Cesarean birth. These results are important because a first birth experience could likely influence many future health, family, and birth outcomes. An initial Cesarean birth often means that future births will also be via Cesarean section, as the rate of vaginal births after a Cesarean section is about 13% in the U.S. (Osterman, 2020). In a recent qualitative study, many of the participants that experienced CSSC mentioned that they wished they could have had CSSC during previous Cesarean section births (Machold et al., 2021). So again, the goal should be to allow as many mothers as possible the opportunity to experience CSSC as long as medically possible.

Race. No statistically significant results were found between race and CSSC because there was not enough variability and representativeness in the study sample. The study results showed that CSSC was known, requested, offered, and experienced to participants who identified as women of color less often than to participants who identified as white, although the results were not significant. Due to a lack of overall racial diversity in the sample and small numbers in racial subsamples, differences between women of color and white women were examined to explain trends in experiences. However, it is recognized that in general, grouping

participants together as people of color in a single racial group is not helpful and can be harmful. The issue is further discussed in the limitations section.

Previous research has shown that healthcare workers have cultural stereotypes that may prevent them from offering skin-to-skin to some women, which might help to explain the slight (yet non-significant given statistical power) differences in receiving CSSC reported in this study (Finigan & Long, 2014; Koopman et al., 2016). The findings that women of color heard about CSSC from social media more often than they heard about it from an OBGYN (which was the top response for where white women had heard about CSSC), midwife, or nurse, suggests that women of color are not getting information about birth options from their healthcare providers as often as white women. It is known that racial bias exists in healthcare, and that has resulted in negative experiences for women of color going though childbirth (Altman et al., 2019; Janevic et al., 2020; McLemore, 2018). According to research from the CDC, Black and American Indian/Alaska Native women were significantly more likely to have a pregnancy-related death than white, Asian/Pacific Islander, and Hispanic women (Petersen et al., 2019). Black women specifically are 3.55 times more likely to have a maternal death than white women (Hardeman et al., 2020; Howell, 2019; MacDorman et al., 2021). Black women have been more at risk for pregnancy-related death since the time that maternal mortality was first tracked and recorded (Bridges, 2020). Racial stereotypes and implicit bias have been shown through research to be likely contributing factors to this higher risk, because a majority of maternal deaths are preventable (Hardeman et al., 2020; Saluja & Bryant, 2021). Specifically, research has shown that health care providers often fail to recognize and act on the pain of Black women, which can result in negative outcomes in treatments and health management (Saluja & Bryant, 2021).

Differences in maternal outcomes by race have become a public health issue that needs further research to improve outcomes and save lives (Jain et al., 2018).

Implications

For the past 10 years, skin-to-skin contact immediately after birth has been the recommendation of the American Academy of Pediatrics (2012) and the World Health Organization (2009). There is evidence that skin-to-skin contact leads to better opportunities for connection, breastfeeding, and communication, as well as physiological and psychological benefits for mothers and their infants (Gupta et al., 2021; Jolien & Yves, 2018; Jones & Santamaria, 2018; Kahalon et al., 2021; Koopman et al., 2016; Posthuma et al., 2017; Velandia et al., 2010; Zauderer & Goldman, 2012). Separating infants after birth can even negatively affect their brain development and can delay bonding (Bergman & Bergman, 2013; Crenshaw, 2014; Moore et al., 2012).

However, this current study found that less than 30% of respondents experienced CSSC during their most recent Cesarean birth, much less often than participants reported that they would have liked it to happen. This study found that personal barriers to CSSC may be younger age, lacking a college degree, and not having previous Cesarean birth experience. Study results suggest that institutional barriers to CSSC may include racism and educationism. Past research has found that environmental risks, equipment logistics, staff support, and general knowledge are also common barriers to CSSC occurrence (Balatero et al., 2019; Carmichael & Matulionis, 2014; Koopman et al., 2016).

In 2020, the rate of low-risk Cesarean sections increased significantly (Martin et al., 2021b). The only actual risk of CSSC appears to be infant safety. This risk could be overcome

with many possible solutions. First, a mother's birth partner could be given the role of watching that the infant is securely positioned on its mother's chest and could be available to stabilize or hold the infant if necessary. This would be completely cost free and would include the birth partner in creating connections and bonding. The nurse assigned to the infant's care could also supervise CSSC for infant safety if a birth partner was unavailable or unable to supervise CSSC.

CSSC can happen in all hospitals with teamwork, communication, and some procedural adjustments (Tillett, 2015). Getting healthcare provider teams all in agreement with this new practice and change from tradition appears to be an important facilitating factor in making CSSC actually happen (Koopman et al., 2016; Smith et al., 2008). As the current study showed that OBGYNs were the most commonly reported source for hearing about CSSC, health care providers can have a large influence on not only the incidence of CSSC, but patient knowledge as well. However, because OBGYNs were not the most commonly reported source of knowledge about CSSC for women of color, healthcare providers need to be sure that they are providing knowledge of birth options equally to all their patients.

Some hospitals that have standardized CSSC have found success with healthcare providers and staff attending educational sessions and in-service trainings, reading research on the topic, watching YouTube videos, and practicing simulated delivery situations (Carmichael & Matulionis, 2014; Dudas et al., 2016; Grassley & Jones, 2014; Magee et al., 2014; Wagner et al., 2018). Patient knowledge of CSSC can be increased through birth/parent education classes, and community marketing campaigns (Magee et al., 2014; Wagner et al., 2018). Other studies have found that hospitals that had one nurse assigned to the care of the newborn were most able to help facilitate skin-to-skin contact (Balatero et al., 2019; Dudas et al., 2016). Further, one study found success continuing CSSC as standard practice in their hospital by making documentation

of the experience, or lack thereof, something that was a required part of patient records (Grassley & Jones, 2014). This simple addition to patient documentation could also be a way to combat implicit personal biases that may be barriers to CSSC.

Limitations

One of the biggest limitations of this study was a lack of the sample's variability and representativeness with race. With the sample being overwhelmingly non-Hispanic white participants, the researcher was unable to find significant results by race, even though differences did exist when examining the descriptive statistics. With a more racially diverse and representative sample, the researcher believes the differences in being offered CSSC and experiencing CSSC would have been statistically significant, and it was the lack of variability in the sample that prevented a significant comparison. Also, grouping people statistically into a monolithic racial group as people of color is often problematic, unhelpful, and potentially harmful. However, for this study, that grouping was done to describe a possible trend in general racial bias overall. As academic research has sometimes been used in the past to perpetuate racism, a very impersonal survey from a privileged, white woman was likely a barrier to a more diverse sample group of people being motivated to participate.

Another limitation is that the survey was only available to members of Facebook groups for moms and my own personal contacts. A potential participant would have to have internet access, a Facebook account, and be a member of a Mom Facebook group in order to find out about this survey. This means that many women who have had a Cesarean birth did not even know about the survey to participate. Therefore, the results can only apply to the sample of participants and cannot be applied to all women who have had Cesarean section births.

It could also be a possibility that due to a large sample size and given the analyses used, there were Type 1 errors in the significant results. Finally, the number of participants who reported that they had requested CSSC (n = 730, 31.4%) and who reported that they were offered CSSC (n = 737, 31.7%) is so similar that it calls into question whether those survey questions were fully understood by participants.

Future Directions

Future research in this area would greatly benefit from obtaining a more ethnically and racially diverse sample in order to be able to make valid comparisons and better speak to the potentially differential experiences had by racialized women. Making more personal contact with participants would be a future strategy to obtain a more representative sample group. While the researcher had hoped this study would help to shed light on the issue of racial bias in maternal choice and care in order to help identify an area for improvement, the hope is now that this study can be a starting point for future research that will further the cause for improvement and change in maternal health and birth satisfaction.

The results of where participants reported that they learned about CSSC were surprising, and future research would benefit from further study in the area of how information about birth options and practices are dispersed and disseminated. It was especially interesting to learn that social media was the most reported way that women of color learned about CSSC, and the second most mentioned way that all women in the study learned about CSSC. Future research could benefit from learning more about health, pregnancy, and birth information that is shared online and through social media, and how that impacts birth experiences and outcomes.

It would be helpful to further understand why women in the West of the United States are less likely to know about and experience CSSC. Further research could be directed towards looking at patient knowledge, provider attitudes, and hospital policies throughout the country to determine why these differences exist.

Conclusion

This study explored the incidence of Cesarean skin-to-skin contact (CSSC) in the operating room, and examined influencing maternal characteristics of age, education, race, and number of births. Information about where CSSC is occurring in the U.S., patient wishes and desires, and how information about CSSC has been obtained can hopefully help to inform and influence an increase in overall rates of CSSC. Results on older age, higher education, and previous Cesarean births having associations with CSSC, as well as other results from the study, will hopefully promote future research to make CSSC possible for more groups of people. Lack of ethnic and racial diversity in the sample highlights the need for more research in this area to create more positive health outcomes and options for all women.

Women are significantly more likely to be disappointed with the experience of Cesarean section birth compared to a vaginal birth (Burcher et al., 2016). However, previous research has found that CSSC improves health, psychological, and emotional outcomes for both mothers and infants, and can improve the overall Cesarean birth experience. We know CSSC can be implemented rather easily with updates to policy and practice. The current study suggests that most women want to experience CSSC when having a Cesarean section birth. Patient wishes and positive outcomes should guide health practitioners and providers in their practice. Healthcare providers and policy makers need to break down the personal, institutional, and policy barriers

that are preventing this practice so that all women having a Cesarean section birth can be given the option of experiencing CSSC.

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APPENDICES

Appendix A: IRB Approval Form

To: Elizabeth King
Childhood Ed & Fam Studies

RE: Notice of IRB Approval
Submission Type: Initial
Study #: IRB-FY2022-322
Study Title: Cesarean Skin-to-Skin Contact
Decision: Approved

Approval Date: December 9, 2021

This submission has been approved by the Missouri State University Institutional Review Board (IRB). You are required to obtain IRB approval for any changes to any aspect of this study before they can be implemented. Should any adverse event or unanticipated problem involving risks to subjects or others occur it must be reported immediately to the IRB.

This study was reviewed in accordance with federal regulations governing human subjects research, including those found at 45 CFR 46 (Common Rule), 45 CFR 164 (HIPAA), 21 CFR 50 & 56 (FDA), and 40 CFR 26 (EPA), where applicable.

Researchers Associated with this Project:
PI: Elizabeth King
Co-PI:
Primary Contact: Jessica Wilson
Other Investigators:

Appendix B: Participant Survey Consent Form

MISSOURI STATE UNIVERSITY

CONSENT TO ACT AS A HUMAN PARTICIPANT

Project Title: Cesarean Skin-to-Skin Contact
Principal Investigators: Dr. Elizabeth King
Primary Study Contact: Jessica Wilson

What is this study about?

This project will explore the prevalence of and access to skin-to-skin contact immediately after a Cesarean section birth and the characteristics of women who participate in the practice.

What are some general things you should know about research studies?

You are being asked to take part in a research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty.

Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or Missouri State University. Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study. You may print a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

Why are you asking me?

You have been chosen to participate in this study because you have had a Cesarean section birth within the last 10 years in the U.S.

What will you ask me to do if I agree to be in your study?

You will be asked to complete a questionnaire about your past birth experiences and about your demographics. The completion of the questionnaire should take approximately 5 minutes.

Is there any audio/video recording?

There is no audio and video recording.

Are there any benefits to society as a result of me taking part in this research?

Results from this study will inform the general public and the healthcare field about the prevalence of skin-to-skin contact in the operating room after Cesarean section births and who has access/barriers to the experience. The results may allow women to have more choices in their Cesarean section birth experience in the future.

Are there any benefits to *me* for taking part in this research study?

There is no direct benefit to participating in this study.

Potential Risks to Participants:

The Institutional Review Board at Missouri State University has determined that participation in this study poses minimal risk to participants. If any of the questions make you feel uncomfortable, you may choose to skip that question or withdraw from the study. If you have

questions, want more information or have suggestions, please contact Jessica Wilson who may be reached at jsw9s@MissouriState.edu or 801-866-3375 or Dr. Elizabeth King who may be reached at Eking@MissouriState.edu or 417-836-6961. If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Administration at Missouri State at 417-836-5972.

Will I get paid for being in the study? Will it cost me anything?

There is no direct payment for participating in this study. There are no costs to you for participating in this study.

How will you keep my information confidential?

Data will be collected via Qualtrics and all participants will be given an ID number. De-identified data will be stored on a password protected computer in a secured area. Data will only be available to study personnel outlined in this application.

What if I want to leave the study?

If any of the questions make you feel uncomfortable, you may choose to skip that question or withdraw from the study. In addition, you have the right to refuse to participate or to withdraw at any time without penalty.

What about new information/changes in the study?

If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant:

By clicking "yes" you are agreeing that you read and you fully understand the contents of this document and you are openly willing to consent to take part in this study. All of your questions concerning this study have been answered. By clicking "yes", you are agreeing that you are 18 years of age or older and are agreeing to participate.

Appendix C: Survey

SURVEY

1. Have you had a C-section (Cesarean section) birth in the last 10 years? Select one:
   a. If "yes", the survey will continue
   b. If "no", the survey will end

2. When was your most recent C-section? Select one:
   a. (Participants will select year from a drop-down menu)

3. Was your most recent C-section planned/scheduled/elective or an unplanned/emergency surgery? Select one:
   a. Planned/scheduled/elective
   b. Unplanned/emergency

4. State where you had your most recent C-section?
   a. (Participants will select state from a drop-down menu)

5. Total # of live C-section births that you have had in your lifetime:
   a. (Participants will select from a drop-down menu)

6. Total # of live vaginal births that you have had in your lifetime:
   a. (Participants will select from a drop-down menu)

BEFORE DELIVERY

7. Before your most recent C-section delivery, had you heard of skin-to-skin contact in the Operating Room as a birth option?

□ Yes
□ No

a. If yes, were you planning to have skin-to-skin contact in the Operating Room before your most recent C-section birth?

□If yes, why?

□ If no, why not?

b. If yes, how did you learn about skin-to-skin contact in the Operating Room as a birth option?
   □ OBGYN
   □ Midwife
   □ Nurse
   □ Birthing class
   □ Friend

□ Family member
□ Co-worker
□ Teacher/professor
□ Article/magazine
□ Social media post
□ Podcast
□ Other

8. Before your most recent C-section delivery, were you told by delivery staff that skin-to-skin contact in the Operating Room was an option?

□ Yes
□ No

9. Before your more recent C-section delivery, had you ever had skin-to-skin contact in the Operating Room with a previous C-section birth?

□ Yes
□ No

a. If yes, how many times have you had skin-to-skin contact in the Operating Room BEFORE your most recent C-section delivery?

10. Why did you choose your primary OBGYN/Midwife for your most recent C-section?
Check one or more

□ Did not have a choice
□ Insurance network
□ Recommended by someone you trust
□ Their personality
□ Their history
□ Their credentials
□ Their experience
□ Their gender
□ Their schedule
□ Location
□ Specialty
□ Birthing philosophy
□ Patient reviews
□ Birth policies
□ Previous experience
□ Other

11. Why did you choose the delivery location/hospital for your most recent C-section?
Check one or more

□ Did not have a choice
□ Where your OBGYN/Midwife delivers
□ Insurance network
□ Recommended by someone you trust
□ Special care nursery

□ Newborn Intensive Care Unit (NICU)
□ Breastfeeding support
□ Prenatal classes
□ Birthing options
□ Birthing philosophy
□ Postpartum care
□ Location
□ Specialty
□ Labor/Delivery staff
□ Anesthesia staff
□ Patient reviews
□ Hospital policies
□ Skin-to-skin option
□ Previous experience
□ Other

AFTER DELIVERY

12. With your most recent C-section, did you **request** to have skin-to-skin contact in the Operating Room within 5 minutes of birth?

□ Yes
□ No

13. With your most recent C-section, were you **offered** by birthing staff to have skin-to-skin contact in the Operating Room within 5 minutes of birth?

□ Yes
□ No
a. If yes, who told you about this option?
□ OBGYN
□ Midwife
□ Nurse
□ Operating Room technician
□ Other

14. With your most recent C-section, did you have skin-to-skin contact in the Operating Room within 5 minutes of birth?

□ Yes
□ No
a. If yes, please share your feelings and experience:
b. If no, would you have been interested in having skin-to-skin contact in the Operating Room?
□ Yes
□ No
i. If no, please share your feelings and experience:

15. What was your age at the time of most recent Cesarean section?
a. Participants will enter a number

16. What was your highest level of education completed <u>at the time of most recent C-section?</u>
Check the box that best describes the highest degree or level of school completed at the time of your most recent C-section delivery

□ 8th grade or less
□ 9th - 12th grade, no diploma
□ High school graduate or GED completed
□ Some college credit but no degree
□ Associate degree (e.g., AA, AS)
□ Bachelor's degree (e.g., BA, AB, BS)
□ Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
□ Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)
(National Center for Health Statistics [NCHS], 2003)