MOTHERS' PERSPECTIVES ON SMARTPHONE USE WHILE BREASTFEEDING

by

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The following individuals certify that they have read, and recommend to the Faculty of Graduate and Postdoctoral Studies for acceptance, a thesis/dissertation entitled:

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Abstract

Background: Smartphones are increasingly used as a part of individuals' health experiences, such as breastfeeding. A review of the literature indicated that exploration of the perceptions of women's smartphone use during their breastfeeding is lacking. **Purpose:** The aim of this study was to examine women's perceptions about using smartphones during their breastfeeding experiences. **Methods:** An interpretive descriptive methodology along with the theoretical framework of symbolic interactionism guided the semi-structured, face-to-face interviews of thirteen participants. Interview transcripts, participant observation, field notes, and reflective journals were analyzed. **Results:** One theme and four subthemes were constructed from the data. The main theme addressed: navigating smartphone use while breastfeeding. Participants described modifying their smartphone use based on their contexts, such as the prior breastfeeding experiences, support systems, or infant interactions. The first subtheme, raising consciousness, reflected how women were deliberate and thoughtful in their reflections about their smartphone use and their decisions to modify their smartphone use. The second subtheme, grappling with breastfeeding realities attends to how women used their smartphones as a resource to overcome some unexpected breastfeeding difficulties. The third subtheme, vicarious virtual breastfeeding experiences captures participants' meanings of reading social interactions and observing online content about breastfeeding. The last subtheme, searching for strength through support speaks to how women used their smartphones to access, approach, develop, and interact with breastfeeding support communities, including family, friends and healthcare providers. **Conclusion:** These findings suggest that women often use their smartphones to make sense of breastfeeding realities, normalize, share their experiences and find support online. Study implications include providing families with online breastfeeding support communities and reliable online breastfeeding

resources by healthcare professionals, including nurses. Additionally, this study supports the need for mindful reflection and usage of smartphones including smartphone applications, such as breastfeeding tracking applications. Further research is recommended to explore the barriers and facilitators to virtual healthcare provider breastfeeding support and studying different breastfeeding populations smartphone use (e.g. rural populations) to enhance breastfeeding support services.

Lay Summary

Smartphones are increasingly becoming a part of women's breastfeeding experiences. The goal of this study was to explore women's perceptions about smartphone use during breastfeeding. Thirteen participants were interviewed using open-ended questions. The findings from this study suggest that smartphones play a significant role during breastfeeding for women. The women navigated smartphone use during their breastfeeding experiences by adjusting their use in accordance with their social environments, accessing resources on their smartphones to overcome breastfeeding challenges, learning from other women's shared online breastfeeding experiences, and fostering breastfeeding support communities on their smartphones. Further examination is recommended to grasp the implications on nursing practice, education and research; this study offers a start to understanding women's smartphone use on breastfeeding experiences. This study contributes to the growing knowledge of smartphone use, specifically in the lives of breastfeeding women.

Preface

This thesis is original, unpublished work completed by myself, Thayanthini Tharmaratnam, and my thesis supervisory committee. I recruited, conducted and transcribed all interviews. I completed the analysis and the development of the findings with the support of my thesis supervisor, Dr. Suzanne Hetzel Campbell, and supervisory committee, Dr. Wendy Hall and Dr. Helen Brown. All members of my thesis supervisory committee supported the writing of my proposal and thesis: Dr. Suzanne Hetzel Campbell, Dr. Helen Brown and Dr. Wendy Hall. This study received ethics approval by the University of British Columbia Behavioural Research Ethics Board. The certificate number of the approval is H17-0156.

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List of Abbreviations

BREB	Behavioural Research Ethics Board
CORE	Course on Research Ethics
HCP	Health care provider
ID	Interpretive Description
SI	Symbolic Interactionism
TCPS2	Tri-Council Policy Statement 2
UBC	University of British Columbia

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First, I would like to thank the breastfeeding mothers who participated in this study. Thank you for your enthusiasm and willingness to share your experiences and insights. Your experiences are the core of this study.

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To my husband, Emalayan, thank you for your love, support and for challenging me every day to be the best version of myself. Thank you, Jecika for your support and taking those long walks with me. Thank you to my parents, my grandmother, siblings, and close friends who have guided and supported me throughout all my studies.

Dedication

To my late grandfather, Mr. S. Kailayapillai. Your devotion and love for education has always inspired and motivated me in fulfilling my educational aspirations.

Chapter 1: Introduction

1.1 Background

Technology use is rapidly increasing and shaping our society; therefore, how people interact with and use technology has become a significant focus of health research. As defined by Oxford Dictionary (2017), a smartphone is "a mobile phone that performs many of the functions of a computer, typically having a touchscreen interface, Internet access, and an operating system capable of running downloaded apps". The study described here was conducted recognizing these basic functions while also focusing on how people interact with their smartphones in ways that can be studied within the specific context of women's use during breastfeeding.

Canadians are increasingly using smartphones to access the internet, social media, and video/music streaming (Statistics Canada, 2017). In fact, over three-quarters of Canadians now own a smartphone (Statistics Canada, 2017). Canadians reported three common perceptions about technology use: that it helps to communicate with other people, it saves time, and it helps to make more informed decisions (Statistics Canada, 2017). In British Columbia, the percentage of internet users is 92%, which is the second highest proportion of technology users in the country (Statistics Canada, 2017). Approximately seventy-nine percent of Canadian women over the age of sixteen use the internet at least once daily (Statistics Canada, 2013). The greatest numbers of females using the internet daily are between the ages of 16 (90%) and 44 (84%), which represent prime childbearing years.

In Canada, approximately 89% of mothers initiate breastfeeding soon after birth (Statistics Canada, 2013). British Columbia has the highest exclusive breastfeeding rates in Canada, with 41% of mothers' breastfeeding their infants up to six months. Therefore, in this

province, considerable percentages of women are likely to be breastfeeding while engaging in smartphone use.

This study investigated breastfeeding women's experiences of smartphone use in British Columbia. The goal of the study was to generate knowledge about women's perceptions of the nature of their interactions with smartphones to understand the potential effects on their breastfeeding experiences.

1.2 Problem Statement

In British Columbia, 41% of women breastfeed their infants up to six months of life and use their smartphone, including internet access. Limited knowledge exists about how smartphone use may affect breastfeeding experiences and mother-infant interactions. This study uses an exploratory design to generate knowledge about mothers' perceptions of smartphone use during their breastfeeding experiences.

1.3 Significance of Research

Mothers are increasingly using technology as a resource and a tool for social interaction and communication while breastfeeding (Daly, Horey, & Middleton, 2017; Guerra-Reyes et al., 2016). Researchers reported that 92% of mothers in their study used Facebook on their mobile phones while breastfeeding (Tomfohrde & Reinke, 2016), yet there is limited research focused on mothers' perceptions about smartphone use during breastfeeding. It is crucial to access mothers' experiences describing their perceptions and the meaning they make of their smartphone use in that context. A qualitative study about smartphone use during the breastfeeding experiences can make a significant contribution to this under studied area.

1.4 Purpose

The purpose of this study was to examine women's perceptions about using smart phones during breastfeeding.

1.5 Research Question

1. What are women's perceptions about using smartphones during their breastfeeding experiences?

1.6 Chapter Summary

This chapter provided a brief discussion of the background and significance of the research, and the research question focused on breastfeeding mothers' technology use, specifically smartphones. In the next chapter, I will review the relevant literature and identify gaps in the literature about women's perceptions about smartphone use during their breastfeeding experiences.

Chapter 2: Literature Review

In this chapter, I summarize and synthesize relevant literature and identify gaps in knowledge for the topic under study. I describe the search strategy undertaken to identify relevant literature. I organize the literature review beginning with social media use by mothers to support their mothering, followed by social media use by breastfeeding mothers, then breastfeeding information-seeking behaviours online, and concluding with online support seeking behaviours by breastfeeding women. By identifying the gaps in the literature, the review supports the rationale for undertaking this qualitative study.

2.1 Search Methods

I conducted a search of the literature review to examine research published until December 2017. PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, and Google Scholar were searched using the following search terms in varying combinations with Boolean terms: breastfeeding, technology, social media, mobile devices, and cell phones. My primary search outcomes were divided into three themes: 1) social media use by mothers to support mothering/motherhood; 2) social media use by breastfeeding women; and 3) breastfeeding information-seeking behaviours on mobile/smartphones. The keywords used to capture the first theme were mothering OR motherhood AND mobile technology OR mobile devices OR cell phones OR smartphone AND social media. For the second theme, the keywords used were breastfeeding AND social media AND/OR mobile phones OR cell phones OR smartphone. For the third theme, the keywords used were breastfeeding AND information seeking OR information seeking behavior AND/OR mobile phones OR cell phones OR smartphone.

2.2 Social Media Use to Support Mothering

I begin this literature review with social media use to support mothering as it provides the context for situating knowledge about how social media influences mothering experiences and focuses on my population of interest.

As smartphone use continues to increase, many individuals often access their social media accounts through their smartphones, including mothers (Pouhster, 2016; Statistics Canada, 2017). The Pew Research Centre reported that American mothers were more likely to use technology (e.g. using the internet to email for work or to loved ones or using social media accounts) compared to fathers in their day-to-day life (Duggan, Lenhart, Lampe, & Ellison, 2015). Mothers were also more likely to report using smartphone applications compared to fathers and the general population of non-parents (e.g. social media mobile applications) (Duggan et al., 2015; Pouhster, 2016). Mothers' motivation to use social media includes: seeking emotional and social support for mothering (Gibson & Hanson, 2013); social inclusion with non-parenting adults (McDaniel, Coyne & Holmes, 2012); and health education and health information (Holtz Smock, & Reyes-Gastelum, 2015; Lee, 2016).

One study reported how social media use affects maternal social connectedness by enabling continuity of family and friend relationships that otherwise would diminish in the first few months postpartum (Asiodu, Waters, & Dailey, 2015). Findings from another study suggested that online blogging improved mothers' mental well-being by connecting with the 'outside world', although there was no distinction made between mental well-being benefits from connections with other parents when compared to extended family or friends (McDaniel, Coyne, & Holmes, 2012). The researchers found that parents' perceptions about high levels of online social support also led to positive perceptions of marital satisfaction and decreased marital

conflict, depressive symptoms, and parental stress (McDaniel, et al., 2012). Additionally, mothers reported observing and living vicariously online by reading and responding to others' experiences, thus, informing their transition to motherhood (Gibson & Hanson, 2013). These studies demonstrate how mothers can interact online to connect with others to reinforce perceptions of social support.

An ethnographic study conducted in the United Kingdom focused on mothers who sought out technology to improve their confidence and reconnect to their identity outside of motherhood (Gibson & Hanson, 2013). Alternatively, other researchers indicated that mothers who frequently used social media reported an increase in parental stress and pressure due to their perceived needs to maintain a positive online image as parents (Bartholomew & Schoppe-Sullivan, 2012). Myruski et al. (2017) suggested that over-usage of mobile devices influenced the quality of parent-infant interactions. They found an association between maternal mobile device use and negative effects on infants' social-emotional function and parent-infant interactions during playtime (Myruski et al., 2017).

Social media use may pressure mothers to portray themselves as the 'good' or 'perfect' mother that could, in turn, affect parenting outcomes. For example, Coyne, McDaniel, and Stockdale (2017) conducted a study of negative social comparisons with other parents online and linked social media use to increased levels of parental role overload, lowered levels of perceived parental competence and social support, and increased levels of maternal depression. Another study conducted by Djafarova and Trofimenko (2017) examined mothers' self-esteem and self-presentation with social media use. They found that new mothers were more likely to report lower levels of self-esteem and self-confidence due to feeling under pressure to maintain a

positive online presence. Because social media use varies in effects on mothering experiences, qualitative descriptive studies could illuminate processes by which these effects occur.

2.3 Social Media Use by Breastfeeding Women

Some studies provide a description of what is currently understood about social media use by breastfeeding women globally. Tomfohrde and Reinke (2016) used a survey to study breastfeeding women's technology use and concluded that many women answering their online questionnaire used their smartphones to access social media while breastfeeding. They reported five main reasons mothers use social media while breastfeeding: entertainment (76%); connection with friends (34%); connection with other breastfeeding mothers (31%); connection with other family members (28%); and catch up on work (7%). Other researchers indicated that many mothers are actively engaging in social media to enrich their breastfeeding experience by posting 'brefies' , reading and commenting on other mothers' breastfeeding experiences, and searching on social media for breastfeeding-related information (Asiodu et al., 2015; Beach, 2017; Locatelli, 2017; Pellechia, Soto, Haake, & Schneider, 2017).

Breastfeeding was one of the persistent issues that led to information seeking by mothers on their smartphones (Guerra et al., 2016). Mothers used social media for information seeking about how to establish breastfeeding and to solve breastfeeding problems (e.g. lip or tongue tie). Asiodu et al. (2015) studied African-American mothers who sought infant development information on social media; the women stated they were frustrated by the difficulty of finding reliable and trustworthy information about infant feeding, so they turned to social media to find infant-related information.

There is literature suggesting that social media is also an effective mode for promoting and supporting breastfeeding (Danbjørg, Wagner & Clemensen, 2014; Gallegos, Russell-

Bennett, Previte, & Parkinson, 2014; Gallegos, Russell-Bennett, & Previte, 2011; Lau, Htun, Tam, & Klainin-Yobas, 2016; Lee & Moon, 2016; Lupton & Pedersen, 2016). Nonetheless, further study will illuminate how mothers perceive smartphone use during their breastfeeding experiences.

2.4 Breastfeeding Information Seeking Behaviours Online

I extended my review to include breastfeeding information-seeking behaviors on desktop and laptop computers due to the limited literature available about information seeking on smartphones.

In one study, approximately 82% of the women surveyed stated they actively used the internet to seek information related to pregnancy and postpartum topics (Demirci, Cohen, Parker, Holmes, & Bogen, 2016). In another online survey conducted about mothers' information seeking behaviors online, one of the topics mothers searched most frequently in the postpartum period was breastfeeding (Slomian, Bruyère, Reginster, & Emonts, 2017). Although mothers in this study were concerned about the reliability of the information that they found online, they acknowledged that online information influenced the parenting decisions that they made. Additionally, mothers in this study indicated that they hoped that their health care providers could recommend reliable online sources of information for new mothers (Slomian et al., 2017). On the other hand, a tactic some mothers employed to lessen their concerns about the credibility of online content was to find breastfeeding-related information by connecting with individuals or groups on social media who had large numbers of "followers" or "likes" on their posts (Jin, Phua, & Lee, 2015).

Although the literature suggests that mothers have used technology for a variety of reasons including social and breastfeeding support and information-seeking related to postnatal

topics (Asiodu et al., 2015; Guerra-Reyes, Christie, Prabhakar, Harris, & Siek, 2016; Russell-Bennett, Gallegos, & Previte, 2012), this domain requires further study to understand the perceptions of mothers using smartphones about usage of the information and support that they find on their smartphones.

2.5 Breastfeeding Women and Support Seeking Behaviours Online and on Smartphones

In the past, mothers sought in-person breastfeeding support from healthcare professionals, friends, extended family members, and other mothers (Bridges, 2016). With increased accessibility to the internet, it appears maternal health information seeking behavior has shifted somewhat. In one study, the main breastfeeding-related reason mothers reported for using online connections and smartphones was to seek breastfeeding support (Holtz et al., 2015).

Some mothers sought breastfeeding information from online peer-supported breastfeeding groups (Copeland et al., 2016). The authors reported that mothers were very receptive to peer support as mothers felt peers were more approachable and easier to contact than their healthcare providers, and regarded peers as providing reassurance as required online and in-person (Copeland et al., 2016). Mothers in another study perceived online peer support breastfeeding groups as complementary to existing breastfeeding support services that are available to them in-person (Bridges, 2016).

Researchers have recommended further studies to understand women's experiences of seeking online breastfeeding support (Bridges, 2016; Johnson, 2015). Although efforts have been made to explore support seeking on social media and online in comprehending motherhood and mothering experiences, studies are lacking about seeking support for breastfeeding online (Asiodu et al., 2015; Bridges, 2016).

2.6 Gaps in the Literature

Based on my review of the current literature, I suggest that descriptive research studies are necessary to examine women's experiences of smartphone use during breastfeeding. The literature has focused on motherhood experiences on social media platforms. Therefore, I argue that it is important to explore social media use during breastfeeding to capture the diversity of women's experiences. To date, no studies exist about mothers' experiences of smartphone use during breastfeeding in British Columbia. The existing literature on smartphone use and breastfeeding is largely quantitative, which fails to give adequate attention to the depth of understanding mothers' experiences. Although previous studies have provided important knowledge about how access to social media enhanced mothers' breastfeeding experiences, they were not intended to capture a nuanced understanding of mothers' reflections about smartphone use. This study specifically addresses this gap by investigating breastfeeding mothers' perceptions about smartphone use during breastfeeding.

2.7 Chapter Summary

This chapter presented relevant literature to justify the importance of the research focused on smartphone use and breastfeeding. This literature review was organized by social media use to support mothering, social media use by breastfeeding women, women's online breastfeeding information seeking behaviors, and breastfeeding women seeking support on smartphones and online. I outlined the gaps in the literature related to the use of technology while breastfeeding. In the next chapter, I describe the research methodology design and theoretical framework I used to guide the study. I discuss the ethical considerations, data collection and analysis processes and the strategies I used to maintain rigour.

Chapter 3: Research Method

In this chapter, I provide an overview of the theoretical framework and the interpretive descriptive research design. I also discuss ethical considerations, inclusion and exclusion criteria, recruitment strategies, data collection, data analysis, and strategies used to attend to rigour.

3.1 Theoretical Framework

Symbolic interactionism (SI) provided the theoretical framework to guide this qualitative study focused on mothers' perceptions of their smartphone use during their breastfeeding experiences. Specifically, SI influenced the framing of the research question, the nature of the narrative data collected, data analysis, and the interpretive processes.

George Herbert Mead first theorized symbolic interactionism; his student, Herbert Blumer, extended the original theoretical work. Blumer first used the term SI in "Symbolic Interactionism: Perspective and Method" (1969). He stated that SI "is a down-to-earth approach to the scientific study of human group life and human contact" (Blumer, 1969, p.47). SI theory tries to describe aspects of society that are created and recreated at the individual level by social interactions. SI focuses on how individuals behave in interactions with others rather than assuming that their behaviours are directed by society. Furthermore, these social interactions guide how individuals perceive symbols in their life and modify their meaning accordingly.

Blumer (1969) stated that the three premises of SI are as follows: (1) human beings act toward objects based on the meanings that the objects have for them; (2) the meaning of objects is based on the social interactions that individuals have with others; and (3) meanings are handled in and modified through an interpretive process used by a person in dealing with the objects they encounter (p. 2-6). These premises guided my study design, research processes and analysis. They assisted me to understand 1) how participants acted in response to the meanings

that smartphones held during breastfeeding, 2) how participants' created meanings of smartphones through social interactions with others and 3) how the meanings of smartphone use were handled and modified through interpretive processes by which participants interacted with their smartphones.

Blumer (1969) believed that people act based on the meaning things have for them. Participants in SI are the holders of experiential knowledge and share their perceptions of their construction of meaning regarding the topic under study. In my study, the women shared their perception of their construction of the meanings they created about their smartphone use during breastfeeding. From an SI perspective, human complexity is best understood through inductive inquiry with research participants (Blumer 1969). SI depicts how researchers make sense of common experiences, shared understandings of collective groups, and personal experiences are in individualized situations, which are individualized according to the situation. SI describes an iterative process of drawing on shared understandings and relating them to individuals' lived realities for the purpose of understanding the meaning of interacting with objects and people's symbolism of their interactions, such as women's interactions with their smartphones during breastfeeding. Thus, it can support the kind of knowledge on which nursing and many other applied disciplines rely on to understand the complexities of human phenomenon.

SI provided a framework for researching my question which focused on the meaning of breastfeeding women interacting their smartphones. My analysis using SI, helped me to understand women's constructed meanings of smartphone use through their descriptions of their actions and interactions in their social environments. For example, when analyzing women's descriptions of online social interactions, this theory helped to position how they modified their

meaning of smartphone use based on prior encounters related to sharing their breastfeeding experiences.

3.2 Research Design

I selected interpretive description (ID) as the research design for this study. ID is a qualitative research methodology created by Thorne, Kirkham, and MacDonald-Emes (1997). ID was developed for applied science research to generate knowledge that could be applied to practice disciplines, including nursing (Thorne, 2016). For example, previous research has suggested that mothers reported frustration and difficulty in locating accurate and reliable information when dealing with breastfeeding challenges (Asiodu et al., 2015). One of nurses' clinical practice concerns is to try to enhance maternal confidence and competence in breastfeeding whenever possible, which includes presenting accurate information and resources to address mothers' breastfeeding challenges. Using ID to study women's perceptions of smartphone use during breastfeeding could contribute to our understanding of how smartphones influence their confidence and competence to seek support online when countering breastfeeding challenges. ID aims to identify themes and patterns among subjective perspectives while accounting for variations between individuals (Thorne, 2016). Breastfeeding experiences are varied, and inherently complex, influenced by an individual's social, cultural, political, and historical background (Coughlin, 2016; Jones, Power & Queenan, 2015). The addition of smartphone use adds to these layers of complexity in understanding the breastfeeding experience; therefore, the topic was well suited to an ID investigation.

Generally, researchers use a variety of theoretical frameworks in ID to guide research. In the past decade, the compatibility of ID and symbolic interactionist theory has been explored, especially for applied qualitative research in disciplines, such as nursing (Handberg et al., 2014;

Oliver, 2011). Thorne (2016) created ID to enable the applied disciplines to generate insights to address relevant practice concerns, to guide practice changes, and to advance practice knowledge. In this study, the ID aims were considered compatible with that of SI as both view knowledge as inherently about individual action. Therefore, the applied nature of ID and SI's focus on meaningful action towards objects and interactions with other people reflect a pragmatist orientation to epistemology as the foundation for the study.

3.3 Sampling

I recruited the participants for this study using a purposive sampling approach. Participants who self-identified as meeting the inclusion criteria and, who could provide relevant information and insight to address the research question, were invited to participate in the study. The population of interest for the study was breastfeeding women who were using smartphones and whose infants were less than one year of age. A small sample size is considered appropriate to gather data to understand the phenomenon using ID (Thorne, 2016). As a novice researcher, a small sample allowed me to gather and analyze a reasonable amount of data and then spend sufficient time immersing in rich, in-depth interviews to conduct a thorough analysis.

3.3.1 Inclusion Criteria

The following inclusion criteria were applied: 19 years of age or older; fluent English-speakers; located within the metro-Vancouver region; currently breastfeeding their infants; and using smartphones while breastfeeding.

3.3.2 Exclusion Criteria

Participants were excluded from the study if they were exclusively bottle-feeding or pumping breast milk; refraining from smartphone use during breastfeeding and experiencing any chronic medical illnesses or major depression or postpartum depression. Mothers who cared for

premature infants or infants with chronic illnesses were also excluded because of the added study burden to interested participants, and the nature of the sample being beyond the scope of this study.

3.3.3 Recruitment Methods

I used three strategies to recruit participants. The first was through poster advertisements and flyers at Metro Vancouver community centers. Posters and flyers (Appendix A) were in English and in hard and digital copies for distribution. The second recruitment strategy was to advertise the study through social media (Facebook groups, Kijiji, and Craigslist). I also recruited participants through snowball sampling, which relied on participants' word of mouth to enroll other participants in the study (Polit & Beck, 2016). If a participant indicated they knew of potential participants, I provided them with a flyer and contact information with further material including the principal investigator's phone numbers, contact information for the ethics board, and the consent form (Appendix B).

Ten participants learned about the study from Craigslist and contacted me by email to express their interest in participating. Two participants learned about the study from other participants and contacted me directly by email. One participant learned about the study from a Facebook mother-baby group where a participant had posted the recruitment study digital poster on the Facebook group message board. In addition to the interviewed participants, three participants were initially interested in participating. Two potential participants contacted me, but then did not respond further, and the third potential participant was no longer able to participate due to personal commitments.

3.4 Ethical Considerations

I obtained ethics approval for the study from the University of British Columbia Behavioral Research Ethics Board (UBC BREB) based on the Tri-Council Policy Guidelines. I attained a Tri-Council Policy Statement 2 – Course on Research Ethics (TCPS2-CORE) certificate as required by UBC BREB. After a potential participant contacted me, I sent information about the study and the consent forms to participants by email to review ahead of scheduling an interview. I provided participants with opportunities to ask questions or address concerns before setting up an interview date. I then proceeded to set up interviews identifying the date, time and location convenient to the participant.

Before I conducted the in-person interview, I obtained informed consent from the women. I reviewed with the participant the purpose of the study and the nature of their involvement. I reiterated that they could ask questions about the study at any point; their participation was voluntary, and, they could choose at any point to decline or withdraw from participating in the study. Furthermore, I ensured that participants received a copy of the consent forms (Appendix B). I kept a second copy in a secured and locked filing cabinet. Most participants declined a paper copy of the informed consent because they saved a digital copy to their smartphones.

I respected the confidentiality and privacy of participants by keeping the audio recordings and transcriptions of the interviews in a locked, secure filing cabinet with no personal identifiers. I used numbers for participants (e.g. P1-P13) in the study results and transcriptions to protect their identities. Personal identifying information was removed from transcripts and replaced with letters (e.g. Hospital X or removal of personal names, ‘Jenny’ to sister). Participants were made aware that the interview was audio-recorded and that they could stop the audio recording at any

point during the interview and/or if they wanted to discuss something "off the record". I transcribed all interviews. All information related to the study was available only to the principal investigator and thesis committee. I will destroy the study information after five years, as per UBC BREB guidelines. The participants received a $25 gift card as a token of appreciation for their time participating in the interview. Participants' identification information for the distribution of the honoraria was kept separate from the data collected; they signed a receipt indicating they received the honorarium (Appendix D).

In the event of participants' experiencing any emotional distress related to participating in the study, breastfeeding concerns or any other postpartum mental health concerns for participant(s), I developed a list of community resource for participants if needed (Appendix G) including some that could address concerns resulting from the study (e.g. breastfeeding concerns, postpartum depression etc.). As well, I planned to evaluate the safety of continuing the interview, by confirming that the participant was willing to continue. If participants reported any emotional distress during the interview, I planned to notify my thesis supervisor for further support immediately and/or direction to reduce harm. During the interviews, no participants demonstrated or reported any emotional distress.

3.5 Data Collection Process

Thorne (2016) recommended multiple data sources (e.g. interviews, participant observation, focus groups, diaries) to encompass the depth and breadth of understanding participants' perspectives. I used the following methods to generate multiple data sources: face-to-face participant interviews, participant observations, and field notes.

I conducted a semi-structured interview with each participant. I interviewed thirteen breastfeeding mothers who used smartphones. All of the interviews were conducted in-person at

a location and time that was most convenient for the participant (e.g. coffee shop, park). The interviews were conducted over a span of three months between June 2018 and August 2018. Each interview was digitally recorded. The interviews ranged in length from 40 minutes to 120 minutes. I used open-ended questions as a framework to guide the interview (Appendix C). I created questions in consultation with my supervisory committee based on the ID methodology and SI theoretical framework to best gather mothers' perceptions of their smartphone use during breastfeeding. In the semi-structured interview, my goal was to follow the lead of the participants, reflect on their responses and then ask further probing questions based on the direction that the participants took. The probing questions included asking participants: "could you please give me an example of…"; "could you tell me more about that experience…". At the end of the interview, I asked each participant to complete a demographic questionnaire (Appendix D).

After each interview, I wrote field notes about participant observations that I noted throughout the interview. I chose to refrain from taking notes during the interview, so I could focus my attention on listening and observing the participant. In my field notes, I noted any significant conversations exchanged at the end of the interview with the participant that were not captured in the digital recording, such as when the participant showed me smartphone applications on her phone that she used during her breastfeeding experience. I also recorded participants' body language, tone of voice, facial expressions, and interactions with their infants. I recorded this as participant observation post-interview. For example, if the participant brought her infant to the interview (e.g. breastfeeding during interview or shortly thereafter) or they were using their smartphone during the interview, I reflected in my field notes the observation of those interactions.

Additionally, I recorded the insights, reactions and reflections I had about the interviews. I reflected on these notes during the transcription process and the analysis. I used the field notes to create a broader context to interpret the data. The field notes also helped to guide framing additional questions for future interviews that I had not captured in past interviews. The field notes stimulated my memory about the emotions and interactions, both the participants' and my own, and the participants' responses, and helped me to provide context for the situation to enrich and clarify my analysis processes in making sense of women's meaning making about smartphone use during their breastfeeding experience.

I wrote reflexive journals to become aware of my biases during the data collection, transcription, and analysis. For example, before starting my interviews, I wrote about how my personal experiences might bias me and how this could affect my observations. I reflected that, because my role as a perinatal nurse involved working with numerous families in supporting their breastfeeding journeys over the years, my previous experience might bias me as I started conducting the research. For example, due to my clinical experience I may spend more time in the interviews listening to women's overall breastfeeding experiences and challenges rather than the focusing the interview to the research question of interest.

To illustrate my journaling process further, prior to one of the interviews that I conducted in a coffee shop, while I was waiting for my participant to arrive I observed a family of four (two adults and two young children) seated in front of me. They were all immersed in their smartphones, and the youngest family member occasionally paused and looked up to catch the attention of other family members to interact and vocalized numerous times to elicit the attention of the others at the table to no avail. I wrote down my observations about those interactions before the participant's arrival and noted the potential for this observation to potentially bias an

interview. For example, I might have focused more on cues mothers were describing about smartphone distraction they noted in their infants while they breastfed them.

3.6 Data Analysis

To structure my analysis, I used the constant comparative analysis approach (CCA) (Thorne, 2016). I compared data across transcripts for similarities and differences. I was trying to understand the commonalities and nuances across women's smartphone usage during their breastfeeding experiences. This consisted of a 'back and forth' process of breaking down the 'parts' from 'wholes' to analyze whether the emergent themes were connecting to the development of codes (Thorne, 2016).

I used my first read of each transcript prior to analysis to ensure that each participant's audio-recorded interview matched the written transcripts. My second, third, and fourth, and sometimes fifth reads, of the transcripts were done to gather a more holistic understanding of an individual participant's experiences and to increase my overall familiarity with the transcripts. During these reads, I started asking myself: "what am I seeing… what does that mean…?". By reading the transcripts multiple times, I was familiarizing myself with the data to go beyond my first impressions to understand what was going on in each transcript. Thorne (2016), in her interpretive descriptive approach, recommends that data analysis begins while data collection is occurring as an iterative process. This iterative process allows the researcher to make sense of the data and to start identifying patterns in the collected data. Thorne (2016) recommended repeated immersion in the data before coding and the development of themes to ensure that inquiry was being refined and challenged throughout the data collection process and to analyze the data appreciatively, before developing themes.

After the initial reads of the transcripts, I started coding based on naming phrases, concepts and ideas within a transcript with initial codes, such as ‘scrolling’, ‘breastfeeding tracking app’, ‘watching videos’, ‘playing smartphone games’ or ‘online information seeking to increase milk supply’. I used open and broad coding to avoid jumping to conclusions. Focusing my analysis on answering the research question, I read each transcript individually with open coding of phrases or ideas within each transcript. I utilized phrases and words from participants to stay close to their experiences. I highlighted these initial codes of ideas and phrases by using colour within individual transcripts across all participants. For example, an emergent code: entertainment (e.g. scrolling on social media sites, watching videos, playing games) was highlighted as purple across all transcripts. A table was created with this initial clustered coding based on colors (e.g. purple, green, and pink) and avoiding the use of labels (words) for category headings.

I analyzed field notes from my interviews that included my reactions and thoughts during the interview process concurrently with the transcripts. Participant observations informed my transcriptions and analysis, where I made a note of topics that elicited emotions of participant discomfort, such as facial grimaces to gather a fuller understanding of their experiences. For example, some participants during the interview became more attentive to their infant (e.g. increased eye contact towards their infant) when they started discussing changes in their infant behaviours with their increased smartphone use while breastfeeding (e.g. baby pulling the phone away from mother during a feed). This observation informed my analysis by querying whether participants experienced concern over their perceived smartphone use around their infants and made me ask how they modified their behaviours to align with their infant’s behaviours.

During analysis, I coded both 'within' individual transcripts and 'across' transcripts to understand the individual data and also the similarities and differences among interviews. By repeatedly immersing myself in the data, I compared and contrasted participants' codes –within and across interviews.

As a novice researcher, I found myself often staying stuck in the open coding of "trees" (ideas or phrases within a transcript) while asking "what does this mean?" and "how do these codes then become themes?". I was hesitant to move towards the development of themes across the data. Keeping analytic memos, engaging in reflective journaling about the analytic process, and discussing with my supervisory committee about developing codes assisted me in moving towards grouping of codes to categories and themes. To deepen my analysis with the observed commonalities, patterns and variations in the themes that I constructed, I used the Srivasta and Hopwood (2009, p.79) framework mentioned by Thorne (2016). This framework assisted in a more attentive approach in grounding my analysis: 1) What are the data telling me; 2) What is it I want to know; and 3) What is the dialectical relationship between what the data are telling me and what I want to know? This framework of questions helped me to reflect on the themes and subthemes I was developing from my analysis and to make sense of what I was observing from my analysis. This process described above led to refining the themes and integration and clustering of codes in my data analysis.

The three SI premises (Blumer, 1969) guided the data analysis and were evident in how women perceived their meaning making about smartphone use in their breastfeeding experiences. The first premise of SI directed my attention to understanding how smartphones were meaningful symbols of social interaction during women's breastfeeding experience. The second premise of SI highlighted in my analysis the meaning of smartphones to mothers that

constituted social interactions with others. Finally, in line with SI's third premise, I also focused my analysis on how participants' variously constructed meanings appeared to change over time as part of their social interactions (e.g. other individuals or their infants).

I discussed the initial themes, with my supervisory committee. They challenged me to refine the themes when looking at the data extractions that I provided as evidence based on the clustered codes that I drew on to construct the theme and subthemes and how they related to each other. I then shared the revised themes and subthemes with illustrative quotes with my committee. With the guidance of my supervisory committee, I refined my themes by revisiting categories that I had mapped out on paper (mind maps), revisiting transcripts, and reflecting on the applicability of these themes and subthemes to answering my research question. This led me to develop one overarching broad theme with four subthemes, which will be discussed in the next chapter (Chapter 4).

3.7 Credibility

Thorne (2016) emphasizes the importance of demonstrating the credibility of ID research findings. I used a variety of measures to enhance the credibility and trustworthiness in the study. Thorne (2016) outlines four evaluation criteria guidelines for credibility: epistemological integrity, representative credibility, analytic logic, and interpretive authority.

Epistemological integrity demonstrates a "defensible line of reasoning" (Thorne, 2016, p. 233) in that the research question is in line with the method, data collection and the analysis –the process of how the interpretation was conducted. I approached this criterion by reviewing my processes multiple times, checking in with my supervisory committee, specifically with my supervisor, throughout the development of the research proposal, data collection and writing of findings of the study.

Representative credibility speaks to whether there is alignment with the findings and the way in which the study participants were sampled. Some strategies recommended by Thorne (2016) that I used were "triangulation of data sources" and "consideration of knowledge from multiple angles of vision" (p. 234). I utilized triangulation of data sources by conducting in-depth interviews, collecting demographics about participants, and utilizing participant observations and field notes to interpret my findings. I interviewed more than one participant in this study to collect a variety of perspectives about smartphone use. Additionally, Thorne (2016) suggests the importance of assisting the reader in understanding the sample studied by including an in-depth description of the sample. This is crucial for readers to consider whether the findings can apply to their practice. I included the demographic data in my next chapter (See Table 4.1).

The third criterion for credibility is analytic logic, where the researcher makes explicit the decision-making process of how claims were made (Thorne, 2016). One way to achieve analytic logic is by an audit trail, in which the researcher documents the process of analysis and decisions to construct findings (Thorne, 2016). I kept an audit trail composed of field notes, analytic memos, and reflexive journals. In the first instance, I documented my reactions and reflections about the interview. I used analytic memos to document my transcription process and decision-making when coding and developing themes. For example, while constructing the overarching theme navigating smartphone usage, I initially used the term negotiating. As a part of the decision-making process, I revisited to make sense of why I shifted to navigating smartphone usage rather than negotiating. My rationale to use the term navigating was led by avoiding confusion of identifying "who" the negotiation process was happening with and whether this theme was speaking more towards describing a negotiation 'process' or understanding the meaning of navigating smartphone use.

Furthermore, as a novice research work, I requested to meet frequently with my supervisor to review my decision-making processes and to reflect on the research process. My committee members also provided an external check of my initial drafted findings and guided me through the development of the themes. They attended to whether the themes were aligned with the evidence (quotes) and participant descriptors I had shared with them several times.

Interpretive authority refers to whether the "researcher interpretations are trustworthy to reveal some truth external to his or her own bias or experience" (Thorne, 2016, p. 235). A strategy I used to construct interpretive authority was during my semi-structured interviews, I would paraphrase or request participants to explain further or provide exemplars to check whether my understanding of their experiences was accurate to ensure that the participants' experiences were reflected truthfully in the data collection process. I also utilized reflexive journaling to address interpretive authority. Reflexive journaling enables the researcher to critically reflect on their personal and professional experiences, assumptions about the topic, biases, preferences and preconceptions about the research under study (Polit & Beck, 2017). I reflected on my assumptions about the topic multiple times post-interviews and as I progressed in the transcription and data analysis stage. For example, at the start of the data collection process, I appreciated that my role as a perinatal nurse might serve as a source of bias as I started conducting the research. I observed in my clinical practice how mothers might feel pressured about breastfeeding from healthcare providers and society. It was also evident in the literature review I conducted that interactions with others online were creating increased pressure and stress for mothers to maintain a positive presence online. I knew there may be more to this topic beyond the limited negative framing that could potentially occur if I did not critically reflect during the study process. My goal was to remain as open as possible to their experiences, and to

understand the phenomenon based on the participants' experiences. Also, reflexive journaling assisted me, in the early interviews, to alter my initial interviewing approach from only focusing on the guiding interview questions to incorporating more probing questions to seek exemplars and further explanations of experiences to increase the depth of the interviews. My reflective journaling incorporated notes about multiparous participants comparing and contrasting their breastfeeding experiences and smartphone usage between children. I was able to request participants to reflect on the breastfeeding experiences of all their children to determine any similarities or differences in their smartphone usage across children.

3.8 Chapter Summary

In this chapter, the ID research methodology, the SI theoretical framework, and data collection and analysis are described. Ethical practices were outlined specifically to address minimizing harm to participants. I presented information about multiple data sources to illustrate the theoretical and methodological approaches to generating findings. Finally, an audit trail of my analysis was provided to demonstrate how different aspects of recruitment, data collection, analysis, and development of themes evolved and informed the research process and decision points along the way. Credibility of the findings was constructed through reflexivity, and related processes and have been reported in this chapter. In the next chapter, I describe the findings of this study.

Chapter 4: Findings

4.1 Introduction

In this section, I present the findings to answer the research question: what are women's perceptions about using smartphones during their breastfeeding experiences? I begin by providing an overview of participant characteristics and then present the overarching theme, navigating smartphone use, and subthemes: raising consciousness, grappling with breastfeeding realities, vicarious virtual breastfeeding experiences, and searching for strength through support.

4.2 Sample Characteristics

The 13 mothers interviewed in this study ranged between the ages of 26 and 39 years, the average age was 33. For educational levels, 77% of participants had a baccalaureate degree or higher. Of the participants, 46% were primiparous and 54% multiparous mothers. Five of the mothers' infants were under six months of age and eight infants were between seven and twelve months of age. The average age of the infants was 6.7 months old (See Table 4.1).

Over 60% of the participants reported using at least two or more smartphone applications related to breastfeeding. The most popular breastfeeding-related smartphone application was one that tracked breastfeeding. All of the participants reported using at least one social media platform regularly, with Facebook being the most popular social media platform (See Table 4.1).

Table 4.1
Sample Characteristics of Participants (N=13)

Characteristics	% (n)
Age	
25-30	15 (2)
31-35	54 (7)
36-40	23 (3)
Preferred not to answer	8 (1)
Education	
Some College/University	23 (3)
Bachelor's Degree	31 (4)
Graduate Degree	46 (6)
Number of Children	
1	46 (6)
2	46 (6)
3	8 (1)
Age of Breastfeeding Infant	
0-6 months	38 (5)
7-12 months	62 (8)
Social Media Usage	
Facebook	92 (12)
Instagram	54 (7)
LinkedIn	38 (5)
Pinterest	31 (4)
Twitter	23 (3)
Snapchat	23 (3)
Other	23 (3)
# of breastfeeding smartphone applications	
0	7 (1)
1	31 (4)
2	46 (6)
3	15 (2)

4.3 Navigating Smartphone Use

All of the study participants navigated their smartphone use during breastfeeding; however, how they engaged with their smartphones during the navigation process varied. Navigating smartphone use was the theme identified to describe how women attributed meaning to using smartphones while breastfeeding. This navigation happened over time; participants described changes in how they used their smartphones associated with changes in their interactions with their infants, other individuals, and their environments. The mothers attributed variations in their smartphone use while breastfeeding to the ages of their infants or, differences in their smartphone use across the birth orders of their children or, past breastfeeding experiences. The study participants who had prior breastfeeding experiences navigated their use of smartphones differently from primiparous participants:

> With my second I would say I would almost certainly say would be using my phone more than I did with my first. I think I would kinda of say that it is more entrenched in my day-to-day life now that I have had a phone for more than like four years now and again mostly it's just texting and reading while she's nursing (P4).

> I noticed that when I used my 'breast friend' cushion especially when the [first] babies were smaller…it kind of freed my hands and it also relaxed my back so I could do things like I could use my smartphone you know I could write, I could read, I could eat, drink without ever having to hold the baby, so that was a huge help for me until I realized that I was kind of on my phone a lot (P6).

At varying points in their breastfeeding experiences, women were navigating the limits of their smartphone use. Many participants indicated that their wellbeing could be disrupted by overusing their smartphones. The women described prioritizing taking care of themselves so that they could juggle the demands of breastfeeding and caring for a baby. For example, one woman shared:

> …with my other [first] daughter I was messaging people like at all hours because I was up all hours, but this time I'm trying not to…it was too much, it was too stimulating to be

> messaging people and to be looking up information and doing research and then you just don't sleep because you're so focused and so wired and your brain is so turned on. So this time I knew to kind of just shut it down at night time. I'm going to try to use the phone less. I still use it, but I'm going to try to use that [the smartphone] less (P12).

Later in the interview, P12 acknowledged that she was still using her phone at night, but it was not to the same extent as when breastfeeding her first daughter. She perceived that she had made a realistic and attainable adjustment that improved her breastfeeding experience. Navigating smartphone use while breastfeeding included a number of subthemes: raising consciousness, grappling with breastfeeding realities, vicarious virtual breastfeeding experiences, and searching for strength through support. The participants' smartphone use was constantly shifting and changing. The participants focused on being comfortable with their smartphone use as part of their day-to-day breastfeeding. The subthemes provide detail about how women perceived navigating using their smartphones through the interactions with their infants, other individuals, and the environment.

4.3.1 Raising Consciousness

Navigating smartphone use involved participants raising their consciousness about their smartphone use during their breastfeeding experiences. Raising consciousness included mindful reflections about what they were doing and then acting on their reflections by making decisions to modify smartphone use. The mothers' used their consciousness about the effects of smartphones to modify the meanings they ascribed to them. In some instances, smartphones were viewed as moving from helpful devices to all-consuming ones. They considered environmental influences, their interactions with other individuals (e.g. peers, friends, family members, healthcare providers), and their infants.

One participant described her consciousness about smartphone use through her recognition that it engulfed her day-to-day life. She made a conscious decision to switch to a flip phone. The flip phone had no internet capabilities, which restricted her access to the web and social media platforms. She regarded her decision as helping her to focus on her breastfeeding needs and putting priority on her well-being and that of her children. She found letting go of her smartphone to be liberating and likened it to relieving a heavy burden:

> …I have friends all around the world and feeling a sense of responsibility to them like oh I should be in contact with ABC, well who said? What rule is there that I have to be at peoples' beck and call? … (P6).

Participants often indicated that they had to explicitly communicate with their social network about setting new expectations that they would not be readily available to them, particularly in the first few months postpartum; they wanted to focus on themselves and their babies. A participant described her support network initially failing to comprehend her need to be less readily available on her smartphone. She indicated that, with her second and third children, her social network understood the importance of giving her the online 'space' in the first few postpartum months for her well-being. Similarly, another participant allocated to her spouse to respond to smartphone interactions (text messaging or phone calls) from her family and friends in the early postpartum period so that she could focus on her well-being.

Participants also modified their use when they recognized that smartphones disrupted their sleep. A participant increased her consciousness about her experience using her smartphone at night:

> It's a bad cycle of insomnia, you're bored [while breastfeeding], and so you just want to go on your phone to either to look up something or for entertainment, but then I think that all that screen time makes my insomnia worse, so kind of a bad cycle (P12).

P12 modified her smartphone use by limiting it prior to bedtime. If she was not able to go to sleep she would "…read a book, doodle or something calming and relaxing so hopefully by the time I'm sleepy I can go to sleep" (P12). Participants became conscious of other ways to modify their smartphone use during the nighttime. For example, they downloaded smartphone applications to filter blue light if using their smartphones while night feeding, so it would not hinder their sleep. Reflecting on what was occurring raised women's consciousness about self-regulating their smartphone use and tailoring what would work for their breastfeeding experiences.

Participants raised their consciousness about navigating smartphone use through smartphone applications. Most participants reported that smartphone pregnancy apps could be useful for breastfeeding in the postpartum period. The most popular postpartum smartphone apps women downloaded were breastfeeding/feed tracking apps. The apps were designed for users to record some of the following information: time of feed, duration of feed, number of feeds per day, and output (voids and stools). Mothers stated a preference for downloading apps that were Canadian, American, or supported by the World Health Organization with the ability to convert between metric and imperial inputs (e.g. kilograms to pounds).

Most of the mothers reported that they stopped using the feeding component of the apps during the first postpartum weeks, although some reported continued use of the app for other purposes, such as height/weight tracking and immunization record keeping. Participants became conscious that the feeding trackers were no longer needed if they perceived breastfeeding was progressing well. They also found them to be too time-consuming or too burdensome to remember to use the app to record every time they breastfed. The participants stopped using

them when they were conscious that the apps no longer enhanced their breastfeeding experiences.

On the other hand, a few participants described consistently using the tracking app. These participants were conscious that their use bordered on obsessiveness, which they described as being stressful. One mother described the effects of using a feed tracking app over the entire first year postpartum with her first child. She stated:

> I think I used that [breastfeeding tracking app] for like a really long time like probably for over a year, but I feel like that was almost detrimental to my breastfeeding experience because I became really obsessive about having to track like every single time…I feel like that sort of tool might be useful in the beginning when you sort of getting used to nursing or your baby is not gaining weight…I never had that problem, my babies were always gaining weight, so I don't know why I did that for that long as I did and I feel like it took out a lot of the enjoyment with breastfeeding away because I felt like this obligation to keep track of these things (P4).

This participant critically reflected on her previous experience and, as a result, took a different approach with feeding her second child. She breastfed based on her intuition of breastfeeding on demand (i.e. following infant's feeding cues, infant sucking on their hand) rather than using an app. Compared to other participants who did not extend their feed tracking app use, P4 believed that her overuse of the smartphone app with her first child was about her insecurity. She was conscious of her obsessive need because she feared that her expectations of breastfeeding did not match reality, but she let go of that with her subsequent child. "I was easier on myself and I didn't beat myself up on the little things" (P4).

The mothers in this study described extending their consciousness to filtering information accessible to them on their smartphones. They would use their phones to read multiple sources to see if the information was reliable or created for entertainment or marketing. Filtering online breastfeeding material enabled them to deduce what information aligned with their personal

values and beliefs. For example, one mother found that, in some of her downloaded smartphone apps, advertisement banners were aimed at mothers to endorse formula products or breast pump equipment. She chose to ignore the advertisements and used the app to identify the information she had originally intended to seek. She described reading Baby Centre articles:

> I just ignore them [promoted advertisements/articles] and you could tell which articles are sponsored. I mean I feel like everything on Baby Centre that I read I need to take with a grain of salt because I don't know how well it's researched, and I really don't know who writes them (P11).

Many mothers in this study were aware of the potential biases of information and marketing online when seeking breastfeeding information and that information might be inaccurate.

Participants also conveyed their consciousness about online sources which could support or refute any breastfeeding-related topic. They realized that they could find online recommendations that were congruent with their beliefs, with the potential for bias in terms of scientific accuracy. As a participant described:

> I realize at that point that I stopped using my phone [regarding seeking online advice]. I realized that really you could get advice about whatever you really wanted, so it didn't really matter what it said online because you could find stuff on there that could support either side (P7).

In this study, mothers with older infants, usually older than 5-6 months, became conscious that their infants' developmental stage had changed, and they were distracted if they were using their smartphone during a feed; they reduced their use of smartphones. One mother stated:

> I mean now that she's getting older she's noticing it [smartphone]. So, I cannot use that when she is breastfeeding because she gets distracted and then she will unlatch and want to see what I'm looking at, so it has curtailed how much I can do that (P5).

The mothers in this study decreased the presence of smartphones when they realized they were interfering with their feeds because of older infants' shifting behaviours and development stage. Some mothers in this study likened avoiding smartphone use during breastfeeding to improve their bonding time when breastfeeding their infants.

> I mean either I wanted to, and I chose to bond with my baby in the moment and not have any distractions and now that my baby is older he just demands that kind of attention, so even if I wanted to be on the phone he's the first one to swat it away from me or try to use it, like he'll like put his hands all over my screen (P11).

> …The baby has like a sixth sense about when I'm googling things, so then he's latched on and he'll swing his head around like ooooh iPhone, so that's a challenge (P9).

> No, I don't really use it if he's engaging. If he's like looking at me or whatever … I probably don't do it so much now because when you see me like now (points to self as she's breastfeeding her baby) there's no way of me using my phone because he just won't sit still (P3).

Participants' awareness of older infants seeking their attention changed their consciousness because they viewed their smartphone use as a hindrance to their aim of completing the feeds with minimal disturbances. They also described wanting to show their infants that they were focusing their attention on them.

4.3.2 Grappling with Breastfeeding Realities

This subtheme highlights how mothers in this study understood the meaning when they associated navigating their smartphone use as a resource to grapple with their breastfeeding realities. Through these symbolic interactions, the women worked through the ups and downs of breastfeeding. Many of the participants spoke about their mismatch between breastfeeding expectations and realities, with a need to use smartphones to work through their roller coaster ride. They used smartphones to support their transition from a lack of prenatal breastfeeding

preparation to breastfeeding, deal with boredom while breastfeeding, and manage breastfeeding challenges, such as pain and anxiety.

Lack of prenatal preparation for breastfeeding added to some participants' perceived stress and anxiety levels in the postpartum period. This was particularly the case when breastfeeding was not going as well as they had imagined. Women emphasized their lack of readiness and informational gaps as motivators to use smartphones to locate breastfeeding information and search for answers to the breastfeeding concerns they were facing. Their breastfeeding concerns included increasing milk supply and/or nipple pain treatment. Mothers in this study used smartphones to seek healthcare providers' (HCPs) breastfeeding information to support breastfeeding and to read, watch, or listen to healthcare provider-based breastfeeding content online. Most mothers shared in their interviews that, despite their confidence to search and evaluate information online, it was burdensome to spend time navigating through the material. For this reason, mothers preferred online resources supported by healthcare providers or local government health organizations; they assumed that those organizations had vetted information as reliable and accurate sources. Overall, mothers first choice was physical visits with healthcare providers, when that was not easily accessible, they navigated smartphones as a resource to find information.

Many mothers indicated they did not anticipate breastfeeding as consuming large amounts of energy and time, particularly as they were establishing breastfeeding. When participants had longer feeding times (e.g. 45 minutes), they described using their smartphones to "pass time" and "relieve boredom". While breastfeeding, they used their phones to do research about breastfeeding or to find postpartum information, connect with family or friends, shop online, play smartphone games, read books online, or listen to music or podcasts. Most

participants felt the need to do 'something' on their smartphones while breastfeeding, especially initially when breastfeeding was longer in duration and frequency and occurring during both days and nights.

Women used their smartphones, which included even the act of scrolling. One mother reflected:

> I think smartphones are a bit of an addiction, especially when you spend so much time in the house, when you are on your own and get to where you are scrolling on Facebook and keep scrolling reading things that you've read already, like, "why am I even doing this?' (P3).

She was not sure why she felt the need to "mindlessly scroll" while breastfeeding; she felt that this habit had become the norm for dealing with boredom while breastfeeding. Many participants stated that boredom was an issue when they had extended feeding times, so they used their smartphones as a resource to pass the time.

One participant described the experience with her first child where she had conflicting views about passing time while breastfeeding and navigating smartphone use:

> I remember feeling lonely, isolated and just me and the baby and the wall and a way to entertain, a way to um you know to distract from the kind of tediousness of it [breastfeeding]. Yeah so I see it like that you know…I don't know I would love to know how many hours I wasted reading on my phone rather than I don't know doing something else or just doing nothing you know (P6).

All of the mothers stated that they would interact with their babies if they were awake while breastfeeding. When infants were asleep, mothers were more likely to spend time during the feed on their smartphones, particularly during night feeds. Some of the participants stated that smartphone use helped them to stay awake during the night feeds when they were sleep-deprived.

Some participants described using their smartphones as a resource to manage breastfeeding challenges. For example, participants with nipple pain during feeds used their phones to manage pain. A participant described how she did that:

> I remembered with my first daughter, I think it was using my smartphone help me to kinda face that [pain] with I mean maybe without my smartphone I would have felt totally intimidated and terrified of the pain I was experiencing with the breastfeeding, so that help me to slightly alienate myself from the… I wouldn't say trauma but like you know of what has happened I remember thinking like wow there's no off button to the baby… (P6).

Another participant experienced anxiety and nervousness about feeding time due to prior feeding challenges. She indicated that her anxiety increased when feeds were long and even shorter feeds started to feel like longer feeds. Rather than focusing on the duration of the feed, she used her smartphone to distract her. She would listen to music or a podcast or she would read on her smartphone. Her smartphone use supported her breastfeeding experience by easing and managing her anxiety. She stated:

> …the distraction is big and being able to use it [smartphone] as a coping tool. Distraction always gets a bad rap, but when they're [infants] in those stages [of breastfeeding], where you're having to feed that often, you need to do something to distract yourself or you'll just go crazy, so just being able to listen to something that can make you laugh or takes your mind off of it helps" (P5).

4.3.3 Vicarious Virtual Breastfeeding Experiences

This subtheme captures how participants used their smartphones to access web content that was created or shared by someone virtually. They navigated their smartphone use to learn vicariously from others during their breastfeeding experiences; for those participants, the meaning of smartphone use not related to exchanging information or conversing with others. Accessing vicarious virtual breastfeeding experiences of others was not intended to be interactional; however, participants felt that those experiences were as meaningful and

supportive as the conversational experiences with people on their smartphones. The women described using YouTube videos, social media message boards or blogs, such as Baby Centre or Facebook, to vicariously learn about breastfeeding from others. Their learning included how to breastfeed, addressing common breastfeeding challenges, and normalizing their experiences through reading about others' breastfeeding setbacks.

Most participants explained that it was beneficial for them to be an 'observer' or a 'lurker'. The terms 'observer' or 'lurker' highlighted smartphone access to information, which was not active participation in online discussions on social media platforms. As one mother described: "I wouldn't say I am active in the parenting groups [on Facebook] umm I very rarely comment or post anything, but I like to observe and read articles that people share…" (P4). Another participant identified herself: "I would be what they probably call a lurker I wouldn't post on there… [Reddit]" (P6). Based on using their smartphones as 'observers' or 'lurkers', mothers could moderate the extent of their uptake of the recommendations or suggestions by not engaging with strangers online. They described a perceived level of 'safety' from avoiding involvement in discussions that they felt could potentially be controversial. One mother shared her experience: "…I like to just see what the moms are saying and what other people are experiencing but to see if they're in the same headspace as you" (P10).

The women used the vicarious virtual breastfeeding experiences of others to make sense of their own experiences. For example, one participant described searching on YouTube for videos about different breastfeeding positions and nipple care so that she could view the videos at her own pace in the privacy of her home. She stated: "I think that was like a life changer coz I didn't have any hands-on help with side-lying breastfeeding, and it made things so much easier, so YouTube was big" (P9).

Most women who accessed videos to learn about breastfeeding found that YouTube videos were more convenient than accessing a healthcare provider. “Online that is like anytime and getting an appointment is hard. I was lucky to get in to [the clinic] pretty quickly, but it is definitely not as accessible as online” (P12). Participants felt they could learn vicariously through videos as the watching, replaying and pausing of video clips was enough for them to grasp what they needed to incorporate into their breastfeeding experiences. Two of the participants indicated no need to interact with others when viewing YouTube videos (e.g. interacting on the discussion/comments section of the video) because watching the online video was sufficient for them to learn a different breastfeeding position.

Normalizing perceived challenges from using smartphones while breastfeeding was another example of how mothers used their smartphones to access vicarious experiences. One participant described reading mothers’ online discussions about the challenges of smartphone use and breastfeeding:

> Couple of times I have dozed off and dropped the phone on him and I know that a lot of people have done that, that’s come up a lot on the Facebook group, where people are like ‘ahhh! I dropped my phone on the baby!’, but it happens…I mean you are exhausted, and you get this rush of oxytocin when you are breastfeeding and then you are sleep[y] and then you doze off and then your phone slips and gravity does its thing (P2).

The participants described accessing conversations where some mothers would console concerned mothers, “yup we have all been there!” (P4). When participants read the exchange of responses their decreased their distress about smartphone use while breastfeeding. In other words, the vicarious experience of reading mothers’ experiences resonated with those who had similar encounters. For example, P2 felt reassured that she was not alone through accessing experiences of others; it reaffirmed her beliefs and created a way to normalize her feelings.

Some participants indicated that using smartphones to vicariously live through other mothers' breastfeeding experiences was not in their best interest. They felt discouraged and anxious when reading about perceived challenging feeding experiences. For example, a participant stated:

> There's a lot of stuff on the internet about the negative or what people perceive as a negative sides of, for example, using formula and so if I was reading where a lot of moms who were like getting really anxious because they were upset that they were going to have to supplement with formula and then that would make me nervous… (P5).

Other participants also actively reduced their exposure to negative vicarious breastfeeding experiences through their smartphones. One participant started to connect what she read about negative breastfeeding experiences to developing fears of perceived setbacks. To reduce nervousness when using smartphones to access negative experiences, participants described mindfully pausing reading and making the decision to move on to read something else not related to breastfeeding or parenting in general. One mother indicated that accessing negative breastfeeding-related content on her smartphone took over her breastfeeding journey. Prioritizing reading about experiences online that did not threaten her mental wellbeing was a way of constructing a purposeful and positive experience. Another mother highlights this further:

> …I still would nurse her in the middle of the night and that would put her to sleep and initially when I put her down to sleep. That was one thing too, that I read online a lot of people would say 'don't do that! You're like ruining your baby if you nurse them to sleep coz they'll never be able to put themselves to sleep' and I at the time was like 'oh no! What am I doing?' (P7).

Because this participant feared that she was "ruining" her baby by breastfeeding her to sleep, she went beyond her smartphone to seek her doctor's advice on this matter. Thus, several participants interacted with their smartphones in symbolic ways, such as here when the participant viewed the interaction between her smartphone and herself and earlier women spoke

about their smartphones as undesirable interactions due to perceived setbacks in their breastfeeding experiences.

Many participants recognized that using smartphones to access online information required filtering and evaluating the information. The women compared one source of online information to what they read in other online sources, such as another discussion board thread or website. They would also compare the information to their peers' opinions, or their healthcare providers' advice.

Participants often described using their smartphones when considering taking medications while breastfeeding and seeing if alternative approaches were available. This was done either before or after consulting a healthcare provider. Vicariously learning online from peers' experiences was seen by participants as informing their decision making.

A number of the women regarded the abundance of online information and opinions as symbolic of being overwhelmed while also being reassuring. One mother stated:

> It's nice to be able to be reassured when you got a problem, or you think something is not going right [with breastfeeding] to then quickly go on the mom's [social media] group or Google and find that thousands of people have been in the same issue and that it's like nothing, so it's really reassuring (P3).

Accessing vicarious virtual breastfeeding experiences by smartphones was related to women's efforts to increase their strength through support via smartphones. Participants emphasized the importance of seeking a comfortable balance between sharing too much or too little of themselves online. Women were worried about vulnerability if they overexposed themselves or their infants online. For example, one participant described reading negative commentary on a celebrity's breastfeeding-related Instagram post. She was conscious about the scrutiny that celebrities received when posting breastfeeding content on their social media

accounts. Thus, reading content about celebrities' breastfeeding experiences that resulted in public shaming/blaming helped her to decide on the amount of sharing she wanted to engage in related to private matters like her breastfeeding experiences when using her smartphone to connect with others.

Another participant shared her experience of conflict generated by discussions in an online group:

> It's definitely kind of like prone to arguments on that group. So, somebody will post something, and someone would say I would never do that! And there is always the range of attachment parenting to the more extreme you know adamant more militant breast-feeding types. There is usually arguments about everything on that group! (P10).

Many participants indicated that using their smartphones for vicarious involvement in online discussions on breastfeeding helped them to decide the extent to which they would share personal information regarding their breastfeeding experience on the internet.

4.3.4 Searching for Strength through Support

The subtheme of searching for strength through support illustrates how mothers navigated their smartphones to obtain support from their social networks. In searching for strength through support, participants actively engaged in interactions by exchanging dialogue. Mothers framed those active interactions as meaningful and supportive of their breastfeeding experiences. Smartphones helped participants develop their strength by locating resources and information from their social networks to support their breastfeeding, and to help overcome breastfeeding obstacles. All mothers accessed others that provided positive support and content about breastfeeding. None of the participants described encountering any perceived negative dialogue directed at them online. Participants may have avoided negative experiences through their smartphones because they had carefully navigated safe spaces within virtual communities.

They also made decisions that they would balance the extent of the information they would share about breastfeeding.

Women's previous vicarious experiences created the context within which they navigated virtual support networks. All but one of the mothers regularly used one social media platform on their smartphones. The two most common platforms used were Facebook and Instagram to find strength through support, including opportunities to socialize. Mothers shared pictures of their babies, connected with groups with similar interests (e.g. mother-baby groups), and stayed current with their social circles. None of the participants described sharing their breastfeeding experience on open social media platforms (e.g. posting 'brelfies' or posting on a public forum about their breastfeeding experience) because they regarded breastfeeding as a private, intimate interaction. My participant observations revealed that participants often quickly closed off discussions when probing whether they shared their breastfeeding experiences with a wider public forum on social media. Participants indicated that they were deliberate and carefully considered with whom and where they shared their breastfeeding experiences on smartphones:

> No. No. I think generally I keep those kind of things [breastfeeding] pretty private so if I did want to share those things it was usually either by direct like private messaging, but yeah no real announcement of any journey. And just to prevent unwelcomed comments I think that's mostly what it is yeah like I am not a severely private person like I will share if like somebody asks like somebody is going through an experience I will share. I just didn't want to solicit anything that I did not want to read yeah it's just mostly that (P11).

> Not like on a public forum I don't think but with a few of my other friends who have had babies this year as well so like in chatting online with friends: Oh are you up? Oh what are you doing up at 3 o'clock? Are you feeding your baby too? That kind of thing like I'll say hang in there it's hard in the beginning you know that kind of I like chatting with my friends about their experience but not in a public forum (P10).

Mothers tended to actively look for support through regular online posting of comments and/or questions in groups that were closed and private, had few members, or had contributing

members who were known to them. P11 formed a WhatsApp group chat with mothers who she had met in a prenatal class. Two other participants had formed online connections with mothers they had met at a local public health breastfeeding group.

Group chats often formed organically for participants based on, but not limited to, family, friends with children, birth months (mothers with newborns born in the same month), prenatal classmates, or local mom-baby groups. Participants preferred connecting via smartphones with those whom they knew personally or whom they anticipated would understand what they were experiencing (e.g. mothers with infants of similar ages). They formed their support networks to support their need for empathy and relatability through shared experiences, and for sustaining meaningful relationships that were non-judgmental and positive.

The participants' lack of preparation, through discussions with their healthcare providers, friends and/or family about breastfeeding prior to the birth of their infants, contributed to their desires to actively seek support through the use of their smartphones. The participants explained the importance of using their smartphones to receive immediate and constant support in the early stages of establishing breastfeeding. One example, a participant described her experience:

> It [smartphone] helped reassure me a lot, when I could text other moms on WhatsApp. Like for all my worries in the first few months about breastfeeding, the other moms, telling me 'yeah that's normal, don't worry!' and sharing their experiences with me, it was really reassuring. I could ask them whatever I was worried about and at whatever time, since we are all awake at different times breastfeeding our babies…(P13).

Participants who were further along with their breastfeeding experiences (6 months postpartum), or participants who had multiple children, described seeking communities to connect, share and normalize breastfeeding experiences through their smartphones. Some women joined breastfeeding virtual communities explicitly to support others. Mothers described online peer support as similar to "cheerleading"; they supported one another through breastfeeding

concerns and challenges with words of encouragement and sharing suggestions of resources or tips that worked for them.

Participants realistically acknowledged that online suggestions might not work for them, but that they presented an opportunity for exploration. Participants described using smartphones to reach out to mothers who were experiencing difficulty breastfeeding because they were wary of the advice offered in group discussions. They shared their personal experiences. For example, one participant encouraged a mother who posed a question online to seek medical advice before considering alternative recommendations. A mother encouraged another mother to seek her doctor's medical advice prior to experimenting with Domperidone® to increase her milk supply. The participant had recently learned of its negative consequences on the cardiac system from her doctor when she had been considering taking it.

Virtual social networks were perceived to be valuable for participants; they were a place where they felt more comfortable to ask questions. They indicated that they were hesitant about "wasting their healthcare providers' time", with concerns such as, "how do I know how much milk my baby is getting?" or "how long should I be feeding my baby?". Mothers appreciated that accessing peer interactions through smartphone use helped them to cover 'common' breastfeeding questions, remain anonymous, and access support promptly. Several participants shared their experience with peer support:

> I asked for advice one time when I was travelling like about how to bring frozen milk on a 12-hour trip and keep it frozen, so that was helpful they recommended a cooler and I bought the cooler all on my smartphone…and they were pretty positive and helpful (P7).

> Yeah there's a lot of moms, especially around day one or two like "why hasn't my milk come in" Um so I have been able to let them know, you know like that's really normal and baby's stomach is a size of a marble right now, so you're doing a good job! (P2).

> …someone will post like I am having a really hard time, I don't know what I'm doing…it it's really hurting. I feel like I want to keep going, but I can't. You know, random women who you don't know are like 'you got this momma! You can do this!' and you know it just makes you feel good. People don't even know you…they don't know that you got it, you probably don't got it, but it makes you feel good. I would say that there is no negativity on those [online groups] in regard to breastfeeding (P3).

Receiving active support from other mothers (e.g. peers) and family via smartphones supported women's breastfeeding goals. Those interactions contributed to women's breastfeeding knowledge and insights about breastfeeding. The experiences with other breastfeeding mothers online brought a sense of connectedness because of the sharing of similar experiences that fostered empathy. The 'feel good' positivity of a stranger's encouraging words helped mothers feel invigorated and try their best with breastfeeding. They appreciated their smartphone-based interactions with a community of breastfeeding mothers.

In the early stages of breastfeeding, where women spent a fair amount of time by themselves and were confined to their homes, the participants indicated their smartphones helped them feel connected to others, particularly during night feeds. That was the most common time for them to reach out to peers, friends, and family. Smartphones were the participants' link to the rest of the world. Participants who had contacts overseas in different time zones or connections with other mothers who were awake during night feeds were more likely to use their smartphones during the night.

When mothers were connecting with peers on group chats or sending text messages about breastfeeding it was about offering support through sharing or hearing about others' breastfeeding experiences or 'venting' and 'bonding' over their perceived common breastfeeding gripes and tribulations. One mother illuminated in her smartphone group chat:

> I think at the very beginning it [breastfeeding] was new for all of us, it was just sort like is it hurting you, like kind of sharing experiences of breastfeeding and then I think some

> people are you know griping, just commiserating about you know like leaking and engorgement and the pain and getting bitten… (P11).

Participants often described group members accessed through smartphones bonding over developmental stages that they were encountering with their infants, such as increased feeding during growth spurts. This bonding reassured participants they were not experiencing breastfeeding alone; they felt supported by other mothers. Many mothers described outgrowing these groups by the time their infants were 6 months of age or older. Mothers used their smartphones to develop closer bonds to select members of the peer group or to find another group for support with more similarities. Some participants solidified relationships with individuals with whom they started their breastfeeding trajectory, while others searched for new communities.

One participant described using her smartphone to download a breastfeeding podcast created by a lactation consultant; she engaged in finding support by emailing her breastfeeding queries that were answered on an upcoming podcast, or the lactation consultant would directly email her back. A lactation consultant and a guest speaker (usually breastfeeding mothers) led the podcast. The participants' direct 'live' interaction accessed via her smartphone created a sense of closeness and community; the participant pointed at her podcast app in the interview and stated: "this is my breastfeeding community" (P8).

For the most part, breastfeeding support from family, offered via smartphones, consisted of encouragement and sharing of personal breastfeeding experiences. Participants who were navigating smartphone use indicated that they preferred face-to-face support from family members to smartphone support; however, family support through smartphones was particularly valuable for breastfeeding if family members were out of town. As one mother stated:

> I remember my mother send me a message: 'oh how are you doing? Remember to eat, sleep, drink and relax kind of thing you know don't do anything else just stay with the baby' like um my sisters too like they would send funny memes about breastfeeding and that but you know like that kind of support and what are you doing? (P6).

Another source of support from smartphone use was promoting healing for women who had unsatisfactory breastfeeding experiences. One participant confronted her disappointing breastfeeding experience (nipple pain on and off when breastfeeding both of her children) by becoming a milk donor. She also decided to blog about her experience. She stated: "…sharing the story has been my healing …and out of all the pain and suffering came something positive, which was I could donate some milk to babies who need it" (P4). She added that her community of online mothers responded positively to her blog and strongly related to her experience. Her act of blogging provided an opportunity for critical self-reflection in her healing, and other mothers' responses to her posts were a bonus for her healing journey.

Participants also described how they used their smartphones to search for healthcare provider-related content. Some participants used smartphones to communicate with healthcare providers (text message, email exchange). They refined their use of support by accessing information about other mothers' experiences with HCPs with breastfeeding expertise through their smartphones. For example, one participant noticed in her mom-baby Facebook group, members would ask one another for local lactation consultant referrals and testimonials.

4.4 Chapter Summary

In this section, I described the perceptions of women's smartphone use within the context of their breastfeeding experiences. I constructed a theme and subthemes that interpreted how women made meaning of their smartphone use during their breastfeeding experiences. The main theme addressed the process of 'navigating smartphone use while breastfeeding'. Participants

described modifying their smartphone use based on their contexts, such as the prior breastfeeding experiences, support systems, or infant interactions. The first subtheme, 'raising consciousness', reflected how women were deliberate and thoughtful in their reflections about their smartphone use and their decisions to modify their smartphone use. The second subtheme, 'grappling with breastfeeding realities' addressed how women used their smartphones as a resource to overcome some unexpected breastfeeding difficulties, including passing time when bored, and managing breastfeeding challenges such as pain and anxiety. The third subtheme, 'vicarious virtual breastfeeding experiences' captures participants' meanings of reading social interactions and observing videos online about breastfeeding. The last subtheme, 'searching for strength through support' addresses how women used their smartphones to access, approach, develop, and interact with breastfeeding support communities, including family and friends and health care providers. In chapter five, I discuss the findings in relation to the literature and the implications for clinical practice.

Chapter 5: Discussion of Findings, Nursing Implications and Conclusion

5.1 Introduction

In this section, I discuss the study findings about women's smartphone use during breastfeeding to highlight how the study contributes to existing literature. I also discuss the contributions of the findings in terms of implications for nursing practice, education, and research. The strengths and limitations of this study will be discussed.

This study examined 13 mother's perceptions about using smart phones during their breastfeeding experiences. The overarching theme constructed from this study was: navigating smartphone use and four subthemes were: (1) raising consciousness; (2) grappling with breastfeeding realities; (3) vicarious virtual breastfeeding experiences; and (4) searching for strength through support.

Researchers have studied mothers' smartphone use by employing quantitative research designs; therefore, there is a lack of studies focused on the rich, in-depth experiences about the meaning of smartphone use during breastfeeding. I analyzed the study data by exploring the symbolism of women's interaction with their smartphones during their breastfeeding experiences. Symbolic interactionism as the study's theoretical framework drew my attention to how women navigated their interactions with their smartphones to maximize their and their infants' wellbeing during breastfeeding.

5.2 Discussion

The study's themes and subthemes (5.1) support claims from the literature that women use their smartphones during breastfeeding (Baker & Yang, 2018; Gray, 2013; Tomfohrde & Reinke, 2016). Social media use has been studied in the women's health literature but has mainly centered on describing overall mothering experiences (Alianmoghaddam, Phibbs, & Benn, 2019;

Asiodu, Waters & Dailey, 2015; Bartholomew & Schoppe-Sullivan, 2012; Coyne, McDaniel & Stockdale, 2017; Gibson & Hanson, 2013; Holtz Smock, & Reyes-Gastelum, 2015; Lee, 2016; McDaniel, Coyne & Holmes, 2012; Myruski et al., 2017). I was not able to locate any Canadian qualitative studies examining breastfeeding women's smartphone use. Literature from the United Kingdom, United States of America, Australia and New Zealand serve as the main focus for this discussion because of the comparability of findings to populations (English-speaking countries and accessibility to the internet) as well as access to journal articles in English. The findings from this study highlight the need for further research in studying women's smartphone use while breastfeeding across Canada and in other countries, among key populations, and connected to breastfeeding outcomes. Further research in this area could gather more data to better understand priority population needs, those at most risk of not meeting their infant feeding goals, to see how their smartphone use during breastfeeding may be facilitating or challenging them reaching those goals.

5.2.1 Appreciative Awareness of Smartphone Use

The participants in this study described the meaning smartphones held for them and critically reflected on their evolving smartphone use during their breastfeeding experiences. For example, participants tended to reach for their smartphones when they had needs, whether that was to connect to their social networks, manage breastfeeding realities, or use self-support strategies to enhance their breastfeeding experiences. Studies show that mothers reported experiences of intense scrutiny about every aspect of their lives when it came to rearing their children (Gibson & Hanson, 2013; Lupton, 2016); the advance of the use of technology may add another area for potential criticism of mothers. Smartphone use has generally been studied as a problem, for example, defining 'problematic use' when studying the general population's use of

smartphones (Elhai, et al., 2017; Kildaire & Middlemiss, 2017; Wang et al., 2015; Wolniewicz et al. 2018). The findings in this study add to the literature that individuals are more conscious about their smartphone use. The mothers in this study identified the importance of being aware of their smartphone usage, especially when they perceived its use as counterproductive to their well-being or to their infants' well-being. This study found that breastfeeding mothers attributed positive elements to smartphone use as well, even though they have been exposed to critique on their smartphones. Moreover, they demonstrated an awareness of their use of smartphones and adjusted their usage based on their infant's cues, their own well-being, and/or their comfort levels of using their smartphones as a part of their breastfeeding experiences. These findings contribute to existing literature by offering a different approach to smartphone awareness.

A novel finding from this study is participants' perspectives about navigating their smartphone use deliberately to identify content they wanted to share about their breastfeeding experiences and with whom they felt the most comfortable sharing information with when online. This finding contrasts with the mothering literature where mothers were reporting perceived pressure and stress due to online social comparison of others parenting (Amaro, Joseph, & de los Santos, 2019; Meeussen & Van Laar, 2018; Padoa, Berle, & Roberts, 2018). Women in this study used vicarious virtual breastfeeding access to protect themselves from online social comparisons. Similarly, to the literature about mothering, study participants were wary about sharing personal breastfeeding information with unknown others, such as pictures of their infants; findings from other studies do not describe specifics about breastfeeding and smartphone use (Chalklen & Anderson, 2017; Kumar & Schoenebeck, 2015).

The women in this study used a critical and reflective approach (raising consciousness) to manage their smartphone use. This finding aligns with the literature that cautions about

informing parents of the implications of smartphone overuse, as well as the importance of role-modeling for children mindful smartphone use (Bauer et al., 2017; McDaniel, 2019; Kildare & Middlemiss, 2017; Saltzman et al., 2019). The participants were aware that smartphone use could both enhance their breastfeeding experiences, by leading to increased duration of breastfeeding, and serve as a distraction that sometimes positively or sometimes negatively affected their breastfeeding experiences.

Participants in this study reported using their smartphones more during or after their night feeds. Mothers stated smartphone use during the night helped them to stay awake during feeds, but affected their ability to fall back to sleep post-feed. When participants in this study noted sleep difficulties related to smartphone use they modified their usage and decreased its use at night. This finding mirrors the literature on smartphone use during night in the general population where individuals who used smartphones at night were more likely to experience insomnia, shorter sleep duration and overall poorer sleep quality (Bhat et al., 2018; Heo et al, 2017; Demirci, Akgonul & Akpinar, 2015).

Another novel finding from this study is the modification of smartphone use described by participants around their infants while breastfeeding. Mothers in this study reported that they reduced their smartphone use when breastfeeding, especially when their older infants were distracted by that smartphone use while awake during feeds.

Although screen time guidelines have been recommended for children (e.g. no screen time at all for children less than age of two), there are currently no national guidelines about adults' smartphone use, particularly within the context of parenting. Authors have suggested that it would be useful to recommend smartphone guidelines for parents (Kildare & Middlemiss, 2017). Research suggests that parents have internal conflicts about their mobile use, such as

cognitive overload (e.g. multitasking between work and child), and tension between the parent and child dyad (Radesky, et al., 2016). Furthermore, research has suggested that even the presence of smartphones during an intimate social setting can reduce connectedness, closeness and conversation quality in human relationships (e.g. having the phone on the table during mealtimes) (Przybylski & Weinstein, 2012). Recommendations to address these inner conflicts and how to balance spending time with their children and smartphone use may assist families to balance and be aware of these tensions. Another example of a guideline recommended to new parents by Kildare and Middlemiss (2017) would be to limit the use of smartphones in the presence of their children. Although on the surface this guideline may appear to be easy to implement, the authors acknowledge that because smartphones are embedded into our day to day lives, thus difficult to disentangle, implementing these guidelines may not be as easy as it seems.

In the subtheme vicarious virtual breastfeeding experiences, the study participants attributed smartphone use as an approach to overcome breastfeeding concerns (e.g. anxiety related to breastfeeding or nipple pain). This finding is a novel contribution to the literature as minimal exploration has looked at how vicarious online experiences using smartphones has enhanced breastfeeding experiences. The majority of study participants perceived that smartphones helped address common breastfeeding concerns through vicarious experiences, connecting with breastfeeding peers, and accessing breastfeeding information and resources.

Many of the participants described themselves as being ‘observers’ or ‘lurkers’ as they sought vicarious breastfeeding experiences of others on their smartphones. Participants used their smartphones while vicariously learning about others’ experiences to decide how much they wanted to present of themselves to the online world, such as observing how other mothers were treated online when sharing their breastfeeding journey. Participants discussed reducing their

smartphone use for vicarious breastfeeding experiences that would negatively impact their wellbeing by making them more anxious or worried about breastfeeding challenges. These novel findings contribute to the emergent literature of breastfeeding mothers' smartphone use.

Filtering online information that was shared by others on discussion boards, group chats, and websites was described by the participants as a part of their smartphone use. They acknowledged smartphones as having a potential for accessing bias or inaccurate information. This finding supports previous research where mothers reported that inaccuracy of breastfeeding information, such as unregulated discussion boards and social media postings, led to difficulty finding appropriate information and resources for breastfeeding support (Asiodu, Waters & Dailey, 2015; Regan & Brown, 2019).

The majority of the participants in this study used breastfeeding apps on their smartphones to track their feedings and record other information. Although this information may help clinicians understand feeding patterns and outcomes, the mothers highlighted feeling stressed at times, with some perceiving overuse and dependence on the feed tracking applications. I join other authors who are calling for further research to examine the accuracy, acceptability, and effectiveness of smartphone breastfeeding tracking apps (Couglin, 2016; Scott et al., 2015). For example, Scott and her colleagues (2015) studied the trustworthiness of maternal and child health apps. The study determined that only four out of ten apps had application development contributions from health professionals. Scott et al. (2015) reported that only three out of ten apps followed 'adequate' measures for adhering to data security and privacy guidelines for storing user data.

The mothers in my study stated a preference for downloading apps that were Canadian, American, or World Health Organization-based with the ability to convert between metric and

imperial inputs (e.g. weight kilograms to pounds). Participants' descriptions of breastfeeding tracking apps provide an example of mothers' appreciative awareness of their smartphone use.

5.2.2 The Role of Smartphones as a Breastfeeding Resource and a Support Network

Many study participants emphasized the importance of availability and accessibility of early breastfeeding information resources and support networks immediately in the postpartum period. Their emphasis on access to information and support concurs with other published research where women were more successful with breastfeeding when support was provided to them in the early postpartum period (Alberdi et al., 2018; Fox, McMullen & Newburn, 2015; Meedya, Fernandez & Fahy, 2017). Emerging literature examining healthcare providers' virtual breastfeeding support suggests that the more available virtual support is, the increased desire women have to access it (Connor et al., 2018; Gray, 2013; Schindler-Ruwisch et al., 2018). When searching for information on their smartphones, the women in this study identified a few deciding factors related to use of recommendations. They questioned whether they were local, realistic to follow, accurate, and from reliable sources.

Participants in this study reported similar online information-seeking behaviours to mothers in other studies, namely: in deciding factors to following online recommendations (Abuidhail et al., 2019; Connor et al., 2018; Marcon et al., 2019); and, in their transition to motherhood with their desire to feel normal and connected to others online (Bridges et al., 2018; Demirci, Caplan, Murray & Cohen, 2018; Johnson, 2015; Regan & Brown, 2019; Skelton et al., 2018).

Accessing social media through smartphone use was important for participants' breastfeeding experiences. They commonly used Facebook groups to access available information or to locate communities of mothers for peer support. Robinson, Lauckner, Davis,

Hall and Anderson (2019) similarly in their study reported that breastfeeding mothers were more likely to receive their primary breastfeeding support from their Facebook breastfeeding support groups rather than in person support. Furthermore, mothers used smartphones to socialize with family and friends, particularly during the night when they were breastfeeding. These findings contribute to the emerging literature on social media use by mothers. When compared to the general population, mothers' social media use is higher (Bridges et al., 2018).

Participants in this study often provided or sought emotional support from peers on their smartphones. Cowie, Hill and Robinson (2011) discussed similar findings in their content analysis of online discussion boards where mothers were more likely to seek emotional support compared to seeking advice from others. Additionally, Hall and Irvine (2009) conducted a qualitative descriptive study where they identified in their content analysis of e-communication among mothers that they used e-communication to seek and provide emotional support that normalized their mothering experiences.

In study interviews, a number of participants described connecting with mothers on their smartphones who they met at public health breastfeeding groups. Mothers described that their smartphones enhanced their abilities to maintain relationships arising from these groups for further breastfeeding support. These findings support the current literature about fostering supportive mother-baby communities online and in-person (Cowie et al., 2011; Price et al., 2018; Regan & Brown, 2019; Robinson, Davis, Hall, Lauckner, & Anderson, 2019). Breastfeeding support online and in-person were both reported to be valuable by participants and is congruent with previous research where mothers equally desired a combination of online and in-person support to enhance their breastfeeding experiences (Asiodu, Waters and Dailey, 2015; Ashton et al., 2014; Regan & Brown, 2019).

Other authors have argued that online peer support groups can be a space where mothers can connect and receive emotional support from fellow mothers as they seek out norms in the transition to motherhood (Johnson et al., 2015; Nolan et al., 2012). These findings in the literature fit with the findings in this study, where mothers reported using smartphones to seek emotional support and knowledge about breastfeeding. Additionally, participants conveyed the need by their support networks and healthcare providers to be realistic about the demands of breastfeeding. This finding is similar to the literature that states that women desire realistic and supportive information about breastfeeding (Hall et al., 2014; Leurer & Misskey, 2015; Redshaw & Henderson, 2012). Leurer and Misskey (2015) reported that women expected realistic information pertaining to breastfeeding challenges that they may face rather than breastfeeding education being focused on the 'benefits and joys of breastfeeding'. Hall et al.'s (2014) findings were similar; women described decreased self-confidence from challenging breastfeeding experiences that were in sharp contrast to their anticipated expectations about breastfeeding. Lastly, in the study conducted by Redshaw and Henderson (2012), mothers reported feeling like they were 'bad mothers' due to their perceived 'failures' of not being able to breastfeed, which stemmed partly from unrealistic expectations of what they anticipated breastfeeding would be like for them.

My study participants wanted healthcare providers who were 'tech-savvy' to assist them to find online avenues for information and to support when they were not able to physically see their healthcare providers. The examples the women shared of accessing YouTube videos and podcasts via their smartphones for breastfeeding content created by HCP emphasizes that women are already seeking online HCP content in addition to the individualized HCP care they received in-person.

My novel findings contribute to the literature by illuminating that smartphones encourage women to normalize the realities and demands of breastfeeding. Using smartphones to connect with other mothers can be reassuring and a realistic approach for breastfeeding women to be aware of the demands of breastfeeding and to know they are supported.

5.3 Nursing Implications

In this section, I discuss the implications for nursing: practice, education and future research based on my findings.

5.3.1 Implications for Nursing Practice

The findings from this study provide nurses and clinicians working with postpartum women valuable insight into the perceptions of breastfeeding women about smartphone use. Nurses can play a vital role in the development and promotion of credible and verified online resources and tools for women to support their breastfeeding experiences. Public health nurses have a unique role in the community to continue to advocate for enhanced maternal-child funding for breastfeeding initiatives. The lack of breastfeeding support and prenatal preparation cited in the study findings by the participants, highlights that different approaches are needed in Canada to provide mothers with information and support particularly in the early period of breastfeeding. Most participants in this study expressed concerns about finding appropriate local resources when they needed support in the early stages of breastfeeding. Accessing drop-in breastfeeding groups, enables mothers to form friendships with individuals who become their breastfeeding community by continuing to foster those relationships on their smartphones. Mothers in this study reported preferring to connect with others on their smartphones for breastfeeding support who they knew in person.

Other novel uses of smartphones that could be incorporated into nursing practice are appreciation of smartphones as sources of distraction, decreasing anxiety about breastfeeding, normalizing demands of breastfeeding, addressing breastfeeding obstacles, and seeking support from peers, friends, family and HCPs. Nurses and other HCPs can emphasize using smartphones to access discussion boards and forums for mothers that have been developed and maintained by national and international government or non-profit organizations.

Recommendations based on these study findings suggest that rather than 'blaming and shaming' new mothers regarding their smartphone use, approaching it with language that is supportive and related to mindful usage would be more beneficial. Nurses can consider helping in the development of breastfeeding resources that are accessed by smartphones, such as smartphone applications or smartphone friendly accessible websites.

Participants desired having more smartphone-based resources created by government organizations or recommended by their HCPs. This finding illuminates the importance of the Canadian healthcare system needing to come up to speed with patient population demands to access breastfeeding information and support on smartphones and online. Creating and promoting healthcare provider led online informational spaces could help mothers with appropriate and timely breastfeeding support. Increasing availability of safe online supportive spaces that are healthcare provider led may support women with limited in-person supports to meet their breastfeeding goals with reduced feelings of judgement by others (Mecinska, 2018; Regan & Brown, 2019). With more accessible and secure technology becoming available, it may be possible to have more HCPs, such as nurses, readily available to support breastfeeding women online and to be better equipped with tools and resources to support their breastfeeding experiences. While considering using online platforms to support families, it is crucial to balance

online, and in-person support based on mothers' perspectives in this study. Although participants in this study found online support valuable due to its increased accessibility, depending on the breastfeeding concern they had, they also described the importance and value of receiving breastfeeding support in person.

These findings underline the importance of clinicians keeping up-to-date on smartphone app use and appropriateness, especially when discussing resources with families around breastfeeding. When making recommendations to families about using apps, it is imperative for not only healthcare providers, but also government organizations to outline not only the benefits, but also to inform individuals about potential addictiveness of smartphone applications, privacy concerns and use of personal information by commercial app developers.

Another finding in this study with significant implications is related to mothers' description of the unavailability of HCPs for assistance with lactation, especially in the early postpartum period. It is possible that this part of their experience is linked to the cutbacks of public health funded breastfeeding clinics and mother-baby groups led by public health nurses. Due to funding cuts in these resources it may make it difficult for mothers to seek and connect in-person on a regular basis with a healthcare provider and other mothers (Canadian Broadcast Corporation, 2011; Public Health Agency of Canada, 2016). Participants' efforts to connect with support using their smartphones, particularly with health care providers, fits with the existing context by raising the question of the effects of the public health funding cuts. Mothers in this study were generally well-educated and supported, which makes it likely that they would be regarded as 'low risk'. The Canadian government has reduced services to 'low risk' mothers and prioritized resources to 'higher risk' families who need access to appropriate high-impact resources (Public Health Agency of Canada, 2016). Authors have indicated that little is known

about the impact of reduction in services to all families in Canada, particularly 'low-risk' first-time mothers (Ashton et al., 2014; Price et al., 2018). This small sample suggests that smartphone use is helping mothers overcome lack of access to funded resources.

5.3.2 Implications for Nursing Education

Understanding women's smartphone use in the context of their breastfeeding experiences is crucial for aligning mobile and internet-based options in the evolution of patient care and nursing education. Critically examining nursing education curriculum and pedagogy provides opportunities for nursing schools, and clinical nurse educators, to meet patient expectations for more tech-savvy nurses. Furthermore, the breastfeeding experiences, constraints, and needs reported in this study, can assist educators to highlight the importance of mothers' use of smartphones in training, workshops, and formal education. Those links will prepare nurses to provide resources and support that is readily accessible for patients and families when facing breastfeeding concerns. Ideally, information about online resources and tools (sustained by government organizations) for breastfeeding education and support will be identified and taught in nursing baccalaureate programs, nursing specialty certifications, and nursing professional development workshops. Using smartphones could be an innovative way for HCPs to support autonomous decision-making related to the myriad complexities of new parenthood from infant behavior, sleeping, and introduction of solids. Accessing HCPs and other forms of support via smartphones can be structured when facilitators, such as public health nurse home visits or drop-in mother-baby groups, may not be available to mothers to access in-person.

5.3.3 Implications for Nursing Research

This is one of the few qualitative studies exploring mothers' perceptions of smartphone use during breastfeeding. Further studies in Canada exploring smartphone use in different

populations (e.g. newly migrated women, rural Canadian mothers) can enhance our understanding about how to meet the needs of subsets of the population.

Additionally, my findings point to further research to create virtual smartphone breastfeeding resources catering to individual needs and led by healthcare providers. Trials could be used to evaluate the effectiveness of virtual breastfeeding resources led by healthcare providers compared to those commercially available including comparisons of breastfeeding indicators and outcomes, for example, complications, duration, parental self-efficacy, infant growth, and parent-infant bonding, to name a few. In my study, women expressed concerns about smartphone breastfeeding tracking applications, either, because they lacked user-friendliness, or they tended to overuse the application. There is opportunity to study how clinicians identify and discuss smartphone use in their practices, as well as making resources and information more accessible to breastfeeding mothers without overburdening them and their support systems. Mothers who were confined to their homes in the initial postpartum days used smartphones in this study to manage their isolation. This observation poses an opportunity to think about how, as nurses, we could better assist breastfeeding mothers using virtual visits and study its impact, to provide breastfeeding support. Some research has started to emerge on lactation consultants using websites to invite clients in a live online session or videoconferencing to review common breastfeeding topics and answer mothers' concerns; such an intervention would be worth exploring further in the Canadian context (Geoghegan-Morphet et al., 2014; Habibi et al., 2018).

Furthermore, exploring clinicians' attitudes, knowledge and skills about smartphone or web-based health technology related to breastfeeding is important to understand the barriers and facilitators in the implementation of online or virtual resources in the Canadian context.

Another area for further nursing research is related to smartphone feed tracking apps, participants in this study reported using them, but described many concerns surrounding app use as outlined in my findings. Further research is warranted to learn more about the benefits and concerns with using smartphone apps in maternal-child health, such as the accuracy of health information on apps, privacy concerns, patient's mental well-being and user-friendliness of apps.

Participants in this study reported smartphone use impacting their ability to fall asleep after night feeds, future research could be directed to study if smartphone use at night has any impact on breastfeeding and sleep. Additionally, studying the effects of smartphone use on maternal sleep quality and its impact on breastfeeding would also be worth examining in future research.

5.4 Strengths and Limitations

This qualitative study is the first of its kind conducted in British Columbia, Canada to study smartphone use in breastfeeding women. The women I interviewed came from a large geographic location in the Greater Vancouver Lower Mainland (Langley, Surrey, Richmond, North Vancouver, East/West Vancouver) and were equally balanced between primiparous and multiparous mothers. The methodology I used assisted me to approach the research area with a curiosity and openness to understand what is happening with this phenomenon of women's smartphone use during their breastfeeding experiences.

Thorne (2016) recommends that researchers consider incorporating additional 'subtle critiques' to increase the quality of the research being undertaken: moral defensibility, disciplinary relevance, pragmatic obligation, and contextual awareness.

Moral defensibility emphasizes that applied qualitative research findings should aim to generate knowledge that will serve a purpose to benefit and/or influence an aspect of society

(Green & Thorogood, 2014; Maxwell, 2013; Thorne, 2016). The purpose of this study's findings is to serve to better understand smartphone use perspectives among breastfeeding women as described in my findings section (Chapter 4).

Disciplinary relevance emphasizes that the findings have some influence or impact on advancing one's discipline, such as the nursing profession (Thorne, 2016). Pragmatic obligation refers to whether the findings are applicable to clinical practice. My findings have been situated and considered in relation to nursing implications in practice, education and research in this chapter. Contextual awareness emphasizes that the researcher appreciates the contextual state of the findings (Thorne, 2016). Thorne (2016) states that researchers should recognize that the findings of their study can change across context and are not fixed across the trajectory of time.

The limitations of my small study are outlined as well in this chapter. The findings of this study are limited to transferability due to the nature of qualitative research work, including the small sample size (Polit & Beck, 2018). Additionally, in ID research, the researcher understands that experiences are uniquely individualized and dependent on a variety of factors, including social and environmental contexts (Thorne, 2016). My background as a perinatal nurse may have influenced the findings in the interviews and interpretation of the findings. Thorne (2016) acknowledges this as a drawback in interpretative description, where researchers do not "bracket" their bias, but willingly accept that their experiences may influence the work they are conducting and the interactions with their participants. Another limitation to this study was the highly educated sample that I interviewed; ten out of the thirteen participants had a baccalaureate degree or postgraduate education degree, which may limit understanding of smartphone usage of breastfeeding women with other educational backgrounds. Additionally, the majority of the participants were 31 years old and older, so younger mothers' experiences of their smartphone

use was well represented in this study who may be more likely to engage in smartphone use. Unfortunately, no recently migrated women volunteered to participate in the study, so differences of smartphone use across mothers newly migrated to Canada could not be examined. Furthermore, this study was conducted in an urban Canadian setting, so experiences of rural Canadians were not explored. This limits the transferability of the study findings. Finally, because smartphone use in the breastfeeding experiences would vary, due to socioeconomic factors, internet access, or digital literacy, the nature of the results is constrained by the sample. The additional 'subtle critiques' above emphasized by Thorne (2016) to support the credibility of this study have been considered in the writing of my last two chapters.

5.5 Conclusion

In this chapter, I discussed the study findings and described the novel findings. I also outlined the contributions of the study to nursing, identifying implications to nursing practice, education and research and the study strengths and limitations. The study findings explored women's perceptions in navigating smartphone use during their breastfeeding experiences, which connected to their raised consciousness about using smartphones; using smartphones to access resources to grapple breastfeeding realities; enhancing their breastfeeding experiences through vicarious virtual breastfeeding experiences and searching for strength on their smartphones to support their breastfeeding.

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Appendices

Appendix A Recruitment Poster

Do you breastfeed?

We want to hear from you!

We are researchers from the University of British Columbia who are interested in learning about the experiences of breastfeeding women who use smart phones.

WHAT CAN I DO?

- Participate in ONE 1-1.5 hour interview.
- Receive a $25 gift card
- Share this poster with someone you know who may be interested in participating!

If you are interested in participating please contact:

Principal investigator: Dr. Suzanne Campbell
Co-Investigator: Thayanthi Tharmaratnam, UBC Master of Science in Nursing (MSN) student will be using this study for her MSN graduate thesis.
Version 1 March 2018

Appendix B Letter of Consent

PARTICIPANT INFORMATION AND CONSENT FORM

Title: Mothers' Perspectives on Using Smart Phones While Breastfeeding

Principle Investigator: Dr. Suzanne Campbell, University of British Columbia, School of Nursing

Co-Investigator: Thayanthi Tharmaratnam, UBC Master of Science in Nursing, Graduate student

What is the purpose of this study?
The purpose of this study is to explore the experiences of breastfeeding mothers using smart phones. This research is being conducted in part of my graduate thesis research that I am completing at UBC School of Nursing.

What will my participation involve for this study?
Your demographic data will be collected. You will be invited to participate in an audiotaped interview with the co-investigator to share your experiences of breastfeeding while using technology. The one interview time that will be conducted 1 to 1 and will be approximately one hour long. They will be conducted at a time and place that is the most convenient for you. You will a $25 gift card as an honorarium to thank you for your participation for your time for sharing your experiences.

Is participation voluntary?
Yes, it is your choice to take part in this study. If you wish to participate, you will be asked to sign this form. Even if you choose to participate, you are free to leave the study at any time without penalty.

Are they any potential risks by participating in this study?
We do not think that there is anything in this study that could be harmful to you. Some of the questions asked in the intervention might upset you. Please let the co-investigator know if you have any concerns. The research team can provide you with a list of local resources that can be assessed for free at any time of the day, every day if you feel distressed or anxious after the interview.

Are they any potential benefits by participating in this study?
There are no direct benefits by taking part in this study. The experiences that you share during the interview will add to emergent knowledge about technology use in breastfeeding women to help with future technology-based interventions for breastfeeding.

Study results: If you are interested to receive information about the results of the study, please fill out the attached page with your name and email address to receive a summary of the results.

How will your identity be protected? How will your privacy be maintained?
Your confidentiality will be respected. The interviews will be audio taped for transcription. Your personal information will not appear anywhere on the transcripts. All study documents will be identified only by code number (not your name) and kept in a locked filing cabinet. Your demographic data will be used only for the purpose for describing general characteristics of mothers participating in the study. Your identity will not be revealed in any reports of the study. Only the principle and co – investigators will have access to the personal, demographic and interview data. The data will be destroyed five years after the completion of the study.

Who should I contact if I have complaints or concerns about the study?
If you have any questions or further concerns about this study, please feel free to contact the principle investigator and co-investigator. If you have any concerns about your rights as a research participant and/or your experiences while participating in this study, you may contact UBC's Office of Research Services.

Consent to participate:
This study has been explained to me. I volunteer to take part in this research. I have been able to ask questions and know I can ask the researchers if I have questions about the research or my rights as described above. My signature below indicates that I consent to participate in this study and have received a copy of this consent form.

Signatures

_____	_____	_____
Printed name of participant	Signature	Date
_____	_____	_____
Printed name of investigator	Signature	Date

Would you like to receive a summary of the study results?

Yes __
No __

If you answered yes, please provide us with your contact information:
Name: _____
Email address: _____

Appendix C Interview Guiding Questions

Introduction
Review consent form. Confirm with participant understanding about study and that the interview will be audio recorded, review with participant procedure/interview process, what to do if feeling distressed during the interview, how the data will be used and what measures will be taken to ensure privacy and confidentiality. Request participant to refrain from using any names during the interview. Provide opportunity for participant to ask questions/concerns before starting interview. Give participant one copy of signed consent form and keep one copy for study records.

Research Question:

1. What are women's perceptions about using smartphones during their breastfeeding experiences?

Guiding questions:

1. Tell me about your breastfeeding experience. [preparation, class, search online, overall journey – ice breaker question]

2. In the first months of breastfeeding did you use your smartphone and, if so what purposes did your smartphone serve?

3. Has your smartphone provided you with any opportunities to connect with others during your breastfeeding episodes?

4. If you used your smartphone to access applications what types of applications have you used? Have you learned about any breastfeeding information through using a smart phone?

4. Do you find any instances challenging related to your smartphone during your breastfeeding experience? Could you tell me more about that?

5. Are there any questions I should have asked you that I did not ask? Do you have any other thoughts you'd like to mention or have any other questions for me?

Appendix D Demographic Survey

Screening question (prior to scheduling interview Q1, & Q1a)
1. Are you currently breastfeeding your infant?
Yes
No

1a. How long did you exclusively breastfeed for? (if previously answered no)

2. What year were you born?

3. What is the highest level of education that you have obtained
Some High School
Graduate High school
Some College/University
Bachelor's Degree
Graduate Degree (Masters/PhD, other professional degree)

4. How many children do you have?
1
2
3
4+

5. Which forms of social media do you use? [check all that apply]
Facebook
Twitter
LinkedIn
Pinterest
Instagram
Snapchat
Other

6. How many smart phone applications have you used related to breastfeeding?
0
1
2
3
4
5+

Appendix E Receipt of Honorarium

By signing this form, I confirm that I have received the $25 gift card honorarium for my participation in the Mothers' Perspectives on Using Smart Phones While Breastfeeding study.

_____	_____
Printed Name	Date
_____	_____
Signature of participant	Date
_____	_____
Signature of Interviewer	Date

Appendix F List of Resources

Resource List

Here is a list of resources that are available in the community that you can contact if you are experiencing any emotional and/or psychological distress. Some resources are specific to the postpartum period whereas other resources are more generalized.

BC Mental Health Information Line – 604-669-7600 24-7 pre-recorded information about various mental illnesses and mental health services in BC.

Distress Line Network of BC – 1-800-SUICIDE 24-7 crisis service for anyone that is suicidal, thinking about suicide or for concerned friends/family.

Fraser Health Support Services for Depression and Anxiety During Pregnancy or Postpartum Resources available through Fraser Health authority for women experiencing anxiety or depression during pregnancy or postpartum period. http://www.fraserhealth.ca/health-info/pregnancy-and-babies/depression-anxiety-pregnancy/supports-for-depression-and-anxiety/

HealthLinks BC Postpartum Depression This is a provincial website that provides information about postpartum depression. https://www.healthlinkbc.ca/health-topics/tn9653

Here to Help Provides additionally resources and information about postpartum depression. http://www.heretohelp.bc.ca/factsheet/postpartum-depression

Pacific Post Partum Support Society – 604-255-7999 Phone support, support groups, resources for those suffering with perinatal depression and/or anxiety.

Postpartum Depression Helpline – 1-800-944-4PPD The largest non-profit organization dedicated to eliminate denial and ignorance of mental health related to childbirth.

Reproductive Mental Health Program at BC Women's Hospital
Call BC Women's Hospital at 1-888-300-3088 ext. 2025 (toll-free in BC) or call 604-875-2025 (in Greater Vancouver) to find out how to see a specialist in postpartum depression or anxiety. You can also visit www.bcmhas.ca/ProgramsServices/ChildYouthMentalHealth/ProgramsServices/Reproductive+Mental+Health.

Self Care Program for Women with Postpartum Depression & Anxiety
This self-help manual authored by staff from BC Women's Hospital, is available as a free download and is meant to augment pre-existing treatment.
http://www.postpartumnh.com/upload/PPDSelfCareGuide.pdf