

Mount Saint Vincent University Department of Applied Human Nutrition

**Exploring the Experiences of People with ‘High-Risk’ Pregnancy and Prenatal Education
in Nova Scotia**

by Megan Churchill

A Thesis
Submitted in partial fulfilment of
the requirements for the degree of Master of Science in Applied Human Nutrition

September 2024

Halifax, Nova Scotia

©Megan Churchill

Mount Saint Vincent University

Department of Applied Human Nutrition

**Exploring the Experiences of People with ‘High-Risk’ Pregnancy and Prenatal Education
in Nova Scotia**

by Megan Churchill

Thesis Committee:

Shannan Grant, RD/PDt, MSc, Ph.D.

Thesis Supervisor

Associate Professor, Department of Applied Human Nutrition, Mount Saint Vincent University

Affiliate Scientist, Departments of Obstetrics & Gynecology and Pediatrics, IWK Health

Adjunct Professor, Department of Obstetrics and Gynecology and Department of Pediatrics,
Dalhousie University

Jillian Coolen, MD, FRCSC

Associate Professor, Department of Obstetrics and Gynaecology, Dalhousie University

Kathryn Hayward, MN

Senior Instructor, School of Nursing, Dalhousie University

Irene Ogada, RD, Ph.D.

Assistant Professor, Department of Applied Human Nutrition, Mount Saint Vincent University

Abstract

Title: Exploring the Experiences of People with ‘High-Risk’ Pregnancy and Prenatal Education in Nova Scotia

Authors (and Affiliations): Churchill M^{1,2}, BSc (Hons); Coolen J^{2,3}, MD, FRCSC; Hayward K³, MN; Ogada I¹, PhD, RD; Grant S^{1,2}, PhD, RD

¹ Mount Saint Vincent University, Halifax, Nova Scotia, Canada;
² IWK Health, Halifax, Nova Scotia, Canada; ³ Dalhousie University, Halifax, Nova Scotia, Canada

Background: Prenatal education provides important information to pregnant people, preparing them for birthing and postpartum. People with high-risk pregnancies may require additional information to ensure that both the parent and infant are healthy/safe. Currently, facilitated prenatal education in Nova Scotia is only widely available through privately owned businesses.

Objective: To explore the impact prenatal education has on birth experiences and infant feeding experiences while in the hospital, for those who had a high-risk pregnancy over the past year (January 2023 – January 2024).

Methods: A provincial questionnaire was administered to collect data on the effects of prenatal education on birth infant feeding experiences. The questionnaire was available online and contained both open- and closed-ended questions. The closed-ended data was analyzed descriptively; and open-ended data underwent content analysis by two trained reviewers.

Results: 35 women who had high-risk pregnancies completed this questionnaire. Respondents received care from a wide range of healthcare providers with the most common being obstetricians (n = 30), family doctors (n = 16), and nurses (n = 16). Respondents completed a variety of prenatal education (online: n = 18; in-person: n = 9) from various HCPs (doctor: n = 1; doula: n = 4; midwife: n = 1; physiotherapist: n = 1). Over sixty percent of respondents agreed that the prenatal education received helped them during (64.7%) and after birth (70.6%), however, 35.3% of respondents disagreed that the prenatal education they received made them feel ready for labour. Over half of the respondents developed a birth plan to help guide their labour and birth experience (67.6%) which 16 respondents agreed was followed (47.1%), however, respondents still disagreed that their birth plan aligned with their birth experience

(35.3%). After birth, nearly all respondents had skin-to-skin contact with their infant (85.3%), and similarly almost all respondents initiated infant feeding within 3 hours after birth (77.4%). Respondents planned to breast/chest feed their infant (n = 29), infant formula (n = 6) or feed their infant with expressed breast/ chest milk (n = 13). Respondents described their birth plans and birth experiences which were coded into following themes: doing parenthood, social determinants of health, risk modification as a responsibility, juxtaposition, and maternal agency.

Conclusion: This thesis highlights that everyone's birth experience is unique, no matter the prenatal education they received, and most of the time, was not what was expected. In the future, research should be conducted on patients' and HCPs opinions of targeted prenatal education for high-risk pregnancies, and barriers and facilitators to implementing targeted prenatal education.

Acknowledgements

First and foremost, I would like to thank my supervisor Dr. Shannan Grant for your continuous support and mentorship throughout my master's degree. The insight and opportunities you have provided me with throughout my time with the GrantLab have been remarkable. Thank you for not only the research, but also the life skills you have taught me over the past 3 years. I would also like to thank my committee members: Dr. Jillian Coolen, Dr. Irene Ogada, and Kathryn Hayward. Thank you for the time you have spent providing me feedback and guidance on this thesis. As well, thank you for your encouragement and enthusiasm with this project. Additionally, thank you to the past and present members of the Women's Health Communication Community of Practice for your support prior to and throughout this thesis.

Thank you to all the Grantlab members past and present. I always enjoyed our meetings and bouncing ideas off each other to ensure we are creating meaningful research projects. Special thank you to two lab members: Rachel Waugh and Laura Gosine. Thank you both for always being there, whether we needed to talk about our thesis project methods or life in general, you both were always a phone call away.

Thank you to all the professors who have helped me get to where I am today, especially Dr. Kyly Whitfield, Dr. Bohdan Luhovyy, Dr. Shannan Grant, Dr. Irene Ogada, Dr. Christine Cassidy, and Dr. Janet Curran. Thank you all for sharing your expertise and mentorship with me, I would not be where I am today without you all. Dr. Christine Cassidy, I look forward to our ongoing collaborations as I begin my PhD in Health under your supervision.

As well, thank you to the following organizations/institutions for funding my Master's of Science degree: the Canadian Institutes of Health Research through the Canadian Graduate Scholarship, the Applied Human Nutrition Department through the Catherine Anne Godwin Memorial Endowed Graduate Scholarship, and the Root to Succeed in Nutrition and Food Research Graduate Scholarship, and Mount Saint Vincent University, through the Graduate Merit Scholarship.

Thank you to my family, especially my husband Justin, parents Rebecca and Philip, brother Christopher, and best friend Abby, for supporting me throughout each step of my education, and celebrating each milestone with me. I would not be where I am today without each one of you.

Last and certainly not least, I would like to express my deepest gratitude to the women who shared their personal experiences with me for this thesis, with your help, we are working to improve the birthing experiences of women in Nova Scotia. Thank you.

Table of Contents

THESIS COMMITTEE:	2
ABSTRACT	3
ACKNOWLEDGEMENTS	5
ABBREVIATIONS	9
LIST OF TABLES	10
LIST OF FIGURES	11
1.0 INTRODUCTION	12
2.0 LITERATURE REVIEW	15
2.1 MATERNAL HEALTH	16
2.2 RISK	17
2.2.1 WHAT IS HEALTH RISK?	17
2.2.2 RISK ASSESSMENT	17
2.2.3 RISK MODIFICATION	18
2.2.4 RISK IN PREGNANCY	18
2.4.4.1 DEGREE OF RISK IN PREGNANCY	19
2.3 PRENATAL EDUCATION	19
2.3.1 PRENATAL EDUCATION DEFINED	19
2.3.2 WHAT PRENATAL EDUCATION IS AVAILABLE IN NOVA SCOTIA?.....	20
2.3.3 DIVERSE PRENATAL EDUCATION DELIVERY APPROACHES	21
2.3.4 HIGH-RISK PREGNANCY AND PRENATAL EDUCATION/CARE	23
2.4 LABOUR/BIRTH EXPERIENCES	23
2.4.1 PERINATAL DEFINED.....	23
2.4.2 PRENATAL EDUCATION’S EFFECT ON LABOUR/BIRTHING EXPERIENCES	24
2.4.3 HIGH-RISK PREGNANCIES EFFECT ON LABOUR/BIRTHING EXPERIENCES	25
2.5 POSTNATAL EXPERIENCES	25
2.5.1 POSTNATAL DEFINED.....	25
2.5.2 INFANT FEEDING INITIATION EXPERIENCES	25
2.5.4 HIGH-RISK PREGNANCIES EFFECT ON POSTNATAL EXPERIENCES.....	27
3.0 METHODOLOGY	29
3.1 RESEARCH PROBLEM/ RATIONALE	30
3.2 UNDERLYING FRAMEWORKS	30
3.2.1 CHRONIC CARE MODEL	30
3.2.2 SOCIO-ECOLOGICAL MODEL.....	31
3.3 DESIGN	33

3.4 SAMPLE.....	33
3.4.1 INCLUSION CRITERIA	33
3.4.2 SAMPLE SIZE	33
3.4.3 SAMPLING METHOD	34
3.5 STUDY OUTCOMES.....	34
3.6 RESEARCH QUESTION	34
3.7 PURPOSE AND OBJECTIVES.....	34
3.7.1 OBJECTIVE 1	34
3.7.2 OBJECTIVE 2.....	35
3.7.3 OBJECTIVE 3.....	35
3.8 QUESTIONNAIRE	35
3.8.1 QUESTIONNAIRE DEVELOPMENT	35
3.8.2 TYPES OF QUESTIONS AND RESPONSES	35
3.8.3 QUESTIONNAIRE ADMINISTRATION	36
3.9 DATA MANAGEMENT.....	36
3.10 ETHICAL CONSIDERATIONS.....	36
3.11 DATA ANALYSIS.....	37
<u>4.0 RESULTS</u>	<u>39</u>
4.1 DEMOGRAPHICS.....	40
4.2 PRENATAL AND BIRTH EXPERIENCES.....	42
4.2.1 BIRTH PLAN AND LABOUR/BIRTH EXPERIENCES	48
4.3 INFANT FEEDING EXPERIENCES	52
<u>5.0 DISCUSSION.....</u>	<u>56</u>
5.1 INDIVIDUAL	57
5.2 INTERPERSONAL	59
5.3 INSTITUTIONAL.....	59
5.4 COMMUNITY	62
5.5 STRENGTHS AND LIMITATIONS	63
5.5.1 STRENGTHS	63
5.5.2 LIMITATIONS	64
5.6 RECOMMENDATIONS FOR FUTURE RESEARCH.....	65
<u>6.0 CONCLUSION</u>	<u>66</u>
<u>6.0 REFERENCES</u>	<u>68</u>
<u>7.0 APPENDICES.....</u>	<u>81</u>
7.1 APPENDIX 1: QUESTIONNAIRE, LAST UPDATED DEC 19, 2023.....	82
7.2 APPENDIX 2: RECRUITMENT POSTER	91
7.3 APPENDIX 3: CONTENT ANALYSIS CODEBOOK.....	92
7.4 APPENDIX 4: CONTENT ANALYSIS DATA TABLES.....	93
7.5 APPENDIX 5: UPDATED CONTENT ANALYSIS CODEBOOK.....	108

7.6 APPENDIX 6: ONE WORD BIRTH EXPERIENCE DESCRIPTION.....109

Abbreviations

BFI	Baby-Friendly Initiative
BMI	Body Mass Index
CCM	Chronic Care Model
CI	Confidence Interval
cm	Centimeter
COVID-19	Coronavirus Disease of 2019
GD	Gestational Diabetes
HCP	Healthcare Provider
MSVU	Mount Saint Vincent University
NICU	Neonatal Intensive Care Unit
NSH	Nova Scotia Health
REB	Research Ethics Board
RR	Relative Risk
SEM	Socio-Ecological Model
SD	Standard Deviation
UREB	University Research Ethics Board
WHC CoP	Women's Health Communication Community of Practice
WHO	World Health Organization

List of Tables

Table 1. Common Physical Risk Factors During Pregnancy and their Associated Complications	19
Table 2. Privately Owned Prenatal Education Courses in Nova Scotia	21
Table 3. Respondent Demographics	41
Table 4. Prenatal Educations Effect on Birth Experiences	43
Table 5. Respondent Experiences During Birth	45
Table 6. Birth Plan	46
Table 7. Respondents Experience with Their Birth Plan	47
Table 8. Initiating Infant Feeding	53
Table 9. Respondents Plan During Pregnancy for Infant Feeding	54
Table 10. Information Regarding Infant Feeding	54

List of Figures

Figure 1. Overlapping of Socio-Ecological Model and Chronic Care Model	32
Figure 2. Words respondents used to describe their birth experience.	52

1.0 Introduction

Maternal health, the health of people during pregnancy, birthing, postpartum, is a unique time as it affects everyone¹. Throughout pregnancy, the pregnant person is providing nutrition and energy to the fetus, to support optimal growth and development²⁻⁴. During birthing, the health of the pregnant person may affect the method of birth [i.e., vaginal or caesarean section (c-section)]⁵⁻⁸. During postpartum, for people who are producing breast/chest milk, the health of the pregnant person can affect the nutrient status of the breast/chest milk⁹. Most pregnancies are considered “normal” pregnancies, however, approximately 8% of all pregnancies are considered high-risk^{10,11}.

Risk refers to the likelihood of an outcomes after an exposure^{12,13}. For example, drinking alcohol during pregnancy (exposure) can put the infant at risk for fetal alcohol syndrome (outcome). Therefore, a pregnancy is considered high-risk when negative exposures are present. Examples of complications (or outcomes) associated with high-risk pregnancies include gestational diabetes (GD), preeclampsia, and preterm labour¹⁴. Education can help reduce risks during pregnancy.

Prenatal education refers to education which is received during pregnancy, with the aim of providing support to new parents, provide knowledge on healthy pregnancies, and prepare parents for labor, birthing, and postpartum¹⁵⁻¹⁷. In 2014, Nova Scotia discontinued all in-person prenatal education classes and replaced them with an asynchronous online prenatal education course^{18,19}. Further, in 2018, the online prenatal education course was discontinued, leaving expectant parents to find alternative prenatal education options²⁰⁻²². High-risk pregnancies have different education needs than “normal” pregnancy and may have different birthing and/or postpartum experiences.

Previous research has shown that those who attend prenatal education classes have decreased fear of birth, pain during birth, and risk of postpartum depression²³. Moreover, people who complete prenatal education report labour and birthing experiences being similar to how they envisioned it²⁴. Further, it is known that those who complete prenatal education have a higher likelihood to initiate breast/chest feeding^{25,26}.

Even though approximately 8% of pregnancies are high-risk, research is limited on this population and whether prenatal education has an effect on birth and infant feeding experiences^{10,11}. Therefore, this thesis explored the impact of prenatal education on birth and infant feeding experiences within a high-risk pregnancy population.

This thesis is the second phase of a larger research project being completed by the Women's Health Communication, Community of Practice (WHC CoP), an interdisciplinary team of members from across Canada with the aim of supporting members in education, dissemination, and collaboration through sharing ways of knowing in pregnancy, birthing, and postpartum. The first phase of this research was a group rhetorical analysis of an online course (*Welcome to Parenting*) once offered by Nova Scotia Health (NSH). The current thesis explored people's experiences with prenatal education and its impact on birth and postpartum experiences.

2.0 Literature Review

2.1 Maternal Health

Maternal health refers to the health of a person during pregnancy, birthing, and postpartum. This is a unique period as maternal health affects everyone¹. The Developmental Origins of Health and Disease (DOHaD) suggests that a fetus' exposures in-utero can influence both their short- and long-term health¹.

During pregnancy, the pregnant person is providing nutrition and energy to support the growth and development of the fetus². For example, folate is important during early pregnancy (4-6 weeks gestation) for supporting the fetus' neural tube closing²⁷. Moreover, calcium and vitamin D are required for formation and mineralization of the fetus' bones, but also to maintain bone and dental health of the pregnant person^{3,4}. Calcium absorption in the small intestine doubles during pregnancy due to increased demand⁴. However, even though calcium absorption is doubled, calcium stores (in bones, including teeth) are utilized, potentially leading to weakened bone and dental health (however, the extent varies by individual)⁴.

The health of the pregnant person and fetus may help determine the method of birth (i.e., vaginal or c-section)⁵⁻⁸. A pregnant person may elect to have a c-section, or the fetus may have a significant drop in heart rate and the healthcare provider (HCP) may choose to perform an emergency c-section^{7,8}. Moreover, the health of the pregnant person may determine whether labour is induced or spontaneous²⁸. For example, the Society of Obstetricians and Gynaecologists of Canada (SOGC) recommends that people with a BMI greater than 40 kg/m² be induced between 39-40 weeks' gestation²⁸. This recommendation is due to the increased difficulty in monitoring the fetus caused by extra layers subcutaneous tissue^{28,29}.

During postpartum, maternal health continues to affect their infants' health. For people who are producing breast/chest milk, their health is important to produce nutrient dense milk to support their infant's growth and development. There are two groups of micronutrients found in breast/chest milk; the first group is affected by the person's food intake and is rapidly secreted into the breast/chest milk. These micronutrients include thiamine, riboflavin, vitamins B6, B12, A, and D, choline, selenium, and iodine⁹. The second group of micronutrients is unaffected by the person's food intake and is taken from their nutrient stores, then secreted into the breast/chest

milk (therefore, depletion of these affects only the person producing the breast/chest milk). These micronutrients include folate, calcium, copper, and zinc⁹. Moreover, protein is an important macronutrient for postpartum health as it is essential for wound healing^{4,30-32}. After birth, people may be recovering from vaginal and/or perineal tears, and c-section incisions. During this time, protein from the diet will aid in the synthesis of enzymes, and the creation of collagen, tissue, and cells^{4,33}.

2.2 Risk

2.2.1 What is Health Risk?

Risk is the likelihood of a negative/positive outcome following an exposure^{12,13}. An exposure can be physical (i.e., smoking), psychological (i.e., depression), or social (i.e., poverty)¹³. Moreover, exposures can be deliberate (conscious; i.e., smoking) or incidental (unconscious; i.e., food poisoning)¹². When a person is “at risk” for a health condition, this does not mean that the person is guaranteed to develop the condition, but due to the exposure, they have a higher likelihood. For instance, during the height of the COVID-19 pandemic, HCPs working in COVID-19 units, were at a greater risk of contracting COVID-19; this does not mean they were going to contract COVID-19 but they had a higher possibility than a HCP working with COVID-19 negative patients.

2.2.2 Risk Assessment

Risk assessment is a method of evaluating a person’s susceptibility to a risk¹². In general, when assessing risk in health, factors such as age, race, ethnicity, sex, and comorbidities will be taken into account¹². Many health professions have risk assessment tools they use to assess a patient’s risk³⁴⁻³⁷. For example, in dietetics the Nutritional Risk Screening 2002 (NRS-2002), Malnutrition Universal Screening Tool (MUST), or the Mini Nutritional Assessment (MNA) are common tools used to assess a patient’s nutritional status and determine their risk for malnutrition³⁴. Once patients are screened, if a patient is screened at risk, a tool such as the Subjective Global Assessment (SGA) is used to determine malnutrition status of the patient³⁴.

2.2.3 Risk Modification

Managing risk in health can be complex; therefore, many organizations, including Health Canada, have developed frameworks^{38,39}. Although, each framework is different, the overall goal is to maintain patient safety and health³⁸⁻⁴⁰. Health Canada initially developed a risk assessment and risk management framework in 1993, which was revised in 2000 due to the continually growing complexities of risk management³⁸. The risk assessment and risk management framework outline a series of steps that can be followed to facilitate the decision-making process³⁸. The steps in the framework include: (1) identify the issue and its context, (2) assess risks and benefits, (3) identify and analyze options, (4) select a strategy, (5) implement the strategy, and (6) monitor and evaluate results³⁸. The goal of the framework is to improve risk management decision-making in Canada³⁸.

In healthcare two risk management strategies include prevention and treatment. Prevention can include eliminating or avoiding negative exposures (i.e., preventing the disease before it occurs), detecting exposures and intervening (i.e., early detection of a disease), or limiting duration of exposure (i.e., reducing severity of a disease)^{41,42}. Treatment in risk management is used to decrease the severity or spread of disease⁴³. Treatment can take many forms such as medication (i.e., vaccination, intravenous, oral, or topical), supplementation (i.e., vitamin, mineral, electrolyte), physiotherapy, or in severe cases, surgery⁴⁴.

2.2.4 Risk in Pregnancy

The main goal in pregnancy is to maintain good health in both the pregnant person and the fetus. A pregnancy is considered high-risk when exposures (i.e. drinking alcohol, smoking during pregnancy) are present that increase the chance of negative health outcomes for pregnant person and/or fetus (during pregnancy) and infant (post-birth)¹⁴. Common physical risk factors and associated complications are outlined below in Table 1. Moreover, if a person had complications in a previous pregnancy, they are more likely to have the same complication in their next pregnancy (i.e., premature baby, miscarriage, small for gestational age infant, macrosomia, stillbirth, etc.)¹⁴.

Table 1. Common Physical Risk Factors During Pregnancy and their Associated Complications¹⁴

Physical Risk Factor	Associated Complication
Age (under 17 years)	Preeclampsia, Preterm labour, Anemia
Age (over 35 years)	Preeclampsia, GD, Labour Complications
BMI Below 18.5 kg/m ²	Small for Gestational Age Infant
BMI Above 25.0 kg/m ²	Macrosomia, GD, Preeclampsia, Stillbirth

BMI, Body Mass Index; kg, kilograms; m, meters; GD, Gestational Diabetes

This thesis focuses on high-risk pregnancies in relation to pre-, peri-, and postnatal education and experiences.

2.4.4.1 Degree of Risk in Pregnancy

A pregnancy is considered high-risk when the pregnant person has an increased chance of experiencing complications (for either themselves or the fetus)¹⁴. There is limited information on medium-risk pregnancies however, Elferink-Stinkens and colleagues⁴⁵ defined medium-risk pregnancies as those that have *all* the following characteristics: (1) diastolic blood pressure between 50-90 mmHg, (2) appropriate gestational age, (3) gestational age 37-42 weeks, (4) singleton pregnancy, (5) parental age between 20-35 years, (6) birthweight between 2500-6000 grams, and (7) fetus having vertex presentation. All other pregnancies are considered low risk. Typically, pregnancies are either classified as high-risk or low-risk⁴⁶⁻⁵⁰.

2.3 Prenatal Education

2.3.1 Prenatal Education Defined

The prenatal period begins at conception and ends when the infant is born¹⁵⁻¹⁷. Medically, there are three stages in the prenatal period: the germinal period (1-2 weeks' gestation), embryonic period (3-8 weeks' gestation), and fetal period (9-40 weeks' gestation)⁵¹. Pregnancy is a major life event, in which people are experiencing changes to their bodies daily, and are adjusting to parenthood^{52,53}.

Prenatal education aims to provide new parents with support, skills, and knowledge for a healthy pregnancy, and prepare for labor/birth and the postpartum period¹⁵⁻¹⁷. Prenatal education is often

facilitated by public health agencies, hospitals, midwives, or doulas and include topics such as prenatal care, changes within the body, birthing, mental health, and newborn care^{15-17,54,55}.

2.3.2 *What Prenatal Education is Available in Nova Scotia?*

In Nova Scotia, prior to 2014, all prenatal education classes were held in-person. Following the launch of Toronto Public Health's *Welcome to Parenting* virtual prenatal education class (2013), all in-person prenatal education classes in Nova Scotia, Canada, were replaced by the online course (2014)^{18,19}. Four years later, in 2018, the virtual prenatal education class was suspended²⁰⁻²². The suspension left people in their prenatal period searching other provinces for virtual prenatal education courses, or to view a list of links to prenatal education YouTube videos²⁰⁻²². Currently, a similar story remains; there is limited free prenatal education classes (in-person or virtual) for expectant parents to attend. Instead, expectant parents can visit the Nova Scotia Health website, where they will find a list of links to videos (posted to YouTube in 2018) on topics such as bathing an infant, breast/chest feeding, newborn care, postpartum vaginal birth, postpartum caesarean birth, and supplementing formula feeding²². In addition to the videos, there are links to websites where parents are able to read information (i.e. infographics, pamphlets)²². Nova Scotia does have Family Resource Centres that provide prenatal education for free, however, many people are unaware that these centres exist⁵⁶. Moreover, the Government of Nova Scotia website, which provides information on these Family Resource Centres has not been updated in over 10 years⁵⁶. Other prenatal education options include privately owned prenatal education courses for a fee (classes range from \$71 to \$460 Canadian)⁵⁷⁻⁶¹. Table 2 outlines privately owned prenatal education courses in Nova Scotia⁵⁷⁻⁶¹. Other provinces across Canada have a similar set up to Nova Scotia, with asynchronous online prenatal education websites to view, or privately owned prenatal education courses available for a fee^{62,63}. However, many provinces including Newfoundland, Alberta, and Prince Edward Island continue to offer in-person or online government funded prenatal education classes⁶⁴⁻⁶⁶.

Table 2. Privately Owned Prenatal Education Courses in Nova Scotia⁵⁷⁻⁶¹

Name	Price (CAD)	Credentials	Delivery Method
Beyond the Bump	\$349	Registered Nurse	Online
Birth, Baby, Sleep	\$71-142	Certified Childbirth Educator	Hybrid
Hello Baby Prenatal and Childbirth Education	\$250	Registered Nurse and Certified Childbirth Educator	In-person
Graceful Beginnings	\$235-253	Doula and Certified Childbirth Educator	Hybrid
Belle Vie Birth and Baby	\$200-460	Doula and Certified Childbirth Educator	Hybrid

Although currently there are different delivery approaches to prenatal education in Nova Scotia, it is not enough. The high prices of in-person or hybrid prenatal education classes may not be accessible to everyone. Moreover, the format for the free prenatal education resources (i.e., infographics, or pamphlets) may not be accessible for everyone either, as people may prefer to have hands-on, in-person learning environments. Additionally, a lot of the free prenatal education resources are older (5+ years old). Recently (August 2023), IWK Health launched a series of online videos for expectant parents to view to gain information on topics including wellness in pregnancy, birthing, and breast/chest feeding. This launch addressed the gap of up-to-date, government-funded prenatal education resources, however, did not address in-person prenatal education.

2.3.3 Diverse Prenatal Education Delivery Approaches

Globally, prenatal education classes take many forms. Prenatal education has been delivered through various approaches, such as in-person, online (synchronous or asynchronous), text messages, online (or hardcopy) workbooks, and phone applications^{16,17,67,68}.

The preferred prenatal education delivery approach varies by person. Kovala and colleagues¹⁵ surveyed 181 expectant parents on their preferred prenatal education delivery approach, 47.5%

of expectant parents stated they preferred in-person prenatal education classes, 37% stated they preferred a combination of in-person and online, 6.6% preferred online, and 8.8% had no preference. Similarly, Wright and colleagues¹⁶ surveyed 685 pregnant people. Findings showed that people significantly preferred non-electronic education (i.e., written information, face-to-face information) over electronic education ($t = 6.4, df = 563, p < 0.001$).

In contrast, other studies have reported on expectant parents that do prefer online education, such as an application or text messages. SmartMom, the first evidence-based mobile health (mHealth) prenatal education program in Canada, sends three text messages per week to expectant parents according to their gestational age¹⁷. Prior to the pilot of SmartMom, focus groups were conducted after viewing a printed copy of sample text messages¹⁷. People believed that the messages would enhance their knowledge of pregnancy and health, text messages were convenient, and that text messages could be a good way to provide support to people in rural and remote communities where physicians shortages are common¹⁷. However, people also believed that text messages would not meet their needs for social and emotional support¹⁷. A mobile application for prenatal education was piloted in a United States Community Hospital; people were randomized into two groups: prenatal education notebook (control group) or a prenatal education mobile application (intervention group)⁶⁷. Between 10-12 weeks' gestation there was no significant increase of usage between groups; however, at 16 weeks' gestation patients began to use the mobile application more than the notebook ($\chi^2(1119) = 9.38, p \leq .01$)⁶⁷.

In First Nation communities' people have significantly higher rates of GD, lower physical activity levels, and lower vegetable intake than people living in urban areas⁶⁹. Additionally, rates of attendance in prenatal education classes are low⁶⁹. A remote prenatal education program, Moms in Motion, including information on prenatal, peri-natal, and post-natal periods, and transitional knowledge on pregnancy, was created⁶⁹. Prior to the pilot of the remote prenatal education, approximately 36% of people participated in in-person prenatal education classes⁶⁹. Following the pilot, prenatal education participation rates increased to 54%⁶⁹. In addition to increased attendance, breast/chest feeding initiation rates also increased⁶⁹. In one of the participating communities, Sagkeeng, breast/chest feeding initiation rates increased from 23% to 67% ($p < 0.0001$) following the pilot of the prenatal education classes⁶⁹.

A variety of prenatal education delivery approaches need to be available and accessible to expectant parents to increase knowledge, skills, and support during pregnancy, birthing, and postpartum.

2.3.4 High-Risk Pregnancy and Prenatal Education/Care

Research is limited on high-risk pregnancy and prenatal education/care. People experiencing high-risk pregnancy have an increased risk of complications, therefore, prenatal education needs may be different than a person with a low-risk pregnancy^{46,50}. A mobile application was developed and piloted for expectant parents at risk of preterm birth⁴⁶. Twenty-eight participants with an increased risk of preterm birth tested the application; all respondents reported that they believed the application provided important and new information for expectant parents⁴⁶. Additionally, 94% of respondents reported that the application improved their knowledge on preterm births⁴⁶.

During COVID-19, interviews conducted with people experiencing a high-risk pregnancy reported negative emotions such as fear, stress, and anxiety of getting COVID-19, especially due to their pregnancy being classified as high-risk⁴⁷. Moreover, people had feeling of guilt as they missed prenatal visits due to fear of getting COVID-19, and blamed themselves for their high-risk pregnancy⁴⁷. Missing prenatal visits was used as a risk mitigation strategy for COVID-19, however, participants did not specify if they were given any information on risk mitigation strategies for pregnancy⁴⁷.

2.4 Labour/Birth Experiences

2.4.1 Perinatal Defined

According to the World Health Organization (WHO), the perinatal period refers to 23 weeks' gestation until 7 days after birth⁷⁰. However, for this thesis, the focus will be on the three stages of labour occurring during the perinatal period.

Labour is divided into three stages; labour, birth, and delivering the placenta⁷¹. Labour, the first stage, begins once regular contractions commence and concludes when the cervix is dilated to 10 cm⁷¹. This stage is the longest and can last up to 20 hours before being classified as prolonged⁷¹.

Birth, the second stage, begins with the cervix dilated to 10 cm, and concludes with the birth of the infant⁷¹. Typically, the birth stage lasts less than 3-4 hours, and if longer, is classified as prolonged⁷¹. Lastly, delivery of the placenta, the third stage, begins when the infant is born and concludes with the delivery of the placenta⁷¹. This stage is the shortest stage, lasting between 5-30 minutes, any longer than 30 minutes increases the persons' risk of postpartum hemorrhaging⁷¹.

2.4.2 Prenatal Education's Effect on Labour/Birthing Experiences

Previous systematic review and meta-analysis data has shown that expectant parents who attend prenatal education classes have a decreased fear of birth, decreased risk of postpartum depression, and decreased pain during labour²³. A systematic review and meta-analysis by Hong and colleagues⁷² reported that people who participated in prenatal education classes had a lower rate of c-section birth (relative risk, RR, 0.90; 95% confidence interval, CI, 0.82–0.99) and epidural use (RR, 0.84; 95% CI, 0.74–0.96)⁷². In addition, people who participated in prenatal education classes had improved stress and self-efficacy in relation to labour and birth⁷².

Interviews with expectant parents conducted by Metinoglu and colleagues²⁴ reported that all people who participated in prenatal education classes had labour and birthing experience as they envisioned. In contrast, only 18% ($n=3$) of people who did not participate in prenatal education had a labour and birthing experience as they envisioned²⁴. Additionally, all people who participated in prenatal education classes reported that they were able to control their pain, contraction, and fear of birth, compared to 35% ($n=6$) who did not participate in prenatal education classes²⁴. Similarly, Swift and colleagues⁷³ stated that 9.4% of participants ($n=3$) who completed prenatal education classes reported feeling fear of birth, compared to 15% of participants ($n=9$) who did not.

Research by Mueller and colleagues⁷⁴ has also shown that participating in prenatal education may have an impact on maternity outcomes. People who participated in prenatal education classes had lower rates of induction ($p = 0.0441$) and analgesic use ($p = 0.0006$) compared to those who did not participate in prenatal education classes⁷⁴. People who did not participate in

prenatal education classes had higher rates of elective inductions, large for gestational age infants, issues with fetal heart rate, and elective c-section⁷⁴.

2.4.3 High-Risk Pregnancies Effect on Labour/Birthing Experiences

Perinatal experiences, including high-risk pregnancies, have the possibility of having life-long psychological and social impacts on expectant parents and their families lives^{48,49}. People who experience pregnancy complications are more likely to perceive the birth as a negative experience⁷⁵. Research is limited on high-risk pregnancies and perinatal experience however, one study by Siguroardottir and colleagues⁴⁹ reported that 83.3% of people ($n=26$) who had a high-risk pregnancy found counselling provided by a midwife useful after birth. Additionally, 93.3% of people ($n=28$) also identified that they prefer the midwife to be part of their birth and postpartum care⁴⁹.

2.5 Postnatal Experiences

2.5.1 Postnatal Defined

The postnatal period is defined by the WHO as the first six weeks following birth, however, many different HCPs/researchers will define the postnatal period differently⁷⁶. The postnatal period is divided into three stages; acute postpartum, subacute postpartum, and delayed postpartum⁷⁷. Acute postpartum refers to the first 6-12 hours following birth, subacute postpartum refers 2-6 weeks post-birth, and delayed postpartum refers to 6 weeks to 6 months post-birth⁷⁷.

This thesis will focus on the acute postpartum and beginning of the subacute postpartum period, or the time spent in the hospital after giving birth.

2.5.2 Infant Feeding Initiation Experiences

The WHO, Health Canada, Dietitians of Canada, Canadian Paediatric Society, and Breastfeeding Committee for Canada recommend that infants be exclusively breast/chest fed for the first six months of life and continuing for up to two years and beyond, with the gradual addition of iron-rich complementary foods starting at six months^{78,79}. Moreover, it is recommended that both skin-to-skin contact is initiated immediately after birth, and breast/chest feeding is initiated

within one hour of birth⁸⁰. Skin-to-skin contact is thought to increase rates of breast/chest feeding initiation⁸¹⁻⁸⁴. In Nova Scotia, Canada, it was found that people who had skin-to-skin contact were over 4 times more likely to exclusively breast/chest feed their infant compared to those who did not (95% CI, 1.89-9.25)⁸². Moreover, those who had skin-to-skin contact were over 3 times more likely to be exclusively breast/chest feeding at discharge compared to those who did not (95% CI, 3.23-3.62)⁸².

Determinants of breast/chest feeding initiation within the first hour of birth were investigated among a Brazilian population⁸⁵. People who attended prenatal education classes and had a vaginal birth were more likely to initiate breast/chest feeding within the first hour of birth⁸⁵. Interestingly, people who had a higher education level, and a monthly family income greater than two minimum wages were less likely to initiate breast/chest feeding within the first hour of birth⁸⁵. Another potential determinant of breast/chest feeding initiation is anxiety and/or depressive symptoms⁸⁶. However, Fairlie and colleagues⁸⁶ reported that there is little evidence to support an association between anxiety/depressive symptoms and failure to initiate breast/chest feeding. In Fairlie's study, 81% of participants with depressive symptoms planned to initiate breast/chest feeding and only 4% failed to do so⁸⁶. Moreover, 19% of participants with depressive symptoms planned to formula feed their infant, and 33% of those participants chose to initiate breast/chest feeding after birth⁸⁶.

Although breast/chest feeding is recommended, some parents are unable to breast/chest feed their infant or choose to not⁸⁷⁻⁸⁹. In this case, infant formula, a commercially produced formula designed to meet the nutritional needs of an infant, is a safe alternative for infant nutrition^{79,90}. Reasons for formula feeding initiation include lack of breast/chest milk supply, busy schedules, insufficient infant growth, or formula feeding being the expected norm⁸⁷⁻⁸⁹. Appleton and colleagues⁸⁹ examined what influences formula feeding practices through semi-structured interviews. Participants stated that many HCPs do not provide education on how to select an appropriate formula, and therefore, they have to rely on the information on the infant formula container (such as ingredients and nutritional information) to choose an appropriate formula⁸⁹. Lastly, participants identified the following as sources of information for support on formula feeding: infant formula container, friends/family, internet/social media, other parents, and rarely

HCPs; respondents also identified that they would prefer to have more information given to them by HCPs⁸⁹.

Prenatal education and its effects on infant feeding (i.e., breast/chest feeding or feeding infant formula) has been researched globally^{25,26}. Huang and colleagues²⁵ evaluated the effects of an online breast/chest feeding education program. At baseline, there was no significant difference between respondents knowledge and attitudes towards breast/chest feeding²⁵. However, after the breast/chest feeding education intervention, participants who received the education had both increase breast/chest feeding knowledge and positive attitudes towards breast/chest feeding²⁵. Moreover, participants who received the breast/chest feeding education had higher rates of exclusive breast/chest feeding from hospital admission (48.3%) to 6 weeks' postpartum (26.7%), compared to respondents who did not receive the education (hospital admission, 38.3%; 6 weeks' postpartum, 20.0%)²⁵. In the United States, Kellams and colleagues²⁶ also evaluated the effects of an online prenatal breast/chest feeding education program. Interestingly, results contrasted those of Huang and Colleagues^{25,26}. Approximately 70% of people who participated in the online prenatal breast/chest feeding education initiated breast/chest feeding while in the hospital; the same percentage as people who did not participate in the prenatal education²⁶. Therefore, in this sample, prenatal breast/chest feeding education had no effect on breast/chest feeding initiation²⁶.

2.5.4 High-Risk Pregnancies Effect on Postnatal Experiences

Previous research has shown the potential of high-risk pregnancies affecting both infant feeding and maternal psychological health outcomes⁹¹⁻⁹⁴. Research by Scime and colleagues⁹¹ evaluated the association between high-risk pregnancies and breast/chest feeding outcomes. Researchers found that in this sample, experiencing a high-risk pregnancy did not affect the initiation of breast/chest feeding⁹¹. Almost all participants in the sample (97.4%) initiated breast/chest feeding after birth⁹¹. However, the severity of high-risk pregnancy was associated with both a shorter duration of breast/chest feeding⁹¹. Similarly, Goulding and colleagues⁹² evaluated breast/chest feeding outcomes among people with chronic hypertension. Results showed that almost all respondents (77.8%; $n=1124$) initiated breast/chest feeding, however at the six-week postpartum visit, breast/chest feeding rates had declined to 55.2% ($n=797$)⁹².

In addition to breast/chest feeding duration, high-risk pregnancies can affect people's postpartum psychological health. Hamidia and colleagues⁹³ examined the association between postnatal depressive symptoms and psychological distress of people who had a high-risk pregnancy during COVID-19. The prevalence of postnatal depressive symptoms was 85% ($n=35$); 28 of the 35 participants (80.0%) did not have any depressive symptoms during pregnancy⁹³. Additionally, post-traumatic stress disorder (PTSD) symptoms were seen in 12.2% ($n=5$) of the study population⁹³.

Other outcomes relevant to the health of people postpartum includes postpartum weight loss and return to work. However, most of the research on these topics do not explore high-risk pregnancies populations. This thesis will focus only on the effects of high-risk pregnancies and infant feeding experience during the postpartum period.

3.0 Methodology

3.1 Research Problem/ Rationale

Research is limited on prenatal education and high-risk pregnancies, especially its impact on birth experiences (such as pain, anxiety, method of birthing, and postpartum depression)^{23–26}, and infant feeding experiences (such as method of infant feeding). However, high-risk pregnancies account for approximately 8% of all pregnancies, and may need extra care (i.e., increased prenatal visits)/ have extra health needs/requirements (i.e., more than what is covered in a ‘typical’ prenatal education class)^{10,11,95,96}.

As such, the overall aim of this research was to explore the impact prenatal education has on birth experiences and infant feeding experiences in the hospital, for those who had a high-risk pregnancy over the past year (January 2023 – January 2024).

3.2 Underlying Frameworks

Two conceptual frameworks were foundational to and guided this work: 1) the chronic care model (CCM) and 2) the socio-ecological model (SEM)^{97–101}. Together, these frameworks aim to position patients as the centre of care, while recognizing that they live in complex environments that effect the impact of interventions^{97–101}. Described below are examples of how aspects of both frameworks have guided the development of the survey tool (questionnaire) and conceptualization of data.

3.2.1 Chronic Care Model

The CCM is a patient-centred model providing guidance on effective care, including improved functional and clinical outcomes, for people diagnosed with a chronic disease^{97,98}. Although the model was initially developed for people diagnosed with a chronic disease, the concepts outlined align with many other patient populations (e.g., women experiencing a high-risk pregnancy). Previously, this model has been applied to prenatal care for people experiencing a low-risk pregnancy¹⁰². Results indicated that people who played an active role in their pregnancy care had more positive experiences with their pregnancy, compared to those who did not¹⁰². The positive experiences are likely because they feel informed and in control of their experience¹⁰². Additionally, Glasgow and colleagues¹⁰³ report that in order for the CCM to be successful, patient education (content) must be adaptable per person. This concept is instrumental in this

thesis and is something especially important for high-risk pregnancies as each person's pregnancy may be different, and therefore, has different education needs¹⁰².

There are many elements within the CCM designed to promote patient-centred care including: build healthy public policy, create supportive environments, strengthen community action, self-management skills, delivery system design, decision support, information systems, activated community, informed activated patient, prepared proactive practice team, and prepared proactive community partners^{100,104}. The element delivery system design directly relates to the concept described above; prenatal education provided to people with high-risk pregnancies should be adaptable.

The thesis' questionnaire focuses on three of the six main elements within the CCM: delivery system design, decision support, and community. For example, the questionnaire asks questions associated with respondents' experiences giving birth and infant feeding (health system design), whether respondents were asked to consent to procedures, and if their birth plans were followed (decision supports), and their experiences with prenatal education and infant feeding (community).

3.2.2 Socio-Ecological Model

The SEM is a conceptual model developed to understand the factors influencing an individual's health^{99,101}. This conceptual model has been used in healthcare education including diabetes education, nutrition education, and physical education¹⁰⁵⁻¹⁰⁷. The SEM is depicted as a series of overlapping circles/ovals, each representing a "level" or system affecting the individual's health¹⁰¹. The first level is the individual level (i.e., the pregnant person themselves); the second level is the interpersonal level (i.e., the pregnant person's support system, such as a partner, family, or friends); the third level is the institutional level (i.e. IWK Health); the fourth level is the community level (i.e. prenatal education classes); and the fifth level is the policy level (i.e., IWK Health policies)¹⁰¹.

The SEM guided development this thesis and questionnaire by aiding in understanding/ positioning how all aspects of an individual's life can affect a person's health and access to

health care resources during pregnancy. Moreover, the SEM was used to support the conceptualization of data, for example, how language, ethnicity, and region where the person lives could affect prenatal education received, in turn, affecting birth experiences. By asking recently pregnancy people how their experience with prenatal education affected their birth and postpartum experiences, in combination with collecting demographic information, this thesis presents further insights into how social determinants of health affect experiences during pregnancy in Nova Scotia.

When used correctly, the CCM encompasses the SEM^{97-99,101}. Figure 1 highlights and aligns the components of the CCM within the SEM^{97-99,101}. The larger purple words are the components of the SEM, while the smaller orange words are the components of the CCM.

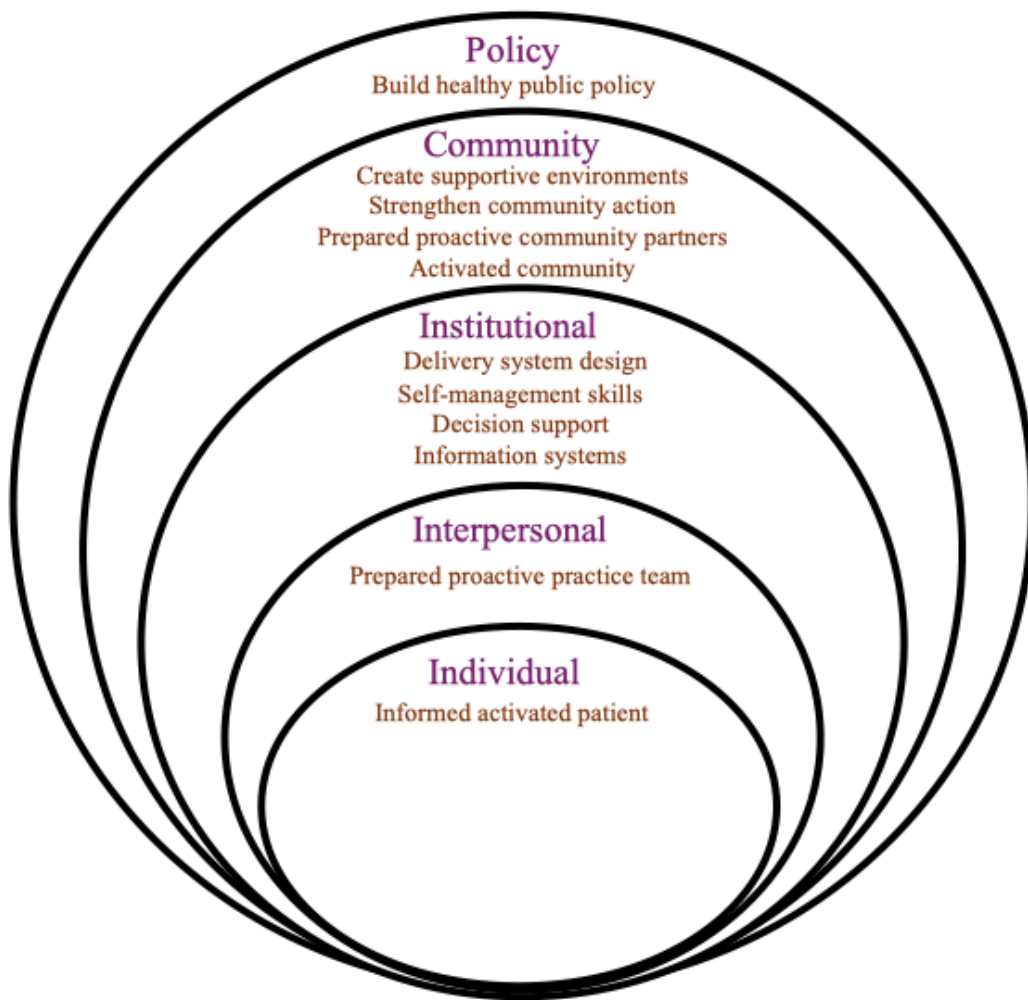


Figure 1. Overlapping of Socio-Ecological Model and Chronic Care Model

3.3 Design

This thesis used a descriptive, exploratory, cross-sectional design. The survey instrument used in this thesis was a questionnaire, containing mixed-form (both close-ended and open-ended) questions ([Appendix 1](#)). Respondents completed the questionnaire at a single point in time. Once the questionnaire closed, the data collected was analyzed. The findings from the questionnaire helped inform if/how prenatal education affected birth experiences and infant feeding initiation of people experiencing a high-risk pregnancy.

3.4 Sample

3.4.1 Inclusion Criteria

The inclusion criteria for this thesis were as follows:

- (1) Have given birth within the past year in Nova Scotia
- (2) Identify with having a high-risk pregnancy
- (3) Completed some form of prenatal education
- (4) 19 years and older
- (5) Is able to read and write in English
- (6) Willing and able to give informed consent

3.4.2 Sample Size

The sample size for this thesis was estimated using calculations and through reviewing previous survey research relating to birth experiences. Due to the lack of survey research on birth experiences, only two similar studies were located. The two study aims were to explore the effects of prenatal education on birth experiences and explore factors relating to negative birth experiences; the sample sizes were 212 people and 541 people, respectively^{108,109}. However, due to the population size in Nova Scotia, these sample sizes were deemed inappropriate. In 2022, approximately 7990 babies were born in Nova Scotia¹¹⁰. Moreover, approximately 8% of all births result in high-risk complications^{10,11}. Therefore, in Nova Scotia, approximately 640 births are considered high-risk. Based on this, a sample size of 65 respondents would be reasonable; this represents 10% of high-risk pregnancies in Nova Scotia. However, due to the exploratory nature and time frame of this research, it was decided that if the sample size of 65 respondents was not met, the study would close after 3 months.

3.4.3 Sampling Method

Nonprobability sampling, including convenience and snowball sampling was used for this thesis. Convenience sampling was used by distributing physical and digital copies of recruitment materials to organizations such as IWK Health, Association of Nova Scotia Midwives, Pelvic Floor and Pediatric Physiotherapists, and Family Resource Centres around Nova Scotia, for them to share with potential respondents such as their clients, and posting recruitment materials on social media (i.e., Facebook, Instagram, Twitter; [Appendix 2](#)). Snowball sampling was used through word of mouth.

3.5 Study Outcomes

The primary outcome for this research was the effect of prenatal educations on birth experiences.

The secondary outcome was prenatal educations effect on infant feeding experiences in the hospital.

3.6 Research Question

How does prenatal education affect birth experiences and infant feeding experiences for people who had a high-risk pregnancy?

3.7 Purpose and Objectives

To explore and describe how prenatal education affects birth experiences and infant feeding experiences in hospital for people who had a high-risk pregnancy.

3.7.1 Objective 1

Update a previously drafted questionnaire, by the Women's Health Communication Community of Practice, to survey people who had a high-risk pregnancy to explore and describe how prenatal education affected their birth experiences and infant feeding experiences in hospital.

1a: Update a questionnaire, based on recent literature.

1b: Incorporate feedback from the WHC CoP and graduate student's thesis committee on drafts of the questionnaire.

3.7.2 Objective 2

Administer the questionnaire to survey people who had a high-risk pregnancy over the past year to explore and describe how prenatal education affected their birth experiences and infant feeding experiences in hospital.

2a: Input questionnaire onto LimeSurvey

2b: Recruit people to complete the questionnaire on LimeSurvey.

2c: Collect data for 3 months^{15,16,111-115} or until a sample size of 65 people is achieved^{10,11,108,109}.

3.7.3 Objective 3

Analyze and report data from the questionnaire on people who had a high-risk pregnancy and how prenatal education affected their birth experiences and infant feeding experiences in hospital.

3a: Describe and analysis respondents experiences with prenatal education and its effects on birth and infant feed experiences in the hospital.

3.8 Questionnaire

3.8.1 Questionnaire Development

The questionnaire used was previously developed and face and content validity were completed prior to this thesis. The questionnaire was developed through meetings/discussion with members of the WHC CoP. Drafts were circulated with members and feedback was provided on questions until consensus was achieved. Next, the questionnaire was face and content validated by fifteen participants including HCPs, academics, and trainees. Participants provided feedback on the layout of the questionnaire, and the questions. The questionnaire was then updated based on the feedback provided.

3.8.2 Types of Questions and Responses

This thesis used an online questionnaire as the data collection tool. The questionnaire consisted of both close-ended and open-ended questions. Close-ended questions consists of multiple-

choice questions, dichotomous questions, ranking, and scales (such as Likert scales)¹¹⁶. Close-ended questions were used to collect data on respondent demographics, and their experiences with prenatal education, birth experiences, and infant feeding experiences in the hospital. Open-ended questions allow respondents to respond with their own words and are used to supplement the close-ended questions¹¹⁷. Open-ended questions were used to survey people who had a high-risk pregnancy on how they describe their birth experiences and experiences with infant feeding experiences in the hospital, using their own words.

3.8.3 Questionnaire Administration

The questionnaire was administered online using LimeSurvey, an online website which hosts questionnaires locally^{118,119}. At Mount Saint Vincent University (MSVU), LimeSurvey hosts the questionnaires on servers located on campus at MSVU^{118,119}. The questionnaire was live for three months. Three months was chosen based on previous literature recruitment timeframes examining people during their pregnancy and/or postpartum period^{15,16,111–115}.

3.9 Data Management

As respondents completed the questionnaire, all responses were recorded on LimeSurvey, which stored data on servers at MSVU in Halifax, Nova Scotia, Canada^{118,119}. Once the questionnaire closed, data was downloaded and stored on a password protected MSVU OneDrive account, to which only the graduate student and thesis supervisor had access. Moreover, data was backed up onto a password protected computer located in the Sheila A Brown Centre from Applied Research at MSVU in the GrantLab, to which only the graduate student had access. All study data will be kept for five years after study closure at which point the files will be permanently deleted.

3.10 Ethical Considerations

Prior to administering the questionnaire UREB approval was obtained (REB # 2023-094). Those who completed in the questionnaire were asked to consent. Information on the consent form included an overview of the thesis, eligibility criteria, what is required to complete the questionnaire, data management information, and contact information for myself. It also stated that all personal information will be de-identified and confidentiality will be maintained.

This questionnaire asked questions related to pregnancy, birth, and postpartum experiences; therefore, it is important to consider that the questions asked, or the answers provided by respondents may have brought up memories associated with birth trauma and/or traumatic experiences during pregnancy. Therefore, resources were provided to respondents on LimeSurvey, developed by Dr. Dayna Lee-Baggley, Clinical Psychologist and member of the WHC CoP ([Appendix 1](#)).

3.11 Data Analysis

Data analysis was mixed format as the questionnaire contained both open- and closed-ended questions.

For the closed-ended questions, data analysis was conducted using Microsoft Excel and IBM SPSS (Version 27). Due to the exploratory and inductive nature of this thesis, data analysis for the closed ended questions was descriptive, including counts, percentages, means, and standard deviations (SD).

For the open-ended questions, deductive content analysis was completed. Two open-ended questions were analyzed; the questions were: 1) Describe your birth plan, and 2) Describe your birth experience. Due to time limitations, only two open-ended questions were chosen for analysis. These two questions were chosen as they best supplement the closed-ended questions, as many respondents had detailed answers for these two questions. Another reason these two questions were chosen was based on the graduate student's interest in understanding participants birth experiences. The data was coded using a codebook created during the first phase of the larger research project with the WHC CoP. The first phase of this research was a group rhetorical analysis of an online course (*Welcome to Parenting*) once offered by Nova Scotia Health (NSH). Members of the WHC CoP reviewed the online course and answered the following questions: 1) Describe what you think about the content and formatting, 2) Describe how the content and formatting presented makes you feel, and 3) Describe the actions you will take after interacting with this material. Next, inductive thematic analysis was used to identify themes based on the reviewers' responses and a codebook was finalized ([Appendix 3](#)). Content analysis for the current project used the following procedure: the graduate student cleaned the data and created a

data table for each question ([Appendix 4](#)). Next, two independent reviewers (the graduate student and their supervisor) coded the respondent responses using the Group Rhetorical Analysis codebook. Lastly, the two reviewers met to discuss codes and reach consensus on the final codes. Content analysis was completed using Microsoft Word.

4.0 Results

4.1 Demographics

A total of 35 respondents completed this questionnaire. Respondents were from across Nova Scotia, with 22 respondents living in Central Zone ($n = 22$, 62.9%), 1 in Eastern Zone ($n = 1$, 2.9%), 4 in Northern Zone ($n = 4$, 11.4%), and 8 in Western Zone ($n = 8$, 22.9%). Most respondents were Western European ($n = 27$; 79.4%), one was Southeast Asian ($n = 1$, 2.9%), one was Indian ($n = 1$, 2.9%), and one was Indigenous ($n = 1$, 2.9%); the remaining five respondents chose to not answer the question ($n = 5$, 14.3%). Additionally, 34 respondents were born in Canada ($n = 34$; 97.1%), and one was not ($n = 1$, 2.9%). Most respondents spoke English in their home ($n = 33$), one respondent spoke English, Italian, and Portuguese ($n = 1$, 2.9%), and one respondent spoke Visayan ($n = 1$, 2.9%). All respondents were female ($n = 35$, 100%). The average age of respondents during their last, or most recent pregnancy was 30.9 ± 4.8 years, ranging from 19 to 39 years old.

During the respondents last, or most recent pregnancy, 32 respondents identified having a spouse/partner as a support person ($n = 32$), 19 respondents identified having a family member and/or friend ($n = 19$), and 17 respondents having a HCP ($n = 17$). One respondent identified not having a support person ($n = 1$). Sixteen respondents had one previous pregnancy ($n = 16$, 45.7%), 11 respondents had two ($n = 11$, 31.4%), 4 respondents had three ($n = 4$, 11.4%), 1 respondent had four ($n = 1$, 2.9%), and 3 respondents had 5 or more previous pregnancies ($n = 3$, 8.6%). Most respondents had 1 previous birth ($n = 26$, 74.3%), 7 respondents had 2 ($n = 7$, 20.0%), and 2 respondents had 4 previous births ($n = 2$, 5.7%). During respondents last, or most recent birth, they were in the hospital for an average of 2.2 ± 1.3 days, ranging from 0.5 to 5 days, with a median of 2 days. As for their baby, the average length of stay was 3.9 ± 4.6 days, ranging from 0.5 to 21 days, with a median of 2 days. Three infants had a length of stay longer than 10 days, which were: 21 days, 18 days, and 11 days. Prenatal HCPs included obstetricians ($n = 30$), family doctors ($n = 16$), midwives ($n = 3$), doulas ($n = 5$), nurses ($n = 16$), and physiotherapists ($n = 1$). See Table 3 for all demographic data.

Table 3. Respondent Demographics (n = 35)

Characteristic	n (%)
Region living	
Central Zone	22 (62.9)
Eastern Zone	1 (2.9)
Northern Zone	4 (11.4)
Western Zone	8 (22.9)
Ethnic Group	
Western European	27 (79.4)
Southeast Asian	1 (2.9)
Indian	1 (2.9)
Indigenous	1 (2.9)
No Answer	5 (14.3)
Born in Canada	
Yes	34 (97.1)
No	1 (2.9)
Languages Spoke at Home*	
English	33
Visayan	1
Italian	1
Portuguese	1
Gender	
Female	35 (100)
Age During Last Pregnancy (average \pm SD; years)	30.9 \pm 4.8
Support During Pregnancy*	
Spouse/Partner	32
Family member/ Friend	19
Healthcare Provider	17
No one	1
Previous Pregnancies	
1	16 (45.7)
2	11 (31.4)
3	4 (11.4)
4	1 (2.9)
5 or more	3 (8.6)
Previous Births	
1	26 (74.3)
2	7 (20.0)
3	0 (0.0)
4	2 (5.7)
5 or more	0 (0.0)
How Long Mom Was in Hospital (average \pm SD; Days)	2.2 \pm 1.3
How Long was Baby in Hospital (average \pm SD; Days)	3.9 \pm 4.6
Healthcare Providers During Pregnancy*	
Obstetrician	30
Family Doctor	16

Midwife	3
Doula	5
Nurse	16
Physiotherapist	1

n = number of respondents; SD = standard deviation; * Respondents could choose multiple answers

4.2 Prenatal and Birth Experiences

Respondents completed prenatal education in various formats including online ($n = 18/34$) and in-person ($n = 9/34$); 6 respondents did not specify whether their prenatal education was online or in-person ($n = 6/34$). Additionally, prenatal education was conducted by a variety of health and wellness providers including a doctor ($n = 1/34$), doulas ($n = 4/34$), a midwife ($n = 1/34$), a physiotherapist ($n = 1/34$), and a yoga instructor ($n = 1/34$). Lastly, prenatal education was held by a variety of organizations/companies including IWK Health/Nova Scotia Health ($n = 7/34$), Birth, Baby, Sleep ($n = 3/34$), Baby Academy ($n = 1/34$), community resource centres ($n = 5/34$), and a local mom's group ($n = 1/34$).

Respondents were asked if the prenatal education they received helped them during and after birth and helped them feel ready for labour (Table 4). Of 34 respondents, 9 strongly agreed that the prenatal education they received helped them during birth ($n = 9/34$, 26.5%), 13 respondents agreed ($n = 13/34$, 38.2%), 4 respondents neither agreed nor disagreed ($n = 4/34$, 11.8%), 3 respondents disagreed ($n = 3/34$, 8.8%), and 5 respondents did not answer the question ($n = 5/34$, 14.7%). Additionally, 7 respondents strongly agreed that the prenatal education they received helped them after birth ($n = 7/34$, 20.6%), 17 respondents agreed ($n = 17/34$, 50.0%), 3 respondents neither agreed nor disagreed ($n = 3/34$, 8.8%), 2 respondents disagreed ($n = 2/34$, 5.9%), 1 respondent strongly disagreed ($n = 1/34$, 2.9%), and 4 respondents did not answer ($n = 4/34$, 11.8%). Lastly, 5 respondents strongly agreed that the prenatal education they received made them feel ready for labour ($n = 5/34$, 14.7%), 9 respondents agreed ($n = 9/34$, 26.5%), 4 respondents neither agreed nor disagreed ($n = 4/34$, 11.8%), 8 respondents disagreed ($n = 8/34$, 23.5%), 4 respondents strongly disagreed ($n = 4/34$, 11.8%), and 4 respondents did not answer ($n = 4/34$, 11.8%).

Table 4. Prenatal Educations Effect on Birth Experiences ($n = 34$)

Question	Strongly Agreed [n(%)]	Agreed [n(%)]	Neither Agreed nor Disagreed [n(%)]	Disagreed [n(%)]	Strongly Disagreed [n(%)]	No answer [n(%)]
The prenatal education I received helped me during birth	9 (26.5)	13 (38.2)	4 (11.8)	3 (8.8)	0 (0.0)	5 (14.7)
The prenatal education I received helped me after birth	7 (20.6)	17 (50.0)	3 (8.8)	2 (5.9)	1 (2.9)	4 (11.8)
The prenatal education I received made me feel ready for labour	5 (14.7)	9 (26.5)	4 (11.8)	8 (23.5)	4 (11.8)	4 (11.8)

n = number of respondents

Next, respondents were asked if they loved their birth story (Table 5); 6 respondents strongly agreed ($n = 6/34$, 17.6%), 12 respondents agreed ($n = 12/34$, 35.3%), 4 respondents neither agreed nor disagreed ($n = 4/34$, 11.8%), 7 respondents disagreed ($n = 7/34$, 20.6%), and 5 respondents strongly disagreed ($n = 5/34$, 14.7%). Moreover, respondents were asked if they were asked to consent to each procedure they received related to their birth (Table 5). Most respondents strongly agreed ($n = 16/34$, 47.1%), or agreed ($n = 10/34$, 29.4%), however, 1 respondent neither agreed nor disagreed ($n = 1/34$, 2.9%), 6 respondents disagreed ($n = 6/34$, 17.6%), and 1 respondent strongly disagreed ($n = 1/34$, 2.9%). Interestingly, all respondents who had a midwife providing prenatal care during pregnancy to them strongly agreed that they were asked to consent to each procedure ($n = 3$). Similarly, the respondent who indicated that a physiotherapist provided prenatal care to them agreed that they were asked to consent to each procedure ($n = 1$). Additionally, most respondents who had an obstetrician provide care to them strongly agreed or agreed that they were asked to consent to each procedure ($n = 21/29$). Lastly, respondents were asked whether they thought their birth was traumatic (Table 5). Fourteen respondents strongly agreed ($n = 9/34$, 23.7%) or agreed ($n = 5/34$, 14.7%), similarly, 14 respondents disagreed ($n = 7/34$, 20.6%) or strongly disagreed ($n = 7/34$, 20.6%); 6 respondents neither agreed nor disagreed ($n = 6/34$, 17.6%).

Table 5. Respondent Experiences During Birth ($n = 34$)

Question	Strongly Agreed [$n(\%)$]	Agreed [$n(\%)$]	Neither Agreed nor Disagreed [$n(\%)$]	Disagreed [$n(\%)$]	Strongly Disagreed [$n(\%)$]
I love my birth story	6 (17.6)	12 (35.3)	4 (11.8)	7 (20.6)	5 (14.7)
I was asked to consent to each procedure I received related to my birth	16 (47.1)	10 (29.4)	1 (2.9)	6 (17.6)	1 (2.9)
My birth was traumatic	9 (26.4)	5 (14.7)	6 (17.6)	7 (20.6)	7 (20.6)

n = number of respondents

Of 34 respondents, 23 of them had developed a birth plan ($n = 23, 67.6\%$). Respondents developed their birth plans with a variety of people/sources including their spouse/partner ($n = 16$), family member or friend ($n = 4$), obstetrician ($n = 4$), family doctor ($n = 1$), midwife ($n = 3$), doula ($n = 6$), nurse ($n = 5$), online resources ($n = 2$), or no one ($n = 6$; Table 6).

Table 6. Birth Plan ($n = 34$)

Question	<i>n</i> (%)
Birth plan	
Yes	23 (67.6)
No	11 (32.4)
Who helped develop the birth plan*	
Spouse/ Partner	16
Family/ Friend	4
Obstetrician (birth doctor)	4
Family Doctor	1
Midwife	3
Doula	6
Nurse	5
Online resources	2
No one	6
No answer	3

n = number of respondents; * Respondents could choose multiple answers

Respondents who had a birth plan were asked whether their birth plan was followed or not (Table 7). Eleven respondents did not answer this question as they did not have a birth plan. More respondents strongly agreed ($n = 4/23, 17.4\%$) and agreed ($n = 12/23, 52.2\%$), while 3 respondents neither agreed nor disagreed ($n = 3/23, 13.0\%$), 3 respondents disagreed ($n = 3/23, 13.0\%$), and 2 respondents strongly disagreed ($n = 1/23, 4.3\%$). Respondents were then asked if their birth plan aligned with their birth experience, 5 respondents strongly agreed ($n = 5/23, 21.7\%$), 4 respondents agreed ($n = 4/23, 17.4\%$), 3 respondents neither agreed nor disagreed ($n = 3/23, 13.0\%$), 7 respondents disagreed ($n = 7/23, 30.4\%$), and 4 respondents strongly disagreed ($n = 4/23, 17.4\%$; Table 7). Although most respondents strongly agreed and agreed that their birth plan was followed ($n = 16/23, 69.6\%$), interestingly, many respondents disagreed and strongly disagreed that their birth plan aligned with their birth experience ($n = 11/23, 47.8\%$). This shows that, in this sample, even with a birth plan, the birth experience will not always go as expected.

Table 7. Respondents Experience with Their Birth Plan ($n = 23$)

Question	Strongly Agreed [<i>n</i>(%)]	Agreed [<i>n</i>(%)]	Neither Agreed nor Disagreed [<i>n</i>(%)]	Disagreed [<i>n</i>(%)]	Strongly Disagreed [<i>n</i>(%)]
My birth plan was followed	4 (17.4)	12 (52.2)	3 (13.0)	3 (13.0)	1 (4.3)
My birth plan aligned with my birth experience	5 (21.7)	4 (17.4)	3 (13.0)	7 (30.4)	4 (17.4)

n = number of respondents

4.2.1 Birth plan and labour/birth experiences

Two open-ended questions describing respondents birth plans and labour/birth experiences were analyzed using deductive content analysis. The respondents' quotes were coded using a previously developed codebook from the first phase of the larger research project, the group rhetorical analysis (overview provided in [Section 3.11 Data Analysis](#)). Findings were coded into four main **themes** (*subthemes*): (1) doing parenthood (what to expect when you're expecting?, perpetuating norms, and reinforcing expert/ big brother), (2) social determinants of health (social support and coping skills, access to health services, and education and literacy), (3) risk modification as a responsibility, and (4) juxtaposition (missing information, and lack of empathy or compassion). Based on the responses respondents provided, one final theme (subthemes) was proposed to be added to the codebook: maternal agency (opinions and flexibility, and control) (see [Appendix 5](#) for the re-purposed codebook).

When respondents described their birth plan, they spoke to the theme **doing parenthood**. Doing parenthood relates to the idea of being a “good” or “bad” parent. One prominent sub-theme identified in respondent answers was *perpetuating norms*, specifically related to c-sections. For example, one respondent stated “*I do think that I would have opted for a c-section straight out of the gate if I had a do over. With all the anti-section information I received prepeg, I forgot how risky delivery is. We almost died.*” – Respondent 3. This respondent identified that they heard negative information related to c-sections which made them think that the best option for birthing is vaginally. However in their case, a vaginal birth was very risky and almost resulted in mortality. Therefore, c-sections can be the best option for some people, for risk reduction.

While some respondents did share stories regarding their birth plans, other respondents provided bullet point lists detailing their birth plan. Examples of details included preferences around induction, water breaking, epidurals (and other pain medications), birthing positions, mechanical birthing interventions, umbilical cord cutting/cord clamping, skin-to-skin contact, breastfeeding, and bathing the infant after birth. These bullet point lists relate to the sub-theme, *what to expect while you're expecting*.

One of the factors related to the **social determinants of health** is *access to health services*¹²⁰, a prominent theme identified in respondent responses. One respondent described “*I wanted to be provided explanations for all procedures and drugs.*” – Respondent 6. This respondent is describing how she wanted access to information related to her birth, such as the reasoning behind the procedures (e.g. manual water breaking, fetal heart monitoring) and medications (e.g. oxytocin, epidural) she was being offered/provided. Other respondents described access to health services, relating to how they completed their birth plan; for example, “*[My birth plan] templates [were] provided by my prenatal class instructor and also discussed with my OB*” – Respondent 24. Respondents received their birth plan templates from different locations including their prenatal HCPs (e.g. obstetrician, family doctor, midwife) , prenatal classes, or online.

As all respondents had a high-risk pregnancy, therefore, **risk modification as a responsibility** was a theme identified within their responses. Many respondents indicated they had a plan of how they would like their birth experience to go, with many wanting a low intervention birth experience. However, respondents also stated that they were willing to make changes to their birth plan if the health and wellbeing of their baby, or themselves were put at risk. For example, one respondent stated “*My birth plan was short and sweet: I wanted no medication or intervention unless the baby or my own health is at risk, then I was open to interventions*” – Respondent 48. Moreover, another respondent stated “*My plan is always to get my baby out safe with as least intervention necessary. Always open to change in plans as the labour progresses*” – Respondent 16. As long as respondents’ babies were delivered safely, they were generally happy with how their birth plan was followed and were understanding that changes sometimes need to be made to ensure the safety of themselves and their baby.

The last theme related to respondent’s birth plans was **maternal agency**, especially the idea of respondents having *control* over their birth plan and how it related to their birth experience. Respondents found it important for them to feel in control. For example, one respondent described how their birth plan related to their birth experience, “*[I] laboured at home until I felt I needed to be checked at the hospital. Asked for and received an epidural at the earliest opportunity. In my case 5 cm dilated. Laboured down even once fully dilated*” – Respondent 12. This respondent is describing how they felt/were in control of their birth through staying at home

until they decided to go to the hospital and being in control of when they received medications (epidural).

When respondents were asked to describe their birth experience, similar themes were identified. Many respondents described **doing parenthood**, especially, *what to expect while you're expecting*. For example, one respondent described that their birth experience was not as scary as they were expecting it to be: *"Not as scary as I thought it would be. I went in informed about procedures and practices. I used what I wanted and baby needed. We came out healthy and happy, and I wouldn't have changed a thing."* – Respondent 49. Other respondents did explain that their birth experience was scary, however, it resulted in their child and therefore, it was worth it. For example, *"As scary as it was to be wheeled into an OR and cut open while awake, the recovery and everything about it was perfect. I got my little girl and I wouldn't change anything."* – Respondent 20.

Respondents mentioned **social determinants of health** when describing their birth experience. First, the social determinant of health, *social support and coping skills*. Respondents described having family, partners, and HCPs providing social support during their birth experience. For example, one respondent explained *"I was in labour for 26 hours at the IWK after being induced and my epidural wore off. The OB asked me to try another 4 to 6 hours more, but I was absolutely exhausted and couldn't think straight. My husband intervened and said I needed a section. I'm so glad he did. I was incapable of making that decision for myself. In the end, I would have needed one anyways because of the size of my baby's head."* – Respondent 26. This respondent is describing the importance of the support their partner provided during labour as the respondent was not feeling well enough to make decisions for their labour and birth. Secondly, *access to health services*, or lack of, was a theme identified in respondent answers. Similar to respondents' birth plans, some respondents described how important it was that HCPs gave them information the reasoning behind the procedures and medications she was being offered/provided. Other respondents described how the lack of hospital resources (staff) affected their birth experience. For example, *"[I] Got initial epidural but it ran out eventually and anesthesiologist was not available. Had a few hours of pushing and was in extreme pain."* – Respondent 14.

Similar to respondents' birth plans, **risk modification as a responsibility** was a major theme identified in their responses. Many respondents describe that their birth experiences did not go directly according to their birth plan as unexpected risks arose that could have impacted the health of themselves or their baby. Moreover, risk modification does not always occur while birthing the baby only and can sometimes occur while delivering the placenta. One respondent explains, *"The OB attempted a few different ways to help my placenta deliver as it wasn't coming out. Then we took a break from that as she put in some stitches. Then she went back to attempting to have my placenta deliver and gave me more fentanyl and then she had to go inside of me to pull my placenta out. This part was also very painful."* – Respondent 2.

Some respondents commented on **juxtaposition** within their answers, specifically **lack of compassion or empathy**. Although this was not the experience of everyone, it is important to recognize that some respondents did feel this. For example, one respondent stated *"I felt alone, no one explained what was happening or what was 'normal'"* – Respondent 44. This respondent reports feeling a lack of compassion or empathy because they did not understand what was happening. This also relates to feeling control over their birth experience. Moreover, another respondent explained *"I had severe epigastric pain and was told by the IWK birth unit to take some gravel. My pain did not go away and 2 days later went into hospital and had an emergency c-section."* – Respondent 17. This respondent reports a lack of compassion or empathy as they felt their pain was not being taken seriously.

The last theme that was prominent in respondent answers was **maternal agency**, specifically feeling **control** over their birth experience. For example, one respondent explained *"It felt empowering and I felt like I was in control of my birth experience. Felt a rush of calm and relief when babe delivered"* – Respondent 9. Although full control over a person's birth experience is not typically possible, many respondents related the feeling over control to positive experiences.

Finally, respondents were asked what words they would use to describe their birth experience (Figure 2). The larger the word, the more respondents used that word to describe their experience. For a more details on the words used, please see [Appendix 6](#). Respondents used a variety of words to describe their birth experience, with a mixture of words with positive and

Many infants began feeding within at least one hour after birth; 8 infants begin infant feeding immediately after birth ($n = 8/34$, 23.5%), 8 infants within 30 minutes after birth ($n = 8/34$, 23.5%), and 6 infants within 1 hour after birth ($n = 6/34$, 17.6%). Four infants begin infant feeding within 2 hours after birth ($n = 4/34$, 11.8%) and 1 infant within 3 hours after birth ($n = 1/34$, 2.9%). Six respondents selected the response “other” ($n = 6/34$, 17.6%), and 1 respondent did not answer the question ($n = 1/34$, 2.9%; Table 8). Reasons for the “other” response included respondents not remembering when infant feeding was initiated and the infant being immediately sent to the neonatal intensive care unit (NICU), so respondents were not sure when infant feeding was initiated (for example, “infant needed to be fed through an IV”).

Most respondents had help from a HCP when initiating infant feeding ($n = 27/34$, 79.4%; Table 8). HCPs who helped with initiating infant feeding included obstetricians ($n = 33$), family doctors ($n = 1$), midwives ($n = 1$), nurses ($n = 27$), and lactation consultants ($n = 1$; Table 8)

Table 8. Initiating Infant Feeding ($n = 34$)

Question	<i>n</i> (%)
When was infant feeding initiated	
Immediately after birth	8 (23.5)
Within 30 minutes after birth	8 (23.5)
Within 1 hour after birth	6 (17.6)
Within 2 hours after birth	4 (11.8)
Within 3 hours after birth	1 (2.9)
Other	6 (17.6)
No answer	1 (2.9)
Help from a healthcare professional	
Yes	27 (79.4)
No	6 (17.6)
No answer	1 (2.9)
What healthcare professional helped*	
Obstetrician (birth doctor)	33
Family Doctor	1
Midwife	1
Nurse	27
Lactation Consultant	1

n = number of respondents; * Respondents could choose multiple answers

Respondents reported on how they planned to feed their infant (Table 9). Most respondents planned to breast/ chest feed their infant ($n = 29$), 6 respondents planned to feed their infant

formula ($n = 6$), 13 respondents planned to feed their infant expressed breast/ chest milk ($n = 13$), and 1 respondent did not answer the question ($n = 1$).

Table 9. Respondents Plan During Pregnancy for Infant Feeding ($n = 34$)

Plan for Feeding Infant*	<i>n</i> (%)
Breast/ chest feeding	29
Formula	6
Expressed breast/ chest milk	13
No answer	1

n = number of respondents; * Respondents could choose multiple answers

Respondents also reported on whether HCPs gave them information on infant feeding during pregnancy (Table 10). Twenty-five respondents received information from HCPs ($n = 25/34$, 73.5%), 7 respondents did not ($n = 7/34$, 20.6%), and 2 respondents did not answer the question ($n = 2/34$, 5.9%). HCPs who provided information included obstetricians ($n = 12$), family doctors ($n = 6$), midwives ($n = 3$), doulas ($n = 4$), nurses ($n = 16$), dietitians ($n = 1$), and lactation consultants ($n = 1$).

Table 10. Information Regarding Infant Feeding ($n = 34$)

Question	<i>n</i> (%)
Healthcare staff gave information on infant feeding	
Yes	25 (73.5)
No	7 (20.6)
No answer	2 (5.9)
What healthcare professional helped*	
Obstetrician (birth doctor)	12
Family Doctor	6
Midwife	3
Doula	4
Nurse	16
Dietitian	1
Lactation Consultant	1

n = number of respondents; * Respondents could choose multiple answers

As for difficulties with initiating infant feeding, 23 respondents reported having difficulties ($n = 23/34$, 67.6%), 10 respondents did not ($n = 10/34$, 29.4%), and 1 respondent did not respond to the question ($n = 1/34$, 2.9%). Difficulties reported included difficulty latching, medical

difficulties producing breastmilk, infants with tongue and lip ties, low breastmilk supply, and extreme pain from labour and birth.

5.0 Discussion

A provincial questionnaire was updated and administered to explore the impact of prenatal education on birth and infant feeding experiences in the hospital, for those who had a high-risk pregnancy over the past year (January 2023 – January 2024). The questionnaire was open for 3 months and collected responses from 35 people. This descriptive, exploratory, cross-sectional study found that people who had a high-risk pregnancy had mixed responses, with some reporting feeling supported by their spouse/partner, family, friends, and HCPs, or having a positive birthing and postpartum experience, while others reported not feeling supported, or having a negative birthing and postpartum experience. This study highlights that everyone's experience is unique, no matter the prenatal education they received, and most of the time, was not what was expected.

Results from this thesis closely align with several components of the underlying frameworks, the CCM and the SEM, which will be highlighted below^{97-99,101}. As described previously, when used properly, the CCM encompasses the SEM (Figure 1)^{97-99,101}.

5.1 Individual

The first level of the SEM is the individual level; this relates to the individuals themselves and includes their biological and personal characteristics (e.g. age, ethnicity, sex, and health)^{99,101}. Within the CCM, the individual level of the SEM relates to informed activated patient; a patient who plays an active role within their care¹⁰⁴.

In this study, respondents were an average of 30.9 ± 4.8 years old, with ages ranging from 22 – 40 years. Previous Statistics Canada data from 2022 reports the average age of people giving birth (live births only) in Nova Scotia as 31.0 years old, with the average age of Canadians being 31.6 years old¹²¹. Although provincial and national data is not available on the average age of women giving birth who are experiencing high-risk pregnancies, previous research has identified that people who are over the age of 35 years, or under the age of 19 years are at increased risk for complications associated with pregnancy and birth¹²²⁻¹²⁵. Interestingly, the average age in the current study sample was under 35 years. This is likely because they had other underlying conditions and/or diagnoses that could affect their pregnancy, birth, and postpartum health. In the

current study for instance, some respondents reported medical diagnosis or infections that impact their birth experience such as hypertension, GD, and Group B Streptococcus.

After people who have a “normal” or low-risk pregnancy give birth, the hospital stay is, on average, 2.1 days (based on 2022-2023 Canadian data)¹²⁶. Canadian research is limited on how high-risk pregnancies affect postnatal length of stay. However, a study by Stastna and colleagues¹²⁷ analyzed how the age of mothers, living in Europe, impacted length of stay after giving birth. They found an average length of stay of 5.5 days for vaginal birth and 7.5 days for caesarean birth, however, as maternal age increased, the length of stay also increased. People between the ages of 38 – 42 years have the longest length of stay for both vaginal and caesarean births¹²⁷. In the current study, the average age was around 30 years, therefore, age alone should have not affected the length of stay. On average, mothers were in the hospital for 2.2 ± 1.3 days, and their infants were in the hospital for 3.9 ± 4.6 days. Infant’s length of stay ranged from 0.5 to 21 days, with a median of 2 days. Three infants had a length of stay longer than 10 days, which were: 21 days, 18 days, and 11 days. These three infants’ length of stay was prolonged due to NICU admissions.

The current study sample was homogenous, including almost all respondents speaking English as their main language at home ($n = 33$). Therefore, this sample was not reflective of the larger population. One respondent did report that they spoke Italian and Portuguese at home, and another reported that they spoke Visayan at home. When English is not the main language spoken, and the prenatal education is delivered in English, there can be language barriers which may limit the person’s ability to be an activated patient. A study by Attanasio and Kozhimannil¹²⁸ assessed racial and ethnic disparities and discrimination among non-Hispanic white, non-Hispanic black, and Hispanic women completing prenatal education in the United States. Results indicated that 65% of women reported barriers related to discussion during prenatal education classes. Approximately 10% of white women had reported that they received poor treatment due to language spoken, in comparison to 19-21% of participants who were of racial and/or ethnic minority¹²⁸. Moreover, researchers found that participants who were Black or Hispanic had an increased chance of discrimination due to language; leading to participants being less likely to ask questions as a result¹²⁸. Although only a small portion of respondents in

the current study did not speak English as their main language, it is important to highlight how language barriers, as well as race/ethnicity, can affect prenatal education experiences. The poor treatment and discrimination reported by women of racial and/or ethnic minority completing prenatal education limits their ability to be an activated patient as they are unable to fully immerse themselves in the prenatal education. In the future, more targeted recruitment should be completed to ensure a diverse sample is included in the results, to better understand their experiences.

5.2 Interpersonal

The second level of the SEM is the interpersonal level; this relates to an individual's relationships with others such as social and medical support^{99,101}. Within the CCM, this level of the SEM relates to prepared proactive practice teams; the individuals medical team including HCPs, family members or friends, spouses or partners, and themselves¹⁰⁴.

Pregnancy can involve many changes and challenges and therefore, it is important to have social support during this time¹²⁹. This support may look different person-to-person. In the current study, all but one respondent indicated that they had support during pregnancy. Support included spouses/partners, family and friends, and HCPs. High-risk pregnancies can come with unique challenges which may cause additional stress, therefore, emphasizing the importance of support during this time. A previous systematic review by East and colleagues¹³⁰ found that when women at an increased risk of low birthweight babies have support during pregnancy, there is a decreased risk for giving birth prior to 37 weeks' gestation, decreased risk of birthing a baby less than 2500g, and decreased likeliness of requiring a c-section. There was no evidence to support decreased risk for stillbirth or neonatal death¹³⁰. Therefore, having social support during pregnancy has shown to increase the likelihood of favourable outcomes during pregnancy and birth.

5.3 Institutional

The third level of the SEM is institutional; this relates to the formal rules of institutions and organizations^{99,101}. Within the CCM, this level of the SEM relates to delivery system design,

self-management skills, decision support, and information systems¹⁰⁴. These components of the CCM relate to the operations of institutions/organizations and navigating them as a patient¹⁰⁴.

The CCM component health system design aligns with a theme identified in respondents open-ended answers, “risk modification as a responsibility”. The main outcome of health system design is to provide safe and high quality care¹⁰⁴. Similarly, the main outcome of risk modification is safety for both the mother and the baby; both risk modification and safety are very important while caring for people experiencing high-risk pregnancies during pregnancy, birthing, and postpartum. Additionally, the CCM elements decision support and self-management skills align with a theme identified, “maternal agency”. Maternal agency refers to respondents overwhelming feeling of desiring control over their birth experience. Respondents identified that they wanted to have evidence-based information shared with them to make decisions and ‘self-manage’ their birth experience (or have control over what happens during their birth). Although this was important to many respondents, they did also recognize that complications occur during birth and that control is not always possible to maintain the health and safety of themselves and their baby. This directly aligns with Ledford and colleagues¹⁰² study, described above, which reported that people who play an active role in their pregnancy care have more positive experiences (individual level).

Birth plans are another example of decision support. Over half of the respondents in the current study had a birth plan ($n = 23$). Moreover, more of the respondents who had a birth plan strongly agreed and agreed that their birth plan was followed, however, most of the respondents with a birth plan disagreed and strongly disagreed that their birth plan aligned with their birth experience. Items on respondent’s birth plan included what medications they wanted (i.e. epidural), atmosphere of the birthing room, umbilical cord cutting/clamping, skin-to-skin contact, opinions on c-section, and mechanical interventions. Many respondents who had a birth plan did not receive their birth plan template from the health authority (NSH, or IWK Health), but instead found birth plans online, or received them from their prenatal education class instructor. As well, some respondents did not use a formal birth plan but instead wrote down their preferences informally to share with their HCPs. Interestingly, even though respondents did not use a template directly from the health authority, the birth plan templates that they did use,

aligned well with the health authorities birth plan template. For example, the birth plan template from IWK Health includes information on importance of a natural birth, comfort measures for labour, medications, important information about labour, concerns about labour, opinions on c-section, support people, skin-to-skin contact, and infant feeding. One benefit of having a birth plan is that it helps people feel they have more control and self-efficacy in relation to their birth experience; which can help make the birth experience more positive¹³¹. A qualitative study by Shareef and colleagues¹³¹ found that birth plans can help to enhance shared decision-making between pregnant people, their partners, and HCPs. As well, birth plans encourage pregnant people and their partners to talk about their birthing preferences and discuss what could happen during childbirth¹³¹. Although many studies have shown the favourable effects of birth plans, some studies have also reported on the negative effects. For instance, Aragon and colleagues¹³² reported on expectant women's perspectives on birth plans. They reported that 43% participants felt that a disadvantage of birth plans include feeling emotions such as disappointment when it is unable to be followed¹³².

Lastly, institutions also have effects on postnatal experiences. For example, IWK Health became designated as a Baby-Friendly hospital in 2019¹³³. The Baby-Friendly Initiative (BFI) promotes skin-to-skin contact directly after birth (lasting for at least 1 hour), breastfeeding within the first hour of birth, and the parent and infant staying in the same room¹³³. Since all respondents attended prenatal education classes and many gave birth at a BFI hospital (central zone; IWK Health), it is assumed that they would have heard information about breast/chest feeding, and the impacts of breast/chest feeding, likely influencing their infant feeding plan.

WHO and Health Canada recommend that infant feeding is initiated within one hour after birth^{134,135}. In the current study, 22 respondents ($n = 22$; 64.7%) initiated infant feeding within one hour after birth. Reasons for infant feeding not being initiated within an hour after birth included respondents not remembering when they first fed their infant, and the infant being admitted into the NICU. There is limited evidence regarding the effects of formula feeding within an hour of birth, however, breast/chest feeding within an hour after birth has been found to have many benefits¹³⁴⁻¹³⁷. Breast/chest feeding within an hour after birth has been associated with exclusive breast/chest feeding until 6 months of age^{137,138}. Additionally, early initiation of

breast/chest feeding (immediately after birth) has shown protective measures for the infants gut microbiome¹³⁶. One precursor to initiating infant feeding within one hour after birth is skin-to-skin contact beginning immediately after birth.

As mentioned above, skin-to-skin contact is one of the BFI strategies. In the current study, almost all respondents had skin-to-skin contact with their infant within the first hour after birth ($n = 29/34$, 85.3%). Reasons for not having skin-to-skin contact within the first hour after birth included, the infant needing to go directly to the NICU, and the mother feeling unwell after giving birth. Skin-to-skin contact has been known to be beneficial for increasing breast/chest feeding rates and duration^{81,139,140} and decreasing length of stay in hospital after birth^{140,141}. A recent systematic review and meta-analysis by Lord and colleagues¹⁴⁰ found that skin-to-skin contact may have an impact on reducing the incidence of neonatal hypoglycaemia. The systematic review identified 7 randomized control trials or quasi-randomized control trials which found that skin-to-skin contact reduced the rates of infants developing hypoglycaemia [$n = 922$, relative risk = 0.32 (0.13, 0.76), $p = 0.01$, $I^2 = 45\%$]¹⁴⁰. However, 2 cohort studies identified in this study found uncertain evidence regarding whether skin-to-skin contact reduced the rate of neonatal hypoglycaemia¹⁴⁰. Infants of people who were diagnosed with GD are at an increased risk of developing neonatal hypoglycaemia^{142,143}, therefore, skin-to-skin contact could potentially be a non-invasive way to reduce the risk.

5.4 Community

The fourth level of the SEM is community; this relates to the community surrounding an individual such as school, work, neighbourhoods, recreation, and culture^{99,101}. Within the CCM, this level of the SEM relates to create supportive environments, strengthen community action, prepared proactive community partners, and activated community¹⁰⁴. These components of the CCM all relate to the support that a community can provide. In this thesis, the main example of community is prenatal education and its effect on birth and infant feeding experiences.

Prenatal education is known to have favourable effects on labour, birth, and postpartum outcomes^{23,24,72-74}. In the current study, many respondents reported that the prenatal education they received helped them during and after birth, however, did not help them feel ready for

labour. A study by Mueller and colleagues⁷⁴ evaluated the effects of childbirth education on labour and birth outcomes as well as maternal satisfaction. The majority participants in Mueller's study indicated that they believed the childbirth education classes helped them during the birthing process⁷⁴, which supports the results of the current study.

Although prenatal education is known to have favourable effects on birth^{23,24,72-74}, birth is not always a positive experience. In the current study, 41.1% ($n = 14$) of respondents strongly agreed or agreed that their birth experience was traumatic, 17.6% ($n = 6$) of respondents neither agreed nor disagreed, and 41.1% ($n = 14$) of respondents disagreed or strongly disagreed. Similarly, a study by Alcorn and colleagues¹⁴⁴ reported nearly 45% of participants self-reporting a traumatic birth experience. In Alcorn and colleagues study¹⁴⁴, a traumatic experience was defined as experiencing a threat to self or baby, or experiencing fear, helplessness or horror during birth. In the current study, people who identified their birth as being traumatic experienced feeling lack of control, emergency c-sections, hemorrhaging, needing forceps for delivery, severe pain, and loss. Unfortunately, people cannot be prepared for the complications that may occur during birthing, therefore, people may feel like they have a lack of control over their birth. The feeling of lacking control can lead to a traumatic birth experience. Prenatal education classes should educate expectant parents on coping strategies to help with unexpected experiences and control, which could potentially help with minimizing negative feelings during birth.

In addition to birth experiences, prenatal education also effected respondent's infant feeding experiences. In the current study, most respondents planned to feed their infant through breast/chest feeding, followed by expressed breast/ chest milk, and formula. However, respondents did not provide information on how their infant was fed post birth, as this question was not asked. Many prenatal education classes promote the initiation of breast/chest feeding, and feeding infants breast/chest milk exclusively¹⁴⁵⁻¹⁴⁷.

5.5 Strengths and Limitations

5.5.1 Strengths

A major strength to this work is that it is supported by the WHC CoP. The WHC CoP is an interdisciplinary group of members across Canada, including HCPs, wellness professionals,

communication professionals, and trainees. The goal of the community of practice is to support members in education, dissemination, and collaboration through sharing ways of knowing in pregnancy, birthing, and postpartum, with the aim of supporting members efforts to center voices traditionally silenced in western science and medicine. The community of practice prepared the grant for this work, drafted the first version of the questionnaire, and was engaged in supporting the graduate student through updating the questionnaire to better reflect recent literature. A second strength of this thesis is that the questionnaire contained mixed-form questions (both closed-ended and open-ended)^{117,148}. By using mixed-form questions, respondents were able to tell their unique birth story, in their own words and in confidence, with the potential to inform future prenatal education strategies^{117,148}. Lastly, research highlighting the experiences of people with a high-risk pregnancy is limited, therefore, this thesis helps fill the gap. It is important to highlight how high-risk pregnancy may affect birth experiences differently than a normal birth, and determine, what (if any) additional supports are needed for this population. Additionally, this research is contributing to the limited local literature on birth experiences and high-risk pregnancies.

5.5.2 Limitations

One limitation to this thesis, and questionnaires in general, is that the amount information respondents can provided can be limited, compared to interviews or focus groups. This is because close-ended questions have fixed responses, therefore, what respondents can choose from is limited. To help with this limitation, text boxes were provided at the end of each section to allow respondents to provide details that they feel are missing from the answers they selected. In addition, open-ended questions were used to ask respondents to explain their birth experience and infant feeding experience in the hospital. A second limitation to this thesis, and questionnaires in general, is that questionnaires lack the ability to build rapport with respondents. For this thesis, respondents were asked about sensitive topics such as pregnancy and birth, and potential respondents may have felt uncomfortable sharing information about their experience; especially with someone they do not know or trust. On the other hand, some potential respondents may have felt more comfortable sharing their information through a questionnaire because they do not have to physically voice their experience. To help with building rapport, the recruitment materials were transparent about how respondents' information will be used and the

potential significance of the project. Third, although open-ended questions allow for participants to share information through their own words, qualitative or content analysis is based on the researcher's interpretation of the respondent's answer. Therefore, sometimes, researchers may interpret a response in a way that it was not intended and could lose the intended meaning. Lastly, a fourth limitation of this questionnaire is that it was only available online. Therefore, some Nova Scotians who had a high-risk pregnancy over the last year may not have had access to internet to answer the questionnaire, especially those in remote and rural areas. Therefore, this may have resulted in excluding certain demographics. However, because the questionnaire was online, we were able to reach the wider population in Nova Scotia compared to only surveying people in the Halifax Regional Municipality (location of MSVU).

5.6 Recommendations for future research

This thesis explored the experiences of people who had a high-risk pregnancy and how prenatal education affected their experiences. In the future, the remaining open-ended questions will be analyzed through qualitative methods. These results will be reported in peer-reviewed manuscripts and conference publications/presentations.

Future research on this topic could first include a scoping review to determine other research conducted on strategies used to implement prenatal education classes. This will help determine what strategies have been effective and which have not. Next, research could include the perceived barriers and facilitators to implementing government-funded prenatal education classes. This research should be conducted through qualitative methods, such as interviews and/or focus groups to ensure that people share their ideas in their own words.

Moreover, interviews and/or focus groups with people experiencing high-risk pregnancies and their HCPs could be conducted to determine whether they want government-funded prenatal education, what information they would want included in the prenatal education, and how they would like to receive the prenatal education.

6.0 Conclusion

This descriptive, exploratory, cross-sectional study explored the impact prenatal education has on birth and infant feeding experiences in the hospital, for those who had a high-risk pregnancy over the past year (January 2023 – January 2024). The objectives were to update a questionnaire previously drafted by the WHC CoP, administer the questionnaire to survey people who had a high-risk pregnancy over the past year, and analyze and report the data. Respondents received care from a wide range of HCPs with the most common being obstetricians, family doctors, and nurses. Respondents completed a variety of prenatal education, from a variety of HCPs, with many respondents completing prenatal education online. Many respondents agreed that the prenatal education received helped them during and after their birth experience, however, disagreed that the prenatal education they received made them feel ready for labour. Many respondents were happy with their birth experience; however, some respondents reported their birth was traumatic. Many respondents developed a birth plan to help guide their labour and birth experience and agreed it was followed, however, many respondents still disagreed that their birth plan aligned with their birth experience. After birth, almost all respondents had skin-to-skin contact with their infant, and almost all respondents initiated infant feeding within 3 hours after birth. Many respondents planned to breast/chest feed their infant or feed their infant with expressed breast/ chest milk. In conclusion, this study found that everyone's birth experience is unique, no matter the prenatal education they received, and most of the time, was not what was expected. In the future, the findings from this thesis will be presented at local and national conferences and published as peer-reviewed articles.

6.0 References

1. Mandy M, Nyirenda M. Developmental Origins of Health and Disease: the relevance to developing nations. *Int Health*. 2018;10(2):66-70. doi:10.1093/inthealth/ihy006
2. Hanson MA, Bardsley A, De-Regil LM, et al. The International Federation of Gynecology and Obstetrics (FIGO) recommendations on adolescent, preconception, and maternal nutrition: “Think Nutrition First.” *Int J Gynecol Obstet*. 2015;131(S4).
3. Brown JE, Lechtenberg E, Murtaugh MA, et al. Chapter 4: Nutrition During Pregnancy. In: *Nutrition Through the Life Cycle, 4th Edition*. Cengage Learning; :87-131.
4. Mahan LK, Krause MV. *Krause and Mahan’s Food and the Nutrition Care Process*. 15th edition. (Raymond JL, Morrow K, eds.). Elsevier; 2021.
5. Rajabi A, Maharlouei N, Rezaianzadeh A, Rajaeefard A, Gholami A. Risk factors for C-section delivery and population attributable risk for C-section risk factors in Southwest of Iran: a prospective cohort study. *Med J Islam Repub Iran*. 2015;29(294).
6. Irwinda R, Hiksas R, Lokeswara AW, Wibowo N. Maternal and fetal characteristics to predict c-section delivery: A scoring system for pregnant women. *Womens Health*. 2021;17:174550652110619. doi:10.1177/17455065211061969
7. Gangwar R, Chaudhary S. Caesarean Section for Foetal Distress and Correlation with Perinatal Outcome. *J Obstet Gynecol India*. 2016;66(S1):177-180. doi:10.1007/s13224-015-0831-5
8. Roy KK, Baruah J, Kumar S, Deorari AK, Sharma JB, Karmakar D. Cesarean Section for Suspected Fetal Distress, Continuous Fetal Heart Monitoring and Decision to Delivery Time. *Indian J Pediatr*. 2008;75.
9. Allen LH. B Vitamins in Breast Milk: Relative Importance of Maternal Status and Intake, and Effects on Infant Status and function. *Adv Nutr*. 2012;3(3):362-369. doi:10.3945/an.111.001172
10. University of California San Francisco Health. High-Risk Pregnancy. Published online n.d. Accessed August 24, 2023. <https://www.ucsfhealth.org/conditions/high-risk-pregnancy>
11. John Hopkins Medicine. 4 Common Pregnancy Complications. Published online n.d. Accessed August 24, 2023. <https://www.hopkinsmedicine.org/health/conditions-and-diseases/staying-healthy-during-pregnancy/4-common-pregnancy-complications>
12. Health Canada. A Primer on Scientific Risk Assessment at Health Canada. Published online 2010. Accessed August 24, 2023. <https://www.canada.ca/en/health-canada/services/science-research/reports-publications/about-science-research/primer-scientific-risk-assessment-health-canada-health-canada-2010.html>

13. Institute of Medicine (US) Committee on Clinical Research Involving Children. Defining, Interpreting, and Applying Concepts of Risk and Benefit in Clinical Research Involving Children. In: *The Ethical Conduct of Clinical Research Involving Children*. National Academies Press; 2004:10958. doi:10.17226/10958
14. Artal-Mittelmark R. Risk Factors for Complications During Pregnancy. Accessed August 15, 2023. <https://www.merckmanuals.com/en-ca/home/women-s-health-issues/high-risk-pregnancy/risk-factors-for-high-risk-pregnancy>
15. Kovala S, Cramp AG, Xia L. Prenatal Education: Program Content and Preferred Delivery Method From the Perspective of the Expectant Parents. *J Perinat Educ*. 2016;25(4):232-241. doi:10.1891/1058-1243.25.4.232
16. Wright A, Elcombe E, Burns ES. “Paper, face-to-face and on my mobile please”: A survey of women’s preferred methods of receiving antenatal education. *Women Birth*. 2021;34(6):e547-e556. doi:10.1016/j.wombi.2020.10.014
17. Munro S, Hui A, Salmons V, et al. SmartMom Text Messaging for Prenatal Education: A Qualitative Focus Group Study to Explore Canadian Women’s Perceptions. *JMIR Public Health Surveill*. 2017;3(1):e7. doi:10.2196/publichealth.6949
18. CBC News. No more prenatal classes, parental learning moves online | CBC News. Published online 2014. <https://www.cbc.ca/news/canada/nova-scotia/prenatal-classes-in-nova-scotia-replaced-by-website-1.2768132>
19. Government of Nova Scotia. Online prenatal and parenting program launched. Published online 2014. <https://novascotia.ca/news/release/?id=20140916002>
20. Walton V. What’s left for expectant mothers after Nova Scotia cut online prenatal classes. Published online 2019. Accessed August 14, 2023. <https://halifax.citynews.ca/local-news/whats-left-for-expecting-mothers-after-nova-scotia-cut-online-prenatal-classes-1361188>
21. Smith E. Health authority anticipated blowback after cutting online prenatal classes. Published online 2019. Accessed August 14, 2023. <https://www.cbc.ca/news/canada/nova-scotia/prenatal-classes-nova-scotia-health-authority-doctors-parents-education-1.5079291>
22. Nova Scotia Health. Libguides: Healthy living, wellness and Chronic Disease Management: Parenting. Published online 2022. <https://library.nshealth.ca/HealthyLiving/parenting#s-lg-box-16411560>
23. Alizadeh-Dibazari Z, Abdolalipour S, Mirghafourvand M. The effect of prenatal education on fear of childbirth, pain intensity during labour and childbirth experience: a scoping review using systematic approach and meta-analysis. *BMC Pregnancy Childbirth*. 2023;23(1):541. doi:10.1186/s12884-023-05867-0

24. Metinoğlu M, Yalçın Irmak A, Çelikkalp Ü. Examining the birth experiences of women with and without prenatal education: A qualitative study. *J Clin Med Kazakhstan*. 2021;18(1):57-63. doi:10.23950/jcmk/9657
25. Huang MZ, Kuo SC, Avery MD, Chen W, Lin KC, Gau ML. Evaluating effects of a prenatal web-based breastfeeding education programme in Taiwan. *J Clin Nurs*. 2007;16(8):1571-1579. doi:10.1111/j.1365-2702.2006.01843.x
26. Kellams AL, Gurka KK, Hornsby PP, et al. The Impact of a Prenatal Education Video on Rates of Breastfeeding Initiation and Exclusivity during the Newborn Hospital Stay in a Low-income Population. *J Hum Lact*. 2016;32(1):152-159. doi:10.1177/0890334415599402
27. Blom HJ. Folic acid, methylation and neural tube closure in humans. *Birt Defects Res A Clin Mol Teratol*. 2009;85(4):295-302. doi:10.1002/bdra.20581
28. Maxwell C, Gaudet L, Cassir G, et al. Guideline No. 391-Pregnancy and Maternal Obesity Part 1: Pre-conception and Prenatal Care. *J Obstet Gynaecol Can*. 2019;41(11):1623-1640. doi:10.1016/j.jogc.2019.03.026
29. Ellis JA, Brown CM, Barger B, Carlson NS. Influence of Maternal Obesity on Labor Induction: A Systematic Review and Meta-Analysis. *J Midwifery Womens Health*. 2019;64(1):55-67. doi:10.1111/jmwh.12935
30. Russell L. The importance of patients' nutritional status in wound healing. *Br J Nurs*. 2001;10(Sup1):S42-S49. doi:10.12968/bjon.2001.10.Sup1.5336
31. Frilasari H, Saudah N, Prameswari VE, Azizah YN, Suhita BM. Nutritional Pattern And Healing Of Perineum Wound On Postpartum Period. *J Nurs Pract*. 2020;3(2):172-180. doi:10.30994/jnp.v3i2.85
32. Festy P, Wulandari Y, Syawaliyah M. The Relationship of Nutritional Status and Perineal Wound Healing Among Post-Partum Women: In ; 2021. doi:10.2991/ahsr.k.210115.098
33. Mackay E. The Power of Protein in Wound Healing. *Wound Care Canada*. 2019;17(1):34-37.
34. Reber E, Gomes F, Vasiloglou MF, Schuetz P, Stanga Z. Nutritional Risk Screening and Assessment. *J Clin Med*. 2019;8(7):1065. doi:10.3390/jcm8071065
35. Poe SS, Cvach M, Dawson PB, Straus H, Hill EE. The Johns Hopkins Fall Risk Assessment Tool: Postimplementation Evaluation. *J Nurs Care Qual*. 2007;22(4):293-298. doi:10.1097/01.NCQ.0000290408.74027.39
36. Cutcliffe JR, Barker P. The Nurses' Global Assessment of Suicide Risk (NGASR): developing a tool for clinical practice. *J Psychiatr Ment Health Nurs*. 2004;11(4):393-400. doi:10.1111/j.1365-2850.2003.00721.x

37. Green SM, Watson R. Nutritional screening and assessment tools for use by nurses: literature review. *J Adv Nurs*. 2005;50(1):69-83. doi:10.1111/j.1365-2648.2004.03350.x
38. Health Canada. Health Canada Decision-Making Framework for Identifying, Assessing, and Managing Health Risks - August 1, 2000. Published online 2011. Accessed August 14, 2023. <https://www.canada.ca/en/health-canada/corporate/about-health-canada/reports-publications/health-products-food-branch/health-canada-decision-making-framework-identifying-assessing-managing-health-risks.html#a35>
39. McGowan J, Wojahn A, Nicolini JR. Risk Management Event Evaluation and Responsibilities. In: *StatPearls*. StatPearls Publishing; 2023.
40. NEJM Catalyst. What is Risk Management in Healthcare? *NEJM Catalyst*. Published online 2018.
41. National Research Council (US) Panel on Statistics for an Aging Population. Health Promotion and Disease Prevention. In: *The Aging Population in the Twenty-First Century: Statistics for Health Policy*. National Academies Press (US).; 1988.
42. Institute for Work and Health. Primary, secondary and tertiary prevention. Published online 2015. <https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention>
43. Maryville University. Risk Management in Healthcare. Accessed August 15, 2023. <https://online.maryville.edu/blog/risk-management-in-healthcare/>
44. Reinaud F. Classifications of medical treatment. Accessed August 15, 2023. <https://www.concilio.com/en/general-surgery-classifications-of-medical-treatment/>
45. Elferink-Stinkens PM, Brand R, Van Hemel OJS. Trends in caesarean section rates among high- and medium-risk pregnancies in the Netherlands 1983–1992. *Eur J Obstet Gynecol Reprod Biol*. 1995;59(2):159-167. doi:10.1016/0028-2243(95)02050-3
46. Olivia Kim U, Barnekow K, Ahamed SI, et al. Smartphone-based prenatal education for parents with preterm birth risk factors. *Patient Educ Couns*. 2019;102(4):701-708. doi:10.1016/j.pec.2018.10.024
47. Mirzakhani K, Shoorab NJ, Akbari A, Khadivzadeh T. High-risk pregnant women’s experiences of the receiving prenatal care in COVID-19 pandemic: a qualitative study. *BMC Pregnancy Childbirth*. 2022;22(1):363. doi:10.1186/s12884-022-04676-1
48. Fenech G, Thomson G. Tormented by ghosts from their past’: A meta-synthesis to explore the psychosocial implications of a traumatic birth on maternal well-being. *Midwifery*. 2014;30(2):185-193. doi:10.1016/j.midw.2013.12.004
49. Sigurðardóttir VL, Gamble J, Guðmundsdóttir B, Sveinsdóttir H, Gottfreðsdóttir H. Reviewing birth experience following a high-risk pregnancy: A feasibility study. *Midwifery*. 2023;116:103508. doi:10.1016/j.midw.2022.103508

50. Yeoh PL, Hornetz K, Dahlui M. Antenatal Care Utilisation and Content between Low-Risk and High-Risk Pregnant Women. Ciccozzi M, ed. *PLOS ONE*. 2016;11(3):e0152167. doi:10.1371/journal.pone.0152167
51. Lang D. Prenatal Development. In: *Parenting and Family Diversity Issues*. Pressbooks; 2020.
52. Eikemo R, Vikström A, Nyman V, Jonas W, Barimani M. Support during the postnatal period: Evaluating new mothers' and midwives' experiences of a new, coordinated postnatal care model in a midwifery clinic in Sweden. *Scand J Caring Sci*. 2023;37(1):260-270. doi:10.1111/scs.13103
53. Deave T, Johnson D, Ingram J. Transition to parenthood: the needs of parents in pregnancy and early parenthood. *BMC Pregnancy Childbirth*. 2008;8(1):30. doi:10.1186/1471-2393-8-30
54. Ateah CA. Prenatal Parent Education for First-Time Expectant Parents: "Making It Through Labor Is Just the Beginning..." *J Pediatr Health Care*. 2013;27(2):91-97. doi:10.1016/j.pedhc.2011.06.019
55. Gagnon AJ, Sandall J. Individual or group antenatal education for childbirth or parenthood, or both. Cochrane Pregnancy and Childbirth Group, ed. *Cochrane Database Syst Rev*. Published online July 18, 2007. doi:10.1002/14651858.CD002869.pub2
56. Government of Nova Scotia. Family Resource Centres. Published online 2012. Accessed August 9, 2024. <https://novascotia.ca/coms/families/prevention-and-early-intervention/family-resource-centres.html>
57. Beyond the Bump. What We Offer. Published online 2022. Accessed August 15, 2023. <https://www.beyondthebumpeducation.ca/#services>
58. Birth, Baby, Sleep. Birth. Accessed August 15, 2023. <https://www.birthbabysleep.ca/birth.html>
59. Hello Baby Prenatal and Childbirth Education. Classes. Accessed August 15, 2023. <https://www.hellobabyprenatal.ca/prenatal-classes-offered>
60. Graceful Beginnings Birth Services. Childbirth Preparation Classes. Published online 2023. Accessed August 15, 2023. <http://www.gracefulbeginnings.ca/childbirth-preparation-classes.html>
61. Belle Vie Birth & Baby. Childbirth Education. Published online 2023. Accessed August 15, 2023. <https://www.belleviebirthandbaby.ca/prenatal-education>
62. Whole Mama Collective. Prenatal Education For You. Accessed August 9, 2024. <https://www.wholemamacollective.ca/prenatal-education>

63. Childbearing Society. Birthing Classes for First Time Parents in Our Evening Series. Accessed August 9, 2024. <https://www.childbearing.org/evening-series>
64. Eastern Health. Prenatal Education. Published online 2023. Accessed August 9, 2024. <https://cwhp.easternhealth.ca/womens-health/prenatal-education/>
65. Alberta Health Services. Having a Baby. Accessed August 9, 2024. <https://birthandbabies.com/having-a-baby/>
66. Chances Family Centre. Special Delivery Prenatal Program. Accessed August 9, 2024. <https://chancesfamily.ca/programs/special-delivery/>
67. Ledford CJW, Canzona MR, Cafferty LA, Hodge JA. Mobile application as a prenatal education and engagement tool: A randomized controlled pilot. *Patient Educ Couns*. 2016;99(4):578-582. doi:10.1016/j.pec.2015.11.006
68. Palmquist AEL, Parry KC, Wouk K, et al. *Ready, Set, BABY Live* Virtual Prenatal Breastfeeding Education for COVID-19. *J Hum Lact*. 2020;36(4):614-618. doi:10.1177/0890334420959292
69. Hui A, Philips-Beck W, Campbell R, et al. Impact of remote prenatal education on program participation and breastfeeding of women in rural and remote Indigenous communities. *EClinicalMedicine*. 2021;35:100851. doi:10.1016/j.eclinm.2021.100851
70. World Health Organization. Maternal and Newborn Health. Accessed August 15, 2023. https://www.who.int/europe/health-topics/maternal-health#tab=tab_1
71. Hutchison J, Mahdy H, Hutchison J. Stages of Labour. In: *StatPearls*. StatPearls Publishing; 2023.
72. Hong K, Hwang H, Han H, et al. Perspectives on antenatal education associated with pregnancy outcomes: Systematic review and meta-analysis. *Women Birth*. 2021;34(3):219-230. doi:10.1016/j.wombi.2020.04.002
73. Swift EM, Zoega H, Stoll K, Avery M, Gottfreðsdóttir H. Enhanced Antenatal Care: Combining one-to-one and group Antenatal Care models to increase childbirth education and address childbirth fear. *Women Birth*. 2021;34(4):381-388. doi:10.1016/j.wombi.2020.06.008
74. Mueller CG, Webb PJ, Morgan S. The Effects of Childbirth Education on Maternity Outcomes and Maternal Satisfaction. *J Perinat Educ*. 2020;29(1):16-22. doi:10.1891/1058-1243.29.1.16
75. Sigurdardóttir VL, Gamble J, Gudmundsdóttir B, Kristjansdóttir H, Sveinsdóttir H, Gottfreðsdóttir H. The predictive role of support in the birth experience: A longitudinal cohort study. *Women Birth*. 2017;30(6):450-459. doi:10.1016/j.wombi.2017.04.003

76. World Health Organization. What matters to women in the postnatal period? Published online 2020. Accessed August 15, 2023. <https://www.who.int/news/item/22-04-2020-what-matters-to-women-in-the-postnatal-period>
77. Romano M, Cacciatore A, Giordano R, et al. Postpartum period: three distinct but continuous phases. *J Prenat Med.* 2010;4(2):22-25.
78. World Health Organization. Infant and Young Children Nutrition: Global Strategy on Infant and Young Child Feeding. Published online 2002. Accessed August 15, 2023. <https://www.who.int/news/item/22-04-2020-what-matters-to-women-in-the-postnatal-period>
79. Infant Feeding Joint Working Group. Nutrition for Healthy Term Infants: Recommendations from Birth to Six Months. Accessed August 15, 2023. <https://www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/infant-feeding/nutrition-healthy-term-infants-recommendations-birth-six-months.html>
80. Selim L. Breastfeeding from the First hour of birth: What works and what hurts. Published online 2018. Accessed August 15, 2023. <https://www.unicef.org/stories/breastfeeding-first-hour-birth-what-works-and-what-hurts>
81. Karimi FZ, Sadeghi R, Maleki-Saghooni N, Khadivzadeh T. The effect of mother-infant skin to skin contact on success and duration of first breastfeeding: A systematic review and meta-analysis. *Taiwan J Obstet Gynecol.* 2019;58(1):1-9. doi:10.1016/j.tjog.2018.11.002
82. Bedford R, Piccinini-Vallis H, Woolcott C. The relationship between skin-to-skin contact and rates of exclusive breastfeeding at four months among a group of mothers in Nova Scotia: a retrospective cohort study. *Can J Public Health.* 2022;113(4):589-597. doi:10.17269/s41997-022-00627-7
83. Moore ER, Bergman N, Anderson GC, Medley N. Early skin-to-skin contact for mothers and their healthy newborn infants. Cochrane Pregnancy and Childbirth Group, ed. *Cochrane Database Syst Rev.* 2016;2016(11). doi:10.1002/14651858.CD003519.pub4
84. Redshaw M, Hennegan J, Kruske S. Holding the baby: Early mother–infant contact after childbirth and outcomes. *Midwifery.* 2014;30(5):e177-e187. doi:10.1016/j.midw.2014.02.003
85. O’Vieira T, O’Vieira G, Giugliani ERJ, Mendes CM, Martins CC, Silva LR. Determinants of breastfeeding initiation within the first hour of life in a Brazilian population: cross-sectional study. *BMC Public Health.* 2010;10(1):760. doi:10.1186/1471-2458-10-760
86. Fairlie TG, Gillman MW, Rich-Edwards J. High Pregnancy-Related Anxiety and Prenatal Depressive Symptoms as Predictors of Intention to Breastfeed and Breastfeeding Initiation. *J Womens Health.* 2009;18(7):945-953. doi:10.1089/jwh.2008.0998

87. Kera AM, Zewdie A, Akafu W, Kidane R, Tamirat M. Formula feeding and associated factors among mothers with infants 0–6 months old in Mettu Town, Southwest Ethiopia. *Food Sci Nutr.* 2023;11(7):4136-4145. doi:10.1002/fsn3.3403
88. Schafer EJ, Williams NA, Digney S, Hare ME, Ashida S. Social Contexts of Infant Feeding and Infant Feeding Decisions. *J Hum Lact.* 2016;32(1):132-140. doi:10.1177/0890334415592850
89. Appleton J, Laws R, Russell CG, Fowler C, Campbell KJ, Denney-Wilson E. Infant formula feeding practices and the role of advice and support: an exploratory qualitative study. *BMC Pediatr.* 2018;18(1):12. doi:10.1186/s12887-017-0977-7
90. Martin C, Ling PR, Blackburn G. Review of Infant Feeding: Key Features of Breast Milk and Infant Formula. *Nutrients.* 2016;8(5):279. doi:10.3390/nu8050279
91. Scime NV, Metcalfe A, Nettel-Aguirre A, Tough SC, Chaput KH. Association of prenatal medical risk with breastfeeding outcomes up to 12 months in the All Our Families community-based birth cohort. *Int Breastfeed J.* 2021;16(1):69. doi:10.1186/s13006-021-00413-0
92. Goulding AN, Antoniewicz L, Leach JM, et al. Breastfeeding initiation and duration among people with mild chronic hypertension: a secondary analysis of the Chronic Hypertension and Pregnancy trial. *Am J Obstet Gynecol MFM.* 2023;5(9):101086. doi:10.1016/j.ajogmf.2023.101086
93. Hamidia A, Kheirkhah F, Faramarzi M, et al. Depressive symptoms and psychological distress from antenatal to postnatal period in women with high-risk pregnancy: A prospective study during the COVID-19 pandemic. *Indian J Psychiatry.* 2021;63(6):536. doi:10.4103/indianjpsychiatry.indianjpsychiatry_1272_20
94. Smorti M, Gemignani A, Bonassi L, Mauri G, Carducci A, Ionio C. The impact of Covid-19 restrictions on depressive symptoms in low-risk and high-risk pregnant women: a cross-sectional study before and during pandemic. *BMC Pregnancy Childbirth.* 2022;22(1):191. doi:10.1186/s12884-022-04515-3
95. Blackford KA, Richardson H, Grieve S. Prenatal education for mothers with disabilities: Mothers with disabilities. *J Adv Nurs.* 2008;32(4):898-904. doi:10.1046/j.1365-2648.2000.t01-1-01554.x
96. Brown C. At the Bedside: Childbirth Education Tutoring for High-Risk Hospitalized Antenatal Women. *Int J Childbirth Educ.* 1997;12(3):20-21.
97. Grover A, Joshi A. An Overview of Chronic Disease Models: A Systematic Literature Review. *Glob J Health Sci.* 2014;7(2):p210. doi:10.5539/gjhs.v7n2p210
98. Barr V, Robinson S, Marin-Link B, et al. The Expanded Chronic Care Model: An Integration of Concepts and Strategies from Population Health Promotion and the Chronic Care Model. *Healthc Q.* 2003;7(1):73-82. doi:10.12927/hcq.2003.16763

99. Kilanowski JF. Breadth of the socio-ecological model. *J Agromedicine*. Published online July 25, 2017:1059924X.2017.1358971. doi:10.1080/1059924X.2017.1358971
100. Wagner EH. Chronic disease management: what will it take to improve care for chronic illness? *Eff Clin Pract ECP*. 1998;1(1):2-4.
101. Dahlberg L, Krug E. Violence: a global public health problem. In: Krug G, Dahlberg L, Mercy J, Zwi A, Lozano R, eds. *World Report on Violence and Health*. World Health Organization; 2002:1-21.
102. Ledford CJW, Sadler KP, Jackson JT, Womack JJ, Rider HA, Seehusen AB. Applying the chronic care model to prenatal care: Patient activation, productive interactions, and prenatal outcomes. *Patient Educ Couns*. 2018;101(9):1620-1623. doi:10.1016/j.pec.2018.04.017
103. Glasgow RE, Tracy Orleans C, Wagner EH, Curry SJ, Solberg LI. Does the Chronic Care Model Serve Also as a Template for Improving Prevention? *Milbank Q*. 2001;79(4):579-612. doi:10.1111/1468-0009.00222
104. Clement M, Filteau P, Harvey B, et al. Organization of Diabetes Care. *Can J Diabetes*. 2018;42:S27-S35. doi:10.1016/j.jcjd.2017.10.005
105. Bamuya C, Correia JC, Brady EM, et al. Use of the socio-ecological model to explore factors that influence the implementation of a diabetes structured education programme (EXTEND project) in Lilongwe, Malawi and Maputo, Mozambique: a qualitative study. *BMC Public Health*. 2021;21(1):1355. doi:10.1186/s12889-021-11338-y
106. Townsend N, Foster C. Developing and applying a socio-ecological model to the promotion of healthy eating in the school. *Public Health Nutr*. 2013;16(6):1101-1108. doi:10.1017/S1368980011002655
107. O'Connor J, Alfrey L, Payne P. Beyond games and sports: a socio-ecological approach to physical education. *Sport Educ Soc*. 2012;17(3):365-380. doi:10.1080/13573322.2011.608940
108. Soriano-Vidal FJ, Vila-Candel R, Soriano-Martín PJ, Tejedor-Tornero A, Castro-Sánchez E. The effect of prenatal education classes on the birth expectations of Spanish women. *Midwifery*. 2018;60:41-47. doi:10.1016/j.midw.2018.02.002
109. Larsson C, Saltvedt S, Edman G, Wiklund I, Andolf E. Factors independently related to a negative birth experience in first-time mothers. *Sex Reprod Healthc*. 2011;2(2):83-89. doi:10.1016/j.srhc.2010.11.003
110. Statista Research Department. Number of births in Nova Scotia, Canada from 2000 to 2022. Published online 2022. Accessed August 15, 2023. <https://www.statista.com/statistics/578570/number-of-births-in-prince-edward-island-canada/>

111. Fry HL, Levin O, Kholina K, et al. Infant feeding experiences and concerns among caregivers early in the COVID-19 State of Emergency in Nova Scotia, Canada. *Matern Child Nutr.* 2021;17(3):e13154. doi:10.1111/mcn.13154
112. Martinez-Vázquez S, Rodríguez-Almagro J, Hernández-Martínez A, Martínez-Galiano JM. Factors Associated with Postpartum Post-Traumatic Stress Disorder (PTSD) Following Obstetric Violence: A Cross-Sectional Study. *J Pers Med.* 2021;11(5):338. doi:10.3390/jpm11050338
113. Coca KP, Chien LY, Lee EY, Souza ACDP, Hong SA, Chang YS. Factors associated with postpartum depression symptoms among postpartum women in five countries during the COVID-19 pandemic: an online cross-sectional study. *BMC Psychiatry.* 2023;23(1):171. doi:10.1186/s12888-023-04607-0
114. Shuman CJ, Peahl AF, Pareddy N, et al. Postpartum depression and associated risk factors during the COVID-19 pandemic. *BMC Res Notes.* 2022;15(1):102. doi:10.1186/s13104-022-05991-8
115. Dol J, Richardson B, Aston M, McMillan D, Tomblin Murphy G, Campbell-Yeo M. Health information seeking in the postpartum period: A cross-sectional survey. *J Neonatal Nurs.* 2022;28(2):118-122. doi:10.1016/j.jnn.2021.08.008
116. Neutens JJ, Rubinson L. *Research Techniques for the Health Sciences.* Fifth edition. Pearson; 2014.
117. Peterson RA. *Constructing Effective Questionnaires.* Sage Publications Inc; 2000.
118. Mount Saint Vincent University Research Ethics Board. REB.INFO.504: Online Surveys. Published online 2022. Accessed August 24, 2023. https://www.msvu.ca/wp-content/uploads/2022/07/REB.INFO_.504-OnLine-Surveys-202206.pdf
119. Mount Saint Vincent University. Limesurvey. Accessed August 24, 2023. <https://www.msvu.ca/campus-life/campus-services/it-services/limesurvey>
120. Government of Canada. Social determinants of health and health inequalities. Published online 2024. Accessed May 19, 2024. <https://www.canada.ca/en/public-health/services/health-promotion/population-health/what-determines-health.html>
121. Statistics Canada. Mean age of mother at time of delivery (live births). Published online 2023. doi:10.25318/1310041701-ENG
122. The Hospital for SickKids. Canadian research finds older mothers at higher risk for childbirth complications. Published online 2019. Accessed April 29, 2024. <https://www.sickkids.ca/en/news/archive/2019/canadian-research-finds-older-mothers-at-higher-risk-for-childbirth-complications/>

123. Canadian Institute for Health Information. *In Due Time: Why Maternal Age Matters.*; 2011. Accessed April 29, 2024. https://publications.gc.ca/collections/collection_2013/icis-cihi/H117-5-19-2011-eng.pdf
124. Glick I, Kadish E, Rottenstreich M. Management of Pregnancy in Women of Advanced Maternal Age: Improving Outcomes for Mother and Baby. *Int J Womens Health*. 2021;13:751-759. doi:10.2147/IJWH.S283216
125. Aoyama K, Pinto R, Ray JG, et al. Association of Maternal Age With Severe Maternal Morbidity and Mortality in Canada. *JAMA Netw Open*. 2019;2(8):e199875. doi:10.1001/jamanetworkopen.2019.9875
126. Canadian Institute for Health Information. *Hospital Stays in Canada, 2022–2023*. Canadian Institute for Health Information; 2024.
127. Šťastná A, Šídlo L, Kocourková J, Fait T. Does advanced maternal age explain the longer hospitalisation of mothers after childbirth? *PLoS One*. 2023;18(4):e0284159. doi:10.1371/journal.pone.0284159
128. Attanasio L, Kozhimannil K. Patient-reported Communication Quality and Perceived Discrimination in Maternity Care. 2015;53(10):863-871.
129. Al-Mutawtah M, Campbell E, Kubis HP, Erjavec M. Women’s experiences of social support during pregnancy: a qualitative systematic review. *BMC Pregnancy Childbirth*. 2023;23(1):782. doi:10.1186/s12884-023-06089-0
130. East CE, Biro MA, Fredericks S, Lau R. Support during pregnancy for women at increased risk of low birthweight babies. Cochrane Pregnancy and Childbirth Group, ed. *Cochrane Database Syst Rev*. 2019;2019(4). doi:10.1002/14651858.CD000198.pub3
131. Shareef N, Said P, Lamers S, Nieuwenhuijze M, De Vries M, Van Dillen J. The contribution of birth plans to shared decision-making from the perspectives of women, their partners and their healthcare providers. Sarmiento I, ed. *PLOS ONE*. 2024;19(6):e0305226. doi:10.1371/journal.pone.0305226
132. Aragon M, Chhoa E, Dayan R, Klufftinger A, Lohn Z, Buhler K. Perspectives of Expectant Women and Health Care Providers on Birth Plans. *J Obstet Gynaecol Can*. 2013;35(11):979-985. doi:10.1016/S1701-2163(15)30785-4
133. IWK Health, Nova Scotia Health. About the Baby-Friendly Initiative and Infant Feeding Policy. Published online 2023. Accessed May 4, 2024. <https://www.nshealth.ca/sites/default/files/documents/pamphlets/2365.pdf>
134. World Health Organization. Infant and young child feeding. Published online 2023. Accessed June 2, 2024. <https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding>

135. Government of Canada. Chapter 6: Breastfeeding. Published online 2019. Accessed June 2, 2024. <https://www.canada.ca/en/public-health/services/publications/healthy-living/maternity-newborn-care-guidelines-chapter-6.html#a4>
136. O’Sullivan A, Farver M, Smilowitz JT. The Influence of Early Infant-Feeding Practices on the Intestinal Microbiome and Body Composition in Infants. *Nutr Metab Insights*. 2015;8(Suppl 1):1-9. doi:10.4137/NMI.S29530
137. Noble L, Hand IL, Noble A. The Effect of Breastfeeding in the First Hour and Rooming-In of Low-Income, Multi-Ethnic Mothers on In-Hospital, One and Three Month High Breastfeeding Intensity. *Child Basel Switz*. 2023;10(2):313. doi:10.3390/children10020313
138. Patel DV, Bansal SC, Nimbalkar AS, Phatak AG, Nimbalkar SM, Desai RG. Breastfeeding Practices, Demographic Variables, and Their Association with Morbidities in Children. *Adv Prev Med*. 2015;2015:1-9. doi:10.1155/2015/892825
139. Oras P, Thernström Blomqvist Y, Hedberg Nyqvist K, et al. Skin-to-skin contact is associated with earlier breastfeeding attainment in preterm infants. *Acta Paediatr*. 2016;105(7):783-789. doi:10.1111/apa.13431
140. Lord LG, Harding JE, Crowther CA, Lin L. Skin-to-skin contact for the prevention of neonatal hypoglycaemia: a systematic review and meta-analysis. *BMC Pregnancy Childbirth*. 2023;23(1):744. doi:10.1186/s12884-023-06057-8
141. Agudelo S, Díaz D, Maldonado MJ, et al. Effect of skin-to-skin contact at birth on early neonatal hospitalization. *Early Hum Dev*. 2020;144:105020. doi:10.1016/j.earlhumdev.2020.105020
142. Kole MB, Ayala NK, Clark MA, Has P, Esposito M, Werner EF. Factors Associated With Hypoglycemia Among Neonates Born to Mothers With Gestational Diabetes Mellitus. *Diabetes Care*. 2020;43(12):e194-e195. doi:10.2337/dc20-1261
143. Voormolen DN, De Wit L, Van Rijn BB, et al. Neonatal Hypoglycemia Following Diet-Controlled and Insulin-Treated Gestational Diabetes Mellitus. *Diabetes Care*. 2018;41(7):1385-1390. doi:10.2337/dc18-0048
144. Alcorn KL, O’Donovan A, Patrick JC, Creedy D, Devilly GJ. A prospective longitudinal study of the prevalence of post-traumatic stress disorder resulting from childbirth events. *Psychol Med*. 2010;40(11):1849-1859. doi:10.1017/S0033291709992224
145. Oggero MK, Rozmus CL, LoBiondo-Wood G. Effects of Prenatal Breastfeeding Education on Breastfeeding Duration Beyond 12 Weeks: A Systematic Review. *Health Educ Behav*. Published online January 19, 2024:10901981231220668. doi:10.1177/10901981231220668
146. Wong KL, Tak Fong DY, Yin Lee IL, Chu S, Tarrant M. Antenatal Education to Increase Exclusive Breastfeeding: A Randomized Controlled Trial. *Obstet Gynecol*. 2014;124(5):961-968. doi:10.1097/AOG.0000000000000481

147. Kehinde J, O'Donnell C, Grealish A. The effectiveness of prenatal breastfeeding education on breastfeeding uptake postpartum: A systematic review. *Midwifery*. 2023;118:103579. doi:10.1016/j.midw.2022.103579
148. Altintzoglou T, Sone I, Voldnes G, Nøstvold B, Sogn-Grundvåg G. Hybrid Surveys: A Method for the Effective Use of Open-Ended Questions in Quantitative Food Choice Surveys. *J Int Food Agribus Mark*. 2018;30(1):49-60. doi:10.1080/08974438.2017.1382422

7.0 Appendices

7.1 Appendix 1: Questionnaire, last updated Dec 19, 2023.

Consent Form:

Title of the Research Study

Exploring the Experiences of People with ‘High-Risk’ Pregnancy and Prenatal Education in Nova Scotia

Research Team Members and Contact Information

Dr. Shannan Grant, PhD, RD (Principal Investigator and Co-Lead of the Women’s Health Communication Community of Practice)
Mount Saint Vincent University
166 Bedford Hwy, Halifax, NS B3M 2J6

Megan Churchill, BSc (Hons), Graduate Student
Mount Saint Vincent University
166 Bedford Hwy, Halifax, NS B3M 2J6

Funding

There is no funding associated with this work.

Do the research team members have any perceived or actual conflicts of interest?

This study is part of Megan Churchill’s Master of Science in Applied Human Nutrition thesis research. All members of the research team do not have any perceived or actual conflicts of interest to report.

Introduction

This consent form explains the research study you are being asked to participate in.

The online questionnaire is being distributed by Principal Investigator Dr. Shannan Grant and is part of a multi-phased research project being conducted in the Department of Applied Human Nutrition at Mount Saint Vincent University, by the Women’s Health Communication Community of Practice. The purpose of this study is to explore and describe how prenatal education affects the birth and postpartum experiences of people diagnosed with high-risk pregnancies. Ethics clearance has been received from Mount Saint Vincent University (UREB# 2023-094).

Respondent Eligibility

You ARE eligible to participate in this study if you:

- (1) Have given birth within the past year in Nova Scotia.
- (2) Identify with having a high-risk pregnancy.
- (3) Completed some form of prenatal education.
- (4) 19 years and over.
- (5) Are able to read and write in English.
- (6) Willing and able to give informed consent.

Privacy and Confidentiality

The findings from this research may be communicated at future conferences and published in academic journals. An anonymous study ID number will be assigned to your responses and any

information that can identify you will remain confidential. Your information will remain confidential unless in instances required by law to report such as if you report any of the following: self-harm, harm to others, and/ or children or elder abuse. If you experience emotional discomfort from participating in the study, please refer to the resources below, developed by a Registered Psychologist:

Wellness Together Canada:

- Free and confidential mental health support available to anyone. Available 24 hours a day, 7 days a week: <https://www.wellnesstogether.ca/en-ca/>
- Crisis Line: <https://www.wellnesstogether.ca/en-ca/crisis>

Mobile Crisis in Nova Scotia:

- Available to Nova Scotians 14 hours a day, 7 days a week at 902-429-8167 or 1-888-429-8167 (toll free): <https://www.halifax.ca/fire-police/police/programs-services/mental-health-crisis-support-halifax>

Tranquility App

- Free app for Nova Scotians (ages 16+) experiences mild to moderate anxiety or depression: <https://www.tranquility.app/>

Employee and Family Assistance Program

- If you are employed in Nova Scotia, check with your workplace to find out if you have access to the Employee and Family Assistance Program
- Government of Nova Scotia Employees have free access to the Employee and Family Assistance Program
- Confidential supports are available for any work, health, or life concern through TELUS Health at 1-800-777-5888

If you have any additional questions, please contact the Research Ethics Coordinator, Office of Research Ethics, at 902-457-6350 or ethics@msvu.ca.

Your participation in this study is voluntary and you may withdraw at any time.

This study is estimated to take approximately 20-30 minutes to complete. By completing the questionnaire, you are consenting to participate. If you withdraw from participating or close the LimeSurvey browser, your responses will be collected up until that point.

Sections of the questionnaire include (1) Demographics, (2) Birth Experiences (3) Infant Feeding Experiences

Please review this information carefully and ask any questions about the study before you agree to participate. If you have any questions, you can contact PrenatalEducationResearch@msvu.ca.

If you would like to receive a copy of the results once completed, please email Megan Churchill at PrenatalEducationResearch@msvu.ca.

**Exploring the Experiences of People with “High-Risk Pregnancy” and Prenatal Education
in Nova Scotia**

Section 1: Demographics

1. Which region do you currently live/ reside in?
 - a. Central Zone (Halifax area, Eastern Shore, and West Hants)
 - b. Eastern Zone (Cape Breton, Guysborough, and Antigonish areas)
 - c. Northern Zone (Colchester-East Hants, Cumberland, and Pictou areas)
 - d. Western Zone (Annapolis Valley, South Shore, South West)
 - e. I prefer not to answer
 - f. Other

2. Which ethnic group(s) do you belong to? If you prefer not to answer this question, please write “X” in the comment box.

3. Were you born in Canada?
 - a. Yes
 - b. No
 - c. I prefer not to answer

4. If you answered “no” to question 3, when did you move to Canada? Please write the year you immigrated to Canada below. If you prefer not to answer this question, please write “X” in the comment box.

5. What is/ are the main language(s) you speak at home? If you prefer not to answer this question, please write “X” in the comment box.

6. What is your gender? If you prefer not to answer this question, please write “X” in the comment box.

7. What was your age (in years) during you last [or most recent] pregnancy? If you prefer not to answer this question, please write “X” in the comment box.

8. Which description best represents who supported you during your last [or most recent] pregnancy? More than one answer is okay.
 - a. Spouse/ Partner
 - b. Family Member/ Friend
 - c. Healthcare Provider
 - d. I prefer not to answer
 - e. Other

9. How many pregnancies have you had?
 - a. 1
 - b. 2
 - c. 3

- d. 4
 - e. 5 or more
 - f. I prefer not to answer
10. How many times have you given birth?
- a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5 or more
 - f. I prefer not to answer
11. How long were you in the hospital after giving birth? If you prefer not to answer this question, please write “X” in the comment box.
12. How long was your baby in the hospital after birth? If you prefer not to answer this question, please write “X” in the comment box.
13. Who did you receive care from during your pregnancy? More than one answer is okay.
- a. No one
 - b. Obstetrician (birth doctor)
 - c. Family Doctor
 - d. Midwife
 - e. Doula
 - f. Nurse
 - g. I prefer not to answer
 - h. Other
14. What does risk mean to you? If you prefer not to answer this question, please write “X” in the comment box.

Section 2: Birth Experiences

1. Did you participate in prenatal education during your last [or most recent] pregnancy?
- a. Yes
 - b. No
 - c. I do not know
 - d. I prefer not to answer
2. If you answered “yes” to question 1, list and describe the prenatal education you participated in during your last [or most recent] pregnancy? If you prefer not to answer this question, please write “X” in the comment box.

3. Select one of the following responses to the following statement: This prenatal education helped me during birth.
 - a. Strongly disagree
 - b. Disagree
 - c. Neither agree nor disagree
 - d. Agree
 - e. Strongly agree
 - f. Not applicable
 - g. I prefer not to answer

4. Select one of the following responses to the following statement: This prenatal education helped me after giving birth.
 - a. Strongly disagree
 - b. Disagree
 - c. Neither agree nor disagree
 - d. Agree
 - e. Strongly agree
 - f. Not applicable
 - g. I prefer not to answer

5. Select one of the following responses to the following statement: The education I received during pregnancy made me feel ready for my labour.
 - a. Strongly disagree
 - b. Disagree
 - c. Neither agree nor disagree
 - d. Agree
 - e. Strongly agree
 - f. Not applicable
 - g. I prefer not to answer

6. Select one of the following responses to the following statement: I love my birth story.
 - a. Strongly disagree
 - b. Disagree
 - c. Neither agree nor disagree
 - d. Agree
 - e. Strongly agree
 - f. I prefer not to answer

7. Select one of the following responses to the following statement: I was asked to consent to each procedure I received related to my birth (e.g., to be induced, have a caesarean section, receive an epidural, begin fetal monitoring, have dilation status checked).
 - a. Strongly disagree
 - b. Disagree
 - c. Neither agree nor disagree
 - d. Agree
 - e. Strongly agree

- f. I prefer not to answer
8. Select one of the following responses to the following statement: My birth was traumatic
- a. Strongly disagree
 - b. Disagree
 - c. Neither agree nor disagree
 - d. Agree
 - e. Strongly agree
 - f. I prefer not to answer
9. If you would like to give us more information in response to questions 1-9, please include this information in the box below. If you prefer not to answer this question, please write “X” in the comment box.
10. Did you write a birth plan prior to labour?
- a. Yes
 - b. No
 - c. I do not know
 - d. I prefer not to answer
11. If you answered “yes” to question 11, who helped you develop your birth plan? More than one answer is okay.
- a. Spouse/ Partner
 - b. Family/ Friend
 - c. No one
 - d. Obstetrician (birth doctor)
 - e. Family Doctor
 - f. Midwife
 - g. Doula
 - h. Nurse
 - i. I prefer not to answer
 - j. Other
12. If you had a birth plan, how was it put to use? If you prefer not to answer this question, please write “X” in the comment box.
13. Select one of the following responses to the following statement: My birth plan was followed.
- a. Strongly disagree
 - b. Disagree
 - c. Neither agree nor disagree
 - d. Agree
 - e. Strongly agree
 - f. Not applicable
 - g. I prefer not to answer

14. Select one of the following responses to the following statement: My birth plan aligned with my birth experience
- Strongly disagree
 - Disagree
 - Neither agree nor disagree
 - Agree
 - Strongly agree
 - Not applicable
 - I prefer not to answer
15. Describe your birth plan. You are welcome to describe your experience developing and using it. You are welcome to provide more thoughts and feelings not captured above. If you prefer not to answer this question, please write “X” in the comment box.
16. Which words would be used to describe your birth experience. If you prefer not to answer this question, please write “X” in the comment box.
17. Describe your birth experience. If you prefer not to answer this question, please write “X” in the comment box.

Section 3: Infant Feeding Experiences

- Did you have skin to skin contact with your baby within the first hour of his/her life?
 - Yes
 - No
 - I do not know
 - I prefer not to answer
- If you answered “yes” to question 1, did you have help from a healthcare professional at this time?
 - Yes
 - No
 - I do not know
 - Not applicable
 - I prefer not to answer
- When did you initiate infant feeding?
 - Immediately after birth
 - Within 30 minutes after birth
 - Within 1 hour after birth
 - Within 2 hours after birth
 - Within 3 hours after birth
 - I prefer not to answer
 - Other

4. Did you have help from a healthcare professional when you first fed your baby?
 - a. Yes
 - b. No
 - c. I do not know
 - d. I prefer not to answer

5. If you answered “yes” to question 4, who was the healthcare professional who helped you? More than one answer is okay.
 - a. No one
 - b. Obstetrician (birth doctor)
 - c. Family Doctor
 - d. Midwife
 - e. Doula
 - f. Nurse
 - g. I prefer not to answer
 - h. Other

6. When you were pregnant, how did you plan to feed your baby? More than one answer is okay.
 - a. Breast/ chest feeding
 - b. Formula
 - c. Expressed breast/ chest milk
 - d. I prefer not to answer
 - e. Other

7. When you were pregnant with this baby, did health care staff give you information on infant feeding?
 - a. Yes
 - b. No
 - c. I do not know
 - d. I prefer not to answer

8. If you answered “yes” to question 7, which health care professional gave you information on infant feeding? More than one answer is okay.
 - a. No one
 - b. Obstetrician (birth doctor)
 - c. Family Doctor
 - d. Midwife
 - e. Doula
 - f. Nurse
 - g. I prefer not to answer
 - h. Other

9. What are some examples of information healthcare professionals gave you regarding infant feeding? If you prefer not to answer this question, please write “X” in the comment box.

10. Are you having or did you have any difficulties feeding at first?
- a. Yes
 - b. No
 - c. I do not know
 - d. I prefer not to answer
11. If you answered “yes” to question 10, please describe the difficulties you experienced. If you prefer not to answer this question, please write “X” in the comment box.
12. Describe your infant feeding experience in hospital. If you prefer not to answer this question, please write “X” in the comment box.

7.2 Appendix 2: Recruitment Poster



Have you given birth over the past year?

Was your pregnancy considered “high-risk”?

Did you complete some form of prenatal education?

If you answered “yes” to all three of these questions, ***we want to hear your voice!***

Research Study: Researchers at Mount Saint Vincent University are looking to explore the impact prenatal education has on birth and postpartum experiences for those who have experienced a high-risk pregnancy over the past year.

What is involved? Completing a 20-30 minute online questionnaire.

You can complete the questionnaire if you:

- Have given birth within the past year in Nova Scotia
- Identify with having a high-risk pregnancy
- Completed some form of prenatal education
- 19 years and over
- Are able to read and write in English

For more information please contact:
prenataleducationresearch@msvu.ca

Please scan the QR Code to begin the questionnaire



This research study has been approved by MSVU Research Ethics Board UREB# 2023-094 Vers 3.

7.3 Appendix 3: Content Analysis Codebook

Theme Code Level			Theme Description
0	0	0	No Answer
1	0	0	Doing Parenthood (“Good/ “Bad” Parent)
1	1	0	What to expect when you’re expecting?
1	2	0	Perpetuating norms
1	3	0	Reinforcing expert/ Big Brother
2	0	0	Social Determinants of Health
2	1	0	Social support and coping skills
2	2	0	Access to health services
2	3	0	Education and literacy
3	0	0	Risk modification as a responsibility
4	0	0	Juxtaposition
4	1	0	Missing information
4	2	0	Lack of empathy or compassion
5	0	0	Maternal Agency
5	1	0	Opinions and flexibility
5	2	0	Control (locus of control)

7.4 Appendix 4: Content Analysis Data Tables

Respondent ID	Section #	Question #	Theme Code	Question/Response	Sequence Number	Notes
	2	12		If you had a birth plan, how was it put to use? If you prefer not to answer this question, please write "X" in the comment box	1	
2	2	12		It wasn't a birth plan, but preferences that my spouse and I discussed and some info we had discussed when discussing options with the health providers.	2	
3	2	12		It was put in my chart. The first nurse read it and asked me about it, but I laboured for 24 hours! I think they lost track of it after the first hour. But, they did stick to my request about pain medication. That was followed exactly.	3	
5	2	12		I got a template off of Etsy, and made it my own. I did research on things people do during birth and what I thought I might like, as I had never done this before.	4	
6	2	12		It was not mostly because of the c-section. But they respected the wishes they could like having music playing	5	
8	2	12		X	6	
9	2	12		X	7	
10	2	12		Unfortunately my plan had to be changed throughout the pre labour as I was induced due to pelvic/hip pain and being unable to walk.	8	
12	2	12		I just proceeded with labour and delivery as I had wanted and if anything came up that wasn't on my birth plan I took advice from my obstetrician on what she recommended I do.	9	

14	2	12		Was asked about preferences by nurses and they were very supportive	10	
15	2	12		X	11	
16	2	12		Printed copy for first None really for second Discussed and documented in chart for 3rd and 4th	12	
17	2	12		It was not due to the emergency c-section.	13	
18	2	12		it wasn't, nobody listened	14	
19	2	12		X	15	
20	2	12		I told the nurse to do whatever was necessary, we wanted my mom to cut the cord and me have skin to skin but otherwise everything they needed to do was okay with me.	16	
21	2	12		X	17	
24	2	12		The only real request was to latch for breast feeding within the first hour	18	
25	2	12		X	19	
26	2	12		I didn't have one because I didn't know what it was.	20	
29	2	12		By some but not all the head nurse was the worst	21	
30	2	12		X	22	
31	2	12		I think they followed it the best they could.	23	
33	2	12		The OB read over it, but to my knowledge, did not have it readily available during my labour & delivery.	24	
34	2	12		They did ask me for my preferences - but my preferences changed because my baby was early. I was given choices during my labour. We did not stick to our birth plan.	25	
35	2	12		Discussed with OBS team at presentation in labour	26	

40	2	12		I had a loose plan, I knew things couldn't all be controlled. But this guided the general options provided to me. Such as pain management.	27	
41	2	12		A loose guide for what Interventions I wanted.	28	
42	2	12		The nurses referenced it when medical interventions were suggested	29	
43	2	12		X	30	
44	2	12		No plan.	31	
45	2	12		X	32	
47	2	12		X	33	
48	2	12		It was present in the delivery room and verbally communicated by my insistence on saying "don't ask me if I want medication. If I do I will ask but I don't want it." They also helped me find comfortable positions to achieve the labour I wanted.	34	
49	2	12		Honestly it was kind of thrown out the window due to the induction. However it helped prepare me and my husband for what would come and I think it helped him support me more through the process.	35	
	2	15		Describe your birth plan. You are welcome to describe your experience developing and using it. You are welcome to provide more thoughts and feelings not captured above. If you prefer not to answer this question, please write "X" in the comment box.	36	
2	2	15		It wasn't a birth plan, but birth preferences that we discussed orally and didn't write down. It included that I preferred to do early labour at home, not be induced, plan for no epidural unless pain was too high, try laughing gas if available, bit of time before cutting the cord,	37	

				skin contact and breastfeeding as soon as possible, bring frozen colostrum just in case, no bath for the baby		
3	2	15		Nothing went according to plan. You can't plan, because you never know what's going to happen. I do think that I would have opted for a c-section straight out of the gate if I had a do over. With all the anti-section information I received prepeg, I forgot how risky delivery is. We almost died.	38	
5	2	15		<p>I got a template off of Etsy, and made it my own.</p> <p>I did research on things people do during birth and what I thought I might like, as I had never done this before.</p> <p>I am not hard to get along with, very easy going. I chose to have the lights dim, to be more calming, and boy did that help, especially since we were up all night for my labor.</p> <p>My template had check boxes for things like medication, if I wanted to be couched (YES), and who would cut the cord, things like that. It was so helpful.</p>	39	
6	2	15		I wanted to labour naturally but have an epidural when possible. I wanted music playing. I wanted my husband to be with me the entire time. I wanted to be provided explanations for all procedures and drugs.	40	
8	2	15		X	41	
9	2	15		X	42	

10	2	15		I wanted a calm birth, with little medication preferably with water. I was open to whatever would be needed as long as myself and babe were healthy	43	
12	2	15		Laboured at home until I felt I needed to be checked at the hospital. Asked for and received an epidural at the earliest opportunity. In my case 5 cm dilated. Laboured down even once fully dilated. Delivered vaginally (though I needed an episiotomy).	44	
14	2	15		X	45	
15	2	15		X	46	
16	2	15		My plan is always to get my baby out safe with as least intervention necessary. Always open to change in plans as the labour progresses	47	
17	2	15		I was hoping to deliver vaginally rather than have major surgery.	48	
18	2	15		support and I wasn't given it	49	
19	2	15		X	50	
20	2	15		Skin to skin Grandma to cut cord Vit k and bath okay Daddy present all times All the drugs	51	
21	2	15		X	52	
24	2	15		Templates provided by my prenatal class instructor and also discussed with my OB.	53	
25	2	15		N/A. I was always just going to let the circumstances guide me. I knew I wanted pain management and I was really hoping to avoid a C section. Other than that I just wanted a healthy baby.	54	
26	2	15		X	55	

29	2	15		Did not want to push on my back, wanted to wait or not have my waters broke, wanted to ask for an epidural, wanted to be able to move as much as possible, no episiotomy unless absolutely necessary and with consent same with forceps.	56	
30	2	15		X	57	
31	2	15		I'd rather not.	58	
33	2	15		Door closed at all times No epidural or episiotomy Baby with me at all times Delayed cord clamping Skin to skin immediately	59	
34	2	15		I wanted a lower intervention birth - but when I found out I don't as going to need Pitocin - I knew the pain level would be higher. For this reason, I did elect to have an epidural. I was in labour for 56 hours - so I was pretty exhausted towards the end.	60	
35	2	15		Filled out the birth plan form provided through midwifery care which was submitted with my file. Unsure if it was referenced by the nursing team during my labour and delivery as it was a very quick delivery but nothing was done against my wishes in that plan	61	
40	2	15		It wasn't super detailed. But I was clear on my major points: I did not want mechanical intervention in delivery such as forceps or a vacuum. I did want pain control (epidural etc.). I indicated I would prefer a c section if things took a turn. And of course the standard items like the golden hour etc.	62	

41	2	15		I had a loose guide of what I did and didn't want. I wanted an epidural and pain management. I did not want forceps or vacuums, I would prefer c-section if major complications arose.	63	
42	2	15		Wanted to be in a bath during labour and only an epidural, ended up being on an exercise ball and trying laughing gas and an epidural.	64	
43	2	15		X	65	
44	2	15		X	66	
45	2	15		X	67	
47	2	15		X	68	
48	2	15		My birth plan was short and sweet: I wanted no medication or intervention unless the baby or my own health is at risk, then I was open to interventions.	69	
49	2	15		We had exercises and med free options planned. We continued with the exercises but I wanted pain medication and asked for it due to the intensity of the induction.	70	
	2	17		Describe your birth experience. If you prefer not to answer this question, please write "X" in the comment box.	71	
2	2	17		I had an OB appointment and then an ultrasound that day in which everything looked good and then after my drive home, my water broke in late afternoon. We went into the hospital for a check as there were very minimal contractions but my water had broken. L&D, as well as my OB, said they could check me if I wanted and it was up to me whether I stayed or went home. We opted to not have a cervical check since we anticipated a long early labour with this being	72	

			<p>by first birth (earlier pregnancy was an ectopic pregnancy). Then we went home for early labour (plan to come back to hospital in the morning). Right before getting home from the drive, the contractions increased significantly in intensity and frequency. I then was throwing up and not able to find any comfortable position. I did not stay at home very long before we decided we needed to go to the hospital. When we arrived, I was checked and was at 8cm dilated with contractions coming every 2 minutes. I was quickly moved to a delivery room. I knew it was too late for an epidural, though I wanted one with my level of pain. They had gas available and pain medication so I used laughing gas and 1/2 dose of fentanyl. The nurses were exceptional. My labour was very intense and it felt like there was almost no break in contractions. The OB arrived just as I was starting to deliver the baby. The baby's heart rate was dipping and not coming back at the rate they wanted and the baby kept crowning and slipping back in. I had some tearing and an episiotomy and he was delivered. They put him straight onto me but he was very low down because his umbilical cord was very short (and why he had trouble coming out and kept slipping back in). So his cord was cut a bit quicker than they had planned. The OB attempted a few different ways to help my placenta deliver as it wasn't coming out. Then we took a break from that as she put in some stitches. Then she went back to attempting to</p>		
--	--	--	---	--	--

				have my placenta deliver and gave me more fentanyl and then she had to go inside of me to pull my placenta out. This part was also very painful. The staff helped to clean up me and the area and then I was offered to have a shower while my husband held the baby. I bled more than was typical but not quite the amount to be considered hemorrhaging. The nurses and OB were all excellent and competent; they were calm in explaining things and did not cause any worry. They explained more details after delivery was completed. We were never rushed through anything. After the shower we were given some time to settle and then moved to our room.		
3	2	17		My birth experience resulted in my child, so I honestly can't complain. I didn't use pain medication until it was strongly recommended - when pushing. I lost a child before my last one, so I know what that feels like too. Nothing is worse than that. My baby was born naturally/ through my vagina. They really shouldn't have been. They were too big or I was too small, or the resident was too rough? Who knows? They were breech though.	73	
5	2	17		I think I explained enough in prior boxes.	74	
6	2	17		I was sad and had to grieve the loss of a natural labour. I also nearly lost my son as he was born not breathing; the IWK saved his life and mine.	75	
8	2	17		X	76	
9	2	17		It felt empowering and I felt like I was in control of my birth experience. Felt a rush of calm and relief when babe delivered	77	

10	2	17		I was induced due to pain/unable to walk. Babe was very stubborn, midwife helped with exercises and bath prior to active labour. I was able to go in different positions more comfortable than others, failed epidural. Babe went “back in” only to come out quickly “sunny side up”. I ended up hemorrhaging again.	78	
12	2	17		Pleasant, no fear, felt safe, felt heard, fast labour, healthy baby.	79	
14	2	17		Induced using foley bulb - resident had trouble and took 3 attempts. It was u successful. Admitted after that and second foley bulb used. Eventually worked after many hours. Started misoprostol and eventually oxytocin and had waters broken. Got initial epidural but it ran out eventually and anesthesiologist was not available. Had a few hours of pushing and was in extreme pain. Eventually brought to OR for caesarean or forceps and forceps were successful. Had epidural just before and made an incredible difference. 3c tear (episiotomy) and very slow recovery. Overall 4 day process in hospital.	80	
15	2	17		Induced at 37 weeks. 4-5 hours of labor after water broke - epidural for the pain. Back contractions, migraines, high blood pressure (was put on a seizure watch for how high it went). Quick delivery of about 30-40mins once it was time to push Baby went to NICU for a day for low blood sugar levels.	81	

				Baby was kept in hospital for 5 days in incubator for jaundice. Mom was kept in hospital for 5 days for blood pressure monitoring of preeclampsia post birth		
16	2	17		I always feel exhausted and doubtful during labour and then when it comes time to push and deliver babe, I absolutely love it	82	
17	2	17		I was at high risk of developing pre-eclampsia and was told to look out for blood pressures higher than 140/90. I never had this. However I ended up with HELLP syndrome anyway and nearly died. I had severe epigastric pain and was told by the IWK birth unit to take some gravel. My pain did not go away and 2 days later went into hospital and had an emergency c-section.	83	
18	2	17		traumatizing and heartbreaking	84	
19	2	17		Long, painful	85	
20	2	17		As scary as it was to be wheeled into an OR and cut open while awake, the recovery and everything about it was perfect. I got my little girl and I wouldn't change anything.	86	
21	2	17		Traumatic	87	
24	2	17		X	88	
25	2	17		We kept having delayed or plans changed re: induction as my situation was complex; I have a velamentous cord connection and a bilobed placenta. Baby was 41+5 and not always responding well to contractions so the original plan for a miso induction was changed to foley balloon and oxy drip. Unfortunately the staffing required for the new plan was hard to come by while the department was short staffed. So we had to wait several days in the IWK.	89	

26	2	17		I was in labour for 26 hours at the IWK after being induced and my epidural wore off. The OB asked me to try another 4 to 6 hours more, but I was absolutely exhausted and couldn't think straight. My husband intervened and said I needed a section. I'm so glad he did. I was incapable of making that decision for myself. In the end, I would have needed one anyways because of the size of my baby's head.	90	
29	2	17		We were induced, water was broke after I delayed it as much as possible. After way too much time we were finally told he was stuck and needed forceps or a c section	91	
30	2	17		Overall easy, baby had some small issues with her heart rate before delivery and I had some complications with the placenta delivery but we felt very supported by the iwk staff.	92	
31	2	17		I'd rather not.	93	
33	2	17		I dilated extremely quickly and faster than the nurses were expecting. The doctor was not present at the time. The nurses called the doctor to come in, and she ran into the delivery room (in her street clothes) as my baby was being delivered by the nurses. It was very quick!	94	
34	2	17		The baby wasn't breathing when he came out. That was very scary - but they got him breathing pretty quickly.	95	
35	2	17		Arrived at the hospital already 9.5cm dilated so quickly moved into delivery, didn't really have a chance to implement any labour comfort plans as active labour started quickly. Planned to try different birthing positions but was very tired so ended up on my back. 1.5 hours of active	96	

				pushing, non-medicated before delivery. Delivery happened 4 hours after arrival at hospital		
40	2	17		I had an induction that resulted in my being in hospital for 3 days before the birth (spent first night at home). The unit was full. We did not have an assigned nurse. We were an afterthought for those first 3 days. I had to ask about taking the insulin and metformin I had been prescribed as we had no one overseeing our care really at that point. Once I was dilated enough for a Foley bulb we opted for that over going home as we live in a rural community. That was when I was denied pain medications and once the bulb had fallen out the doc decided was to wait until the next day again to have my water broken. I had to be started on a Pitocin drip which did lead to eventual delivery after my baby passed his meconium. There was a slight shoulder dystocia that the doctor was able to manually release and the baby was delivered after 20 min of pushing. I had a small 2nd degree tear. Did not end up with our hour together as he had some difficulty breathing. Then he had to stay in the nursery after the interventions.	97	
41	2	17		I had a 4 day long induction. The third day I received a Foley bulb which I was told wouldn't be very painful by a male doctor then was denied pain medications afterwards by a nurse. Same doctor pushed breaking my water to the next day when the Foley came out within a few hours. Next day went much faster. Waters	98	

				broken, Pitocin drip and epidural. Pushed for 20 minutes. Slight shoulder dystocia the doctor manually corrected. Slight 2nd degree tear. Baby passed meconium before birth, and had some difficulty breathing at first. Required slight intervention.		
42	2	17		It was hard to have my baby in distress and have a major surgery that I was not planned for.	99	
43	2	17		I started having cramping/contractions around noon, ate then called in-laws to watch my toddler. As they pulled into drive away (30 minutes) my water broke. Immediately headed for IWK we parked car and then walked to registration, then contractions are intense then baby was born immediately when I arrived on birthing floor	100	
44	2	17		I felt alone, no one explained what was happening or what was "normal". I had 2 failed epidurals, was induced with cervadil and then Pitocin. Started asking for a c section after 24 hours barely dilated. Finally had a c section after 38 hours and 4 cm dilated.	101	
45	2	17		X	102	
47	2	17		X	103	
48	2	17		I laboured at home from 10pm to 4am when my waters broke. Needed the group b strep antibiotics so we drove through a snowstorm to get admitted and had our second boy at 1143am. My team left me alone (as I wished) and helped me find ways to be comfortable as I needed it. I was so supported and overwhelmed with joy. I was diagnosed with placenta previa after the initial scan and was horrified at the idea of	104	

				another traumatic c section and thankfully it moved and everything worked out. We brought a birth pool but baby came so fast we didn't have time to l fill it up.		
49	2	17		Not as scary as I thought it would be. I went in informed about procedures and practices. I used what I wanted and baby needed. We came out healthy and happy, and I wouldn't have changed a thing.	105	

7.5 Appendix 5: Updated Content Analysis Codebook

Theme Code Level			Theme Description
0	0	0	No Answer
1	0	0	Doing Parenthood (“Good/ “Bad” Parent)
1	1	0	What to expect when you’re expecting?
1	2	0	Perpetuating norms
1	3	0	Reinforcing expert/ Big Brother
2	0	0	Social Determinants of Health
2	1	0	Social support and coping skills
2	2	0	Access to health services
2	3	0	Education and literacy
3	0	0	Risk modification as a responsibility
4	0	0	Juxtaposition
4	1	0	Missing information
4	2	0	Lack of empathy or compassion
5	0	0	Maternal Agency
5	1	0	Opinions and flexibility
5	2	0	Control (locus of control)

7.6 Appendix 6: One Word Birth Experience Description

Table 1. Words respondents used to describe their birth experience and their associated counts.

Word	Count (<i>n</i>)
Aggressive	1
Amazing	1
Beautiful	4
Blur	1
Breathtaking	1
Calm	2
Cathartic	1
Challenging	1
Confusing	1
Devastating	1
Dramatic	1
Easy	1
Empowering	3
Enlightening	1
Excellent	1
Exciting	1
Exhausting	1
Fast	6
Good	1
Grateful	1
Happy	1
Hard	1
Ignored	1
Informed	1
Intense	3
Life-changing	2
Long	4
Magical	1
Medical	1
Nerve-wracking	2
Overwhelming	2
Painful	1
Positive	4
Powerful	1
Quick	2
Relaxed	1
Relief	1
Sad	1
Safe	1
Scary	7

Stressful	2
Supported	4
Terrifying	1
Traumatic	6
Unfortunate	1
Unique	1
Unknown	1
Whirlwind	1