Mount Saint Vincent University
Department of Applied Human Nutrition

Exploration of infant and young child feeding knowledge, attitudes, and beliefs held by young, non-parent men in Nova Scotia

by
Olga Levin

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

September 2022
Halifax, Nova Scotia

Mount Saint Vincent University
Department of Applied Human Nutrition

Exploration of infant and young child feeding knowledge, attitudes, and beliefs held by young, non-parent men in Nova Scotia

by
Olga Levin

Approved:

Kyly C Whitfield, PhD
Thesis Supervisor
Associate Professor, Department of Applied Human Nutrition, Mount Saint Vincent University

---

Linda Mann, MBA, PDt
Associate Professor, Department of Applied Human Nutrition, Mount Saint Vincent University

---

Phillip Joy, PhD, PDt
Assistant Professor, Department of Applied Human Nutrition, Mount Saint Vincent University

Abstract

Background: Adherence to infant and young child feeding (IYCF) recommendations is critical for optimal child growth and development and is often influenced by sociocultural factors. Most research to date has focussed on breastfeeding alone, and usually only among future/current parents and healthcare providers. As members of the public and potential future fathers, young, non-parent men may play a role in IYCF decisions or setting social norms; however, in-depth qualitative work on this topic is limited.

Objective: To explore the knowledge, attitudes, and beliefs regarding the full range of IYCF practices (breastfeeding, as well as complementary and responsive feeding) held by young, non-parent men (19-29 years) in Nova Scotia, and better understand their construction.

Methodology and methods: This qualitative research was guided by a social constructivist approach. Twenty-one young men participated in the focus group discussions that were conducted using a semi-structured guide, audio-recorded, and transcribed verbatim. Transcripts were thematically analyzed using MAXQDA software (v. 20.2.2).

Findings: Three main overarching themes emerged: "shifting masculinity norms," "experiences of alienation," and "use of intuitive heuristics." First, men showed supportive breastfeeding attitudes by prioritizing mother and infant well-being, wishing to be respectful of women's choices regarding how and where to feed. With some dissonance, in the second theme, we report that men believed they were not experts in this realm and at times felt alienated due to a lack of IYCF knowledge and exposure. Participants reported passively learning about IYCF through media and vicarious experiences, and also reported discomfort around specific breastfeeding situations due to unclear social norms. Finally, the third theme focused on men's intuitive reasoning: men used analogies, metaphors, and tangible cues to make sense of IYCF recommendations.

Conclusions: In line with previous work, we identified a lack of IYCF knowledge, confidence, and experience among this non-parent sample. Novel to our work, we found that men held modern IYCF ideas, an openness to learning, and perceptions that the general public should have a stronger appreciation for IYCF recommendations, suggesting shifting masculinity norms and priorities. Future public health programming may consider expanding the target population for IYCF training to include mother's social circles, or even large-scale public media campaigns to sensitize the general public to IYCF recommendations.

Acknowledgements

Gratitude (Hakarat HaTov) is one of the basic teachings in the Jewish tradition. Working on this thesis over the past three years has taught me so much about my strengths and resilience, but most importantly how grateful I am for so many people.

My first thanks are to my supervisor, Dr. Kyly Whitfield. You have inspired me since the first time we met at your office, shortly after I had given birth to my youngest daughter. Thank you for listening, understanding, and allowing me to be myself, while also encouraging me to dare to step out of my comfort zone. Your vibrant personality and enthusiasm for your work are contagious and were so helpful in many challenging times throughout this project. Thank you for teaching me to enjoy every step of the way. It was so easy to work with you, and I am grateful for that. You are a true leader!

To my committee members, Professor Linda Mann and Dr. Phillip Joy! Thank you both for your valuable guidance throughout this journey, wrapped with such admirable kindness and grace. This research would have looked very different without your perspectives and experience. Thank you!

I am also grateful to all my colleagues at MAMA Lab and the research assistants who worked on this project. A special thanks to Andrea Field for being my second pair of eyes and ears during the focus groups, and for your work on the transcripts; I really appreciate it. Ksenia Kholina and Jolene Bianco, I am grateful for your endless support and our special friendship. Kathleen Chan, Hillary Fry, and Jocelyne Labonté, thank you for your advice, kind words, writing groups, and much more. To all of you, it was a privilege to get to know such a genuinely caring, intelligent, hard-working, fabulous group of women.

I also wish to thank my private team. To my husband Ilya, for your love and continuous faith, thank you for pushing me forward; it will never be taken for granted. To our daughters, Arbel and Mia, my compass, for whom I wish to pass on the joy of learning. To my dear parents, family and friends close and far, I am so blessed to have all of you in my life.

Lastly, I would like to acknowledge Dr. Sara Kirk and Jennifer Guy, who were there as I took my first steps as a newcomer to Canada and entered academia. Thanks to your kindness and acceptance, perhaps unknowingly, you have opened many doors for me. You will forever have a warm place in my heart.

This thesis is dedicated to the twenty-one courageous young men who were willing to participate in this study. Thank you for your openness, vulnerability, patience, and respectful conversations that made it all happen.

Thank you!

!תודה רבה

Table of Contents

List of tables

List of figures

List of abbreviations

CCHS- Canadian Community Health Survey

CI- Confidence interval

FGD- Focus group discussions

HIC- High-income countries

HMS- Human milk substitutes

IIFAS- Iowa Infant Feeding Attitude Scale

IYCF- Infant and young child feeding

INSIGHT- Intervention Nurses Start Infants Growing on Healthy Trajectories

LMIC- Low- and middle-income countries

NCDs- Noncommunicable diseases

NHTI- Nutrition for Healthy Term Infants

OR – Odds ratio

SIDS- Sudden infant death syndrome

UK- United Kingdom

UNICEF- United Nations Children's Emergency Fund

USA- United States of America

WHO- World Health Organization

1. Introduction

The first 1000 days of life is a critical period for growth and development, and optimal nutrition during this period has a lifelong impact (1). As such, improving infant feeding practices for optimal maternal and infant health is an ongoing global health priority (2). The World Health Organization (WHO) has evidence-based infant and young child feeding (IYCF) guidelines for the first 24 months of life, such as exclusive breastfeeding for the first 6 months, continued breastfeeding to 24 months and beyond, and the timely introduction of iron-rich complementary foods at 6 months (3). These have been adopted and echoed in the Canadian Nutrition for Healthy Term Infants (NHTI) recommendations from birth to 6 months and from 6 months to 24 months (4,5).

However, according to a 2015 study from Ontario, adherence to the NHTI recommendations is low, with only 2% of new mothers to healthy infants following all nutrition recommendations from birth to 6 months (6). Nova Scotia in particular is among the provinces with the lowest breastfeeding rates in Canada (7). For this reason, knowledge of and adherence to NHTI recommendations may be even lower in Nova Scotia.

One major barrier to optimal feeding practices is the sociocultural context (8–10). Infant feeding decisions are made within a social context, under the influence of family members (11), health care providers (12), and through a media lens (13). Some mothers feel stigma when they breastfeed, particularly in public (14–16), or when breastfeeding older infants and young children (17). Other mothers begin complementary feeding too early, or with inappropriate foods to meet social expectations (18–20), while certain cultural beliefs impact maternal feeding responsiveness (21). Infant feeding is a highly polarizing issue that often elicits opinions, even if uninvited (22).

In 2019, Chan & Whitfield assessed knowledge and attitudes around infant feeding among a diverse sample of adults in Nova Scotia through a questionnaire (23). Their research revealed several knowledge deficits around breastfeeding and particularly complementary feeding guidelines despite high self-rated confidence, with significant differences among men, younger adults (age 19-29 years), non-parents, and participants with lower annual household incomes (<$50,000/year) (23). This work also indicated low acceptability of public breastfeeding images compared to private locations, and low acceptability of images of older toddlers breastfeeding compared to infants, among young, non-parent men ($p<0.05$) (24).

Other researchers exploring the IYCF knowledge, attitudes, and beliefs among men also found a lack of breastfeeding knowledge and less favourable attitudes towards public breastfeeding in young, non-parent men compared to fathers and older participants (25–27). Attitudes of young men mainly were explained using sexualization of the breast, masculinity fears, and perceived negative impact of breastfeeding on women's body shape (27,28). Mass media and exposure were associated with breastfeeding knowledge and attitudes, suggesting sociocultural context as a strong influencer (27,28).

IYCF Knowledge, attitudes, and beliefs among young, non-parent men is an under-researched area, mostly focused on breastfeeding with less research on complementary and responsive feeding. This research used a social constructivist approach to build on findings from Chan & Whitfield (23), to gain an in-depth perspective of the varied IYCF knowledge, attitudes, and beliefs among young, non-parent men in Nova Scotia.

2. Terminology

Knowledge, attitudes, and beliefs are internal determinates of individual behaviours (29). Research in the area of IYCF does not necessarily define these terms, and they are sometimes used interchangeably with other terms, such as perceptions, thoughts, and values. For clarity, I will distinguish between the different terms and their meanings for the purpose of this thesis:

- *Knowledge* - the current information about specific feeding practices (30). Knowledge is "gained through a learning process, based on scientific facts, personal experience and/or traditional beliefs" (29), and assessed by comparing IYCF answers to the established feeding evidence or feeding recommendations. While knowledge sometimes correlates positively with attitudes, this is not always the cause, suggesting that attitudes may be more deep-rooted and less flexible than knowledge.
- *Attitudes* - described as "social cognitions" (31), and defined as feelings, opinions, values, or perceptions that an individual holds on a topic, problem, or concern (29). Attitudes are commonly measured on a scale of comfortability or agreement levels with certain statements to determine positive, neutral, or negative attitudes. IYCF attitudes were found to be associated with knowledge, experiences, and social norms (31,32); and are often a strong predictor of IYCF intentions and behaviours (31).
- *Beliefs* - sometimes used interchangeably with "knowledge," "perceptions," "thoughts," or "attitudes." However, in this thesis, beliefs will be used to describe specific cultural or traditional thoughts.

Feeding terminology can also be interpreted differently:

- *Breastfeeding* - suggests feeding only at the breast. However, aligned with the literature of this thesis, we use the term "breastfeeding" to discuss the practice of feeding human milk regardless of the feeding modality (e.g. breast or bottle).
- *Infant formula feeding* - human milk substitutes (HMS) is a broad term that describes any food presented as a partial of full replacement to human milk, including commercial infant formula (33). Although in the literature, HMS is used interchangeably with infant formula, for simplicity, the term "formula" is used in this thesis to describe feeding only with commercial infant formula.

Lastly, we use the term "men" instead of "males" to distinguish between 'gender' and 'sex'. While sex reflects the biological attributes at birth, gender refers to the socially constructed

roles and social identities practiced by individuals (34). The gender identity of the individual influences their behaviours, attitudes, and experiences (34); therefore, given the association of masculinity and IYCF knowledge, attitudes, and beliefs, more appropriate to use in the context of this research.

3. Literature review

3.1. Importance of early life nutrition

Globally, 1 in 3 children suffers from at least one form of malnutrition: undernutrition (stunting, wasting, and/or underweight), micronutrient deficiency, or overnutrition (overweight or obesity) (35). In Canada, as with other high-income countries (HIC), malnutrition in the form of overnutrition is of highest concern (36). Overweight and obese children are likely to stay obese into adulthood and more likely to develop noncommunicable diseases (NCDs) at a younger age (35). The main NCDs are cardiovascular disease, cancers, type 2 diabetes, and respiratory disease, and they are the leading cause of mortality in the world (37). Therefore, NCDs were identified by the WHO as the most important global health issue of the 21st century. The burden of NCDs not only results in the loss of life years but also reduces the healthy life years by increasing disability and reducing productivity (37).

The period from conception to the end of the second year of the child's life, the first 1000 days, is characterized as a critical window in which early exposures have a significant effect on fetal/infant growth and development as well future health by reducing the risk for NCDs (38). It is increasingly accepted that early nutrition exposure during pregnancy and infancy affects gene expression, also known as nutritional programming (1). This concept stems from seminal research on undernutrition in 54 low- and middle-income countries (LMIC), which demonstrated that stunting and low birthweight during the first 24 months resulted in sustained impaired growth in later years (39). More recent example is the "Growth Acceleration Hypothesis" in which faster weight gain in infancy is thought to program children for the major components of the metabolic syndrome, including higher blood pressure, obesity, and endothelial dysfunction (40). A meta-analysis including 47,611 participants from 10 cohorts in HIC found that rapid weight gain, defined as increase of 1 standard deviation score (SDS), between birth to 1 year of age doubled the risk of childhood obesity [OR 1.97, 95% confidence interval (CI) 1.83-2.12], and increased the risk of adult obesity (1.23, 1.16-1.30) (41). The increased risk for childhood obesity was even stronger when rapid growth weight was calculated from birth to 2 years (2.46, 1.88-3.21) and among those with extremely high weight gain (above +1.33SDS), equivalent to upward centile crossing through two or more bands on standard growth charts (41). Feeding method has been found to predict such growth trajectories, as formula feeding is associated with

rapid weight gain in infancy and childhood overweight, while breastfeeding was found to have a tempering effect (42).

There is substantial and growing data that early life nutrition is particularly important to combat NCDs, with optimal nutrition during the fetal and early childhood periods decreasing morbidity and mortality and reducing the risk of chronic disease (38).

3.2. Infant and young child feeding (IYCF)

The term infant and young child feeding (IYCF) refers to the feeding practices starting in the first hour after birth and continuing through to 2 years old (43). As a critical component of care in childhood, adequate IYCF practices are essential to support growth, health, and development of children to reach their full potential. Moreover, adequate nutrition is recognized as a crucial component in children's rights according to "The Convention on the Rights of the Child" (1989), which secures children's rights to optimal nutrition through access to nutritious and safe food to ensure their health and to combat disease. In contrast, poor nutrition or suboptimal feeding practices increase the risk of illness, and decrease school performance and productivity, therefore influence on the society as a whole (43).

Since 2001, the globally recognized IYCF recommendations set out in the *Global strategy for infant and young child* were adopted by the WHO and United Nations Children's Emergency Fund (UNICEF) (43). Early breastfeeding should be initiated within the first hour of life by placing newborns skin-to-skin with their mother immediately after birth; exclusive breastfeeding for 6 months with no other food or liquid (including water), with continued breastfeeding for 2 years or beyond. Introducing complementary foods should be timely (at around 6 months of age), nutritionally adequate, frequent enough, and appropriately fed to meet the nutritional and developmental growing needs (43).

In Canada, the Infant Feeding Joint Working Group was a collaborative effort between Health Canada, Canadian Paediatric Society, Dietitians of Canada, and the Breastfeeding Committee that created the "Nutrition for Healthy Term Infants" (NHTI) joint statements (4,5). These documents, intended for caregivers and clinicians, outline the infant feeding principles, and set specific recommendations for feeding infants from birth to 6 months, and from 6 to 24 months in Canada. These guidelines were released in 2012 and 2014, respectively, and are described in detail in **Appendix A**. Importantly, Canadian recommendations align with the

WHO/UNICEF global recommendations, and similarly aim to support, promote, and protect breastfeeding for up to two years and beyond, provide appropriate (rich in iron and zinc), timely and safe complementary foods, and practice responsive feeding (4,5). The rationale and the evidence that forms the basis for these major IYCF principals and recommendations are discussed below.

3.3. Evidence for recommended feeding practices

This section presents the evidence surrounding the key recommendations in the NHTI regrading breastfeeding, complementary feeding, responsive feeding, and micronutrient supplementation.

3.3.1. Breastfeeding

Human milk is the gold standard for newborn nutrition (43). Except for vitamin D in Canada and other specific geographic regions, human milk meets all of the nutritional needs for infants in their first 6 months of life (4). Human milk includes macronutrients, vitamins, minerals, digestive enzymes, hormones, antimicrobial, and antibacterial components (43). It is a unique living tissue, and its composition complements the infant's developing gastrointestinal system, constantly changing depending on maternal nutritional and health status, and the infant's needs. In contrast to commercial infant formula, human milk contains easily digestible protein that assists in food sensitization in the first year of life (44), and human milk oligosaccharides that help establish the infant's gut microbiome, promoting intestinal development, and stimulating immune maturation (45).

The NHTI recommendations specific to breastfeeding include initiating breastfeeding within the first hour after birth, breastfeeding exclusively until 6 months of age, and continuing breastfeeding until 2 years old and beyond (4,5).

Early breastfeeding and skin-to-skin contact immediately after birth serve as the first line of protection, providing the conditions for the infant survival through passive immunity and body temperature maintenance, respectively (46). Early latching contributes to successful breastfeeding establishment and exclusive breastfeeding (47). For mothers, early breastfeeding may reduce postpartum hemorrhage (promotes uterine contractions) and increase maternal bonding behaviors which are protective against post-partum pathologies (38).

Exclusive breastfeeding has long been associated with a substantial protection against infections and mortality, both in HIC countries and LMIC (48). Back in 1984, the risk of death from diarrhea of partially breastfed infants between 0-6 months of age was 8.6 times higher than those who were exclusively breastfed (49). For those who were not fed any breastmilk, the risk was 25 times higher compared to exclusive breastfeeding (49). More recently, Ip *et al*. conducted a series of meta-analyses of breastfeeding and health outcomes in HIC (48). In their results, five cohort studies of good and moderate methodological quality showed that any breastfeeding was associated with 23% (OR 0.77, 95% CI 0.64-0.91) reduction of acute otitis media, which increased to a 50% (0.50, 0.36-0.70) reduction with exclusive breastfeeding, compared to exclusive formula feeding. When assessing hospitalization due to lower respiratory tract disease, an analysis of seven studies reported a 72% (0.28, 0.14-0.54) reduction among infants younger than 12 months who were exclusively breastfeed for at least 4 months as compared to those who were formula fed (48). In another meta-analysis including 18 studies, Hauck *et al*. reported that any breastfeeding is also protective against sudden infant death syndrome (SIDS), which is a leading cause of death among infants between 1 month and 1 year of age in the developed world (50), however exclusive breastfeeding for any duration had the strongest effect with a SIDS reduction of 73% (SOR 0.27, 95% CI 0.24-0.31) compared to not breastfeeding (51).

Up until 6 months of age, giving water or other liquids other than human milk increases the risk for diarrheal diseases (43). In contrast, exclusive breastfeeding for the first 6 months is associated with continued protection for the infant against gastrointestinal infections (52). A Cochrane review of 23 studies concluded that infants who were exclusively breastfed for 6 months experienced fewer gastrointestinal infections and less respiratory morbidity than those who were breastfed for shorter time (52). In settings with higher breastfeeding frequency, the breastfeeding mother also benefits from exclusively breastfeeding her infant to 6 months; for example, often delaying the return of menses, an important advantage particularly in LMIC (52).

In the second year of life, human milk still provides caloric contributions of up to one third of the daily required intake (43) and serves as important source of nutrients and liquids in times of sickness and dehydration (46). Moreover, evidence suggests that breastfeeding over 6 months provides protection against both acute lymphoblastic and myeloblastic leukemia in childhood (48).

Long term health benefits for prolonged breastfeeding are associated with reduced childhood obesity, NCDs, and increased intelligence (53). A large meta-analysis of 113 studies, mostly from HIC, showed that longer periods of breastfeeding were associated with 26% (OR 0.74, 95% CI 0.70-0.78) reduction in the odds of overweight or obesity (54). Recent data also shows consistent better performance in intelligence tests with up to 7 intelligence quotient (IQ) points higher by children who were breastfed in infancy than those who were not breasted or were breastfed for shorter periods (53).

Long-term maternal health benefits of breastfeeding include reduced risk of breast and ovarian cancers and possible reduction in the risk of type 2 diabetes (53). For instance, for every 12 months or more of breastfeeding, there has been found a 28% (OR 0.72, 95% CI 0.65-0.80) reduction in the risk of invasive breast cancer, and 28% (0.72, 0.54-0.97) reduction in ovarian cancer with longer periods of breastfeeding, compared to not breastfeeding (53).

Breastfeeding also has societal and environmental benefits compared to feeding with formula (8). It is estimated that improved breastfeeding practices would prevent 823,000 annual deaths among children under 5 years old, and 20,000 annual deaths in women as a result of breast cancer. Breastfeeding also decreases child and maternal morbidities and improves the educational potential, consequently leading to reduced healthcare-costs and national wealth. It reduces the need in manufacturing, packaging, storage, and transportation of formula, ultimately contributing to substantially less ecological impact (8).

3.3.2. Complementary feeding

The period of transition from milk to family foods addresses both nutritional and developmental milestones, therefore the NHTI recommendations discusses the importance of timely, adequate, and safe complementary feeding (5).

Timely- Complementary foods should be introduced at around 6 months, depending on the infant signs of development and interest in food (55). Up until 6 months, human milk alone is adequate to meet the infant's nutritional needs. Since human milk is comprised of 88% water, there is no need to supplement with additional water or other liquids that may compromise the overall intake and increase risk for diarrheal disease (43). At about 6 months, as the baby grows and nutritional needs increase, energy and some micronutrients requirements are no longer met by human milk alone. Iron and zinc are of utmost importance as they are present in relatively low

concentrations in human milk and are important minerals for cognitive and motor development (43). Despite high absorption and bioavailability, infant requirements at 6 months surpass the amount available in milk (56).

Delayed introduction, or providing inadequate, low-iron complementary foods can result in iron deficiency anemia (57). Iron deficiency in early childhood has significant health consequences including impaired mental and motor development, poor socio-emotional behaviour, and reduced school achievement (58). Anemia caused by iron deficiency is estimated to be the leading cause of years lived with disability among children (59).

Conversely, early complementary food introduction before 4 months of age is associated with an increased risk for allergies disease development (60). There is convincing evidence that allergenic complementary foods such as cow's milk, egg, fish, gluten, peanuts, and seeds should not be introduced before 17 weeks and not later than 26 weeks, due to concerns of increased allergy development (60,61). Another example of inappropriate timing for complementary foods is the delayed introduction of lumpy texture beyond 10 months, which may increase feeding difficulties later on (60).

Adequate- Complementary foods should provide enough energy, protein, and micronutrients for the older infant's growing needs (43). During the complementary feeding period, more than 90% of the iron requirements of a breastfed infant must be met by complementary foods, which should provide sufficient bioavailable iron (62). Therefore, NHTI recommends iron-rich meat, meat alternatives, and iron-fortified cereal as the first complementary foods (5). Cow's milk should be delayed until 9-12 months of age and no more than 750 mL per should be consumed per day (5). An Icelandic cross-sectional study found that drinking more than 500 mL milk among 2-year-old toddlers was associated with iron depletion (63). Mechanisms of iron depletion associated with early cow's milk introduction include displacing iron rich foods by consuming cow's milk, direct inhibition of iron by calcium, and microscopic gastrointestinal bleeding (63). Beyond adverse outcomes related to iron status, there is also evidence that early consumption of cow's milk may also promote inappropriate rapid growth (64).

Safe- According to the NHTI, foods for older infants and young children must be prepared, served, and stored safely (5). These practices include avoiding choking hazards (e.g. popcorn), maintaining proper hygiene during preparation to prevent food borne illness,

avoidance of serving undercooked or raw products, and delaying honey introduction until 12 months of age to help prevent infant botulism (5).

Although the complementary feeding period is one of rapid growth and development, there is a dearth of evidence on health consequences or behaviors beyond breastfeeding. Therefore, complementary feeding recommendations and practices tend to vary between and within countries, reflecting cultural factors and food availability (60).

3.3.3. Responsive feeding

Responsive feeding is one of five possible parental feeding styles (65), and is characterized by caregivers' recognition of, and appropriate responses to, children's cues and behaviours during feeding interactions (66). This means understanding the child's hunger and satiety cues, developmental needs, and maintaining a balanced parent-child interaction during feeding times. In contrast, non-responsive feeding practices are those that override the child's cues, and are characterized by either excessive parenting control (pressuring or restricting food intake), allowing children complete control over the feeding situation (indulgent feeding), or a lack of caregiver involvement during the feeding (uninvolved feeding) (66).

The NHTI recommendations encourage responsive feeding based on the child's hunger and satiety cues, finger foods introduction, and drinking from an open cup (5). Responsive feeding should be practiced at all stages of early life feeding such as breastfeeding on cue, while introducing complementary foods, and when feeding a toddler (5). There is evidence to support responsiveness among different feeding modalities as well, such as bottle feeding (66).

Children who are fed responsively based on their hunger and satiety cues are less likely to refuse food, and more likely to learn self-feeding earlier and self-regulate food intake (67). This has important implications for future eating behaviors, possibly even affecting weight status and adiposity in HIC (67,68). The Intervention Nurses Start Infants Growing on Healthy Trajectories (INSIGHT) study from Pennsylvania, United States of America (USA) found that mothers knowledge of responsive feeding practices significantly impacted infants' eating patterns (69). Mothers in the intervention group were taught about responsive feeding practices (e.g. how to recognize hunger and satiety cues, to offer age-appropriate foods and portion sizes, to use food for hunger only and not as a reward or punishment, or to sooth a distressed but not hungry child, shared feeding responsibilities etc.). Compared to infants of control group mothers,

infants of mothers who received a responsive feeding curriculum during the first year postpartum were less likely to consume a low variety diet (OR 0.40, 95% CI 0.23–0.71), and to have a high intake of fruit juice and energy dense foods (0.28, 0.12–0.61) at 9 months of age (69). Another INSIGHT pilot study with 160 mother-infant dyads investigated two behavioral interventions, complementary feeding advice and responsive feeding, provided to first time mothers during the first year postpartum (70). At 1 year, infants of mothers who received both of the interventions had lower weight-for-length percentiles (p=0.009) than both infants to mothers who received only the dietary advice, and the control group infants (70). A recent review reported that responsive feeding interventions were the most important parental behaviour change model for the prevention of childhood obesity (71).

A number of studies from LMIC have also reported the positive effects of responsive feeding education on the infant developmental milestones, suggesting responsive feeding is important for brain development in a critical growth period (72,73). Given the theory that responsive feeding is embedded in responsive parenting, controlling children's feeding and overriding their internal hunger and satiety regulatory cues, may interfere with their emerging autonomy and striving for competence (74). Furthermore, responsive infant feeding has been recently recognized by the Public Health Nurses of Canada to be one area of intervention that can promote children's mental health (75).

3.3.4. Micronutrient supplementation

According to NHTI recommendations, supplementation of vitamin D is required from birth to 12 months of age for all breastfed or partially breastfed infants and young children (5). Vitamin D is important to maintain adequate calcium absorption to support optimal bone mineralization and skeletal development (76). Vitamin D deficiency or rickets in its severe form during this quick growth period, can result in failure to grow, bone deformities and dental defects (76). The amount of 10 µg (400IU) was found adequate in rickets prevention (77).

Despite being the optimal food for infants, human milk from Canadian mothers typically contains about 25 IU vitamin D per liter which is insufficient for rickets prevention (78). Along with concerns over the health risks of sun exposure (vitamin D can be synthesized endogenously with UV exposure) (76), it is therefore recommended that all breastfed infants receive supplements (4). In Canada, although rates of rickets are highest among children in the

Northwest Territories (higher latitude), cases were found across all provinces (76). Infants who are formula fed obtain adequate amounts of vitamin D from the formula and therefore do not require supplements (76).

For children between 12 to 24 months of age, supplementation is recommended as a conservative approach for children who are breastfeeding or receiving breastmilk and not receiving enough vitamin D in their diet (5). Other supplements are not routinely required for infants and young children up to 24 months of age (5).

3.4. IYCF global trends

A 2016 UNICEF report provides a global status update on IYCF practices and puts forth recommendations for improving them (46). Despite the critical importance for the child survival, only 45% of the newborns are put to the breast within an hour of birth. Just over 40% of infants under 6 months of age are exclusively breastfed, and these rates continue to decline with increasing infant age, across all regions. For breastfeeding up to 24 months, just under half of children continue to be breastfed, with a sharp decrease from 74% at one year to 46% at 2 years (46). Despite some improvements in breastfeeding initiation and exclusivity rates over the last 15 years, current prevalence is still far from meeting the global target of exclusive breastfeeding in the first 6 months up to at least 70%, as set out through the Maternal, Infant and Young Child Nutrition targets to 2030 (35).

Indicators for complementary feeding practices are available only for the last decade, showing a worrisome picture as well (46). Complementary feeding often begins too late or too early. Although rates have increased from 2000, only two thirds of infants 6 to 8 months of age were fed timely solid, semi-solid, or soft foods in 2015. In contrast, more than one third of the infants were receiving their first complementary foods too early with an alarming rate of infants receiving complementary foods between 0 to 3 months of age, exposing them to pathogens and early weaning from breastfeeding. Percentages are even lower when it comes to meeting meal frequencies and diet diversity. Globally, half of all children aged 6 to 23 months are not being fed the minimum number of times a day during this critical period for growth and development. Moreover, only one third of the infants at this age groups are eating a diverse diet containing at least four food groups, leaving the rest at risk for undernutrition, including micronutrient deficiencies (46).

3.5. Current IYCF trends in Canada and Nova Scotia

A 2013 report presents the latest breastfeeding trends in Canada per the Canadian Community Health Survey (CCHS) (79). Here, 89% of Canadian mothers initiate breastfeeding soon after birth which is impressively higher than the global rates. For instance, compared to other HIC, Canada's rate is higher than that of the US, 77% but lower than the rate in Norway, 95% and Australia, 92%. Rates of breastfeeding exclusively to 6 months have notably increased from 17% in 2003 to 26% in 2013, while approximately half of mothers exclusively breastfeed for 4 months (79).

Breastfeeding rates vary among Canadian provinces and territories (79). Rates of exclusive breastfeeding for 6 months tended to be lower in Atlantic Canada at 23%, and higher in Western Canada with 29% in Prairie provinces and 41% in British Colombia. However, an increase in the rates since 2003 has been seen in all provinces. The rates of breastfeeding initiation ranged widely among provinces and territories from 57% in Labrador and Newfoundland to 96% in British Colombia and Yukon, with little change since 2003, except for Quebec (76% to 89%) (79).

Nova Scotia has one of the lowest breastfeeding initiation rates in the country with 70% initiation rate and 62% of women breastfeeding exclusively when they leave the hospital (80). In addition, only 12% of Nova Scotian women continue to exclusively breastfeed up to 6 months (81). The rates are even lower in Eastern Nova Scotia with 44% of exclusive breastfeeding at hospital discharge in Cape Breton and 51% in Guysborough Antigonish Strait Health Authority (80). Recent data from Statistics Canada indicate that breastfeeding trends in Nova Scotia have been increasing, with 86% initiation rates and 22%[1] exclusively breastfeeding up to 6 months, compared with 91% and 33%, the national rates for the year of 2018 (82).

National data on complementary feeding practices indicate some suboptimal practices around early introduction of liquids and complementary foods (79). Among all mothers who tried breastfeeding, 45% introduced other liquids[2] to their infants when they were 3 months or younger, and 13% at 4 to 5 months old. As for complementary foods (defined by CCHS as "solid foods"[3]), 11% of infants consumed them at 3 months or younger, and 32% at 4 to 5 months old.

[1] Statistics Canada notes that these data should be interpreted with caution due to high data variability.
[2] "other liquids" defined by CCHS as milk, formula, water, juice, tea or herbal mixture.
[3] "solids" defined by CCHS as cereals and mashed or pureed meat, vegetables, or fruits.

Over half (57%) consumed complementary foods at the 6-month mark or later. In 2011-12, the main reasons among breastfeeding mothers for introducing other liquids and complementary foods were belief that their infants were ready for complementary foods (44%), and perceived insufficient milk supply (23%), while top reasons for ceasing exclusive breastfeeding before 6 months also included perceived insufficient milk supply, as well as difficulty with breastfeeding technique. Another infant feeding practice of interest is adherence to vitamin D supplements, which was also not ideal, with 79% of mothers supplementing breastfed infants, but only 67% doing so daily (79). After exclusive breastfeeding, vitamin D supplementation was identified as having the lowest adherence of all IYCF recommendations (6).

3.6. Factors influencing IYCF practices

Although the myriad benefits of IYCF practices are well established, adherence to the recommendations in most HIC, including Canada, remains low (6,83). Individual, sociodemographic, and sociocultural factors have all been identified as IYCF determinants that contribute to the caregivers' feeding decisions (8).

It is important to note that although various IYCF practices are discussed here separately, they are interconnected. For example, caregivers can practice responsive feeding while breastfeeding (e.g. "feeding on cue"), introducing complementary foods, and with different feeding modalities (84). Although the directionality is still unclear (i.e. does breastfeeding support responsive feeding practices, or do responsive feeders choose to breast- rather than bottle-feed (66), it is apparent that feeding at the breast compared to bottle feeding, especially for longer durations, facilitates more responsive feeding at the complementary feeding stage (84–87). Conversely, caregivers' responsiveness during complementary feeding can predict responsiveness moving forward, regardless of breastfeeding duration (88). Therefore, while breastfeeding, complementary feeding, and responsive feeding are discussed separately below, feeding children is ultimately a composite of all of these practices, and thus understanding which factors influence the whole spectrum of IYCF practices can be beneficial in supporting better IYCF outcomes in Nova Scotia.

3.6.1. Breastfeeding determinants

Of all IYCF practices, breastfeeding is the most researched topic, particularly research investigating factors that influence women's decisions to initiate or to cease breastfeeding (8,12,83,89–91). Similar to infant feeding determinants in general, women's decisions to breastfeed are multifaceted, and include the personal attributes of the woman, the infant behaviour, presence of adequate formal and informal supports, as well as other social, medical, or economic reasons (83).

It is well known that breastfeeding practices are strongly related to inequalities of health, mostly influenced by social determinants of health (83). Age, income levels, marital status, education level, and early return to work are all risk factors for poorer breastfeeding outcomes (79,91). Per the CCHS, mothers who initiated breastfeeding and those who breastfed exclusively for 6 months were in their 30s or older, and/or had attained postsecondary education (79). In contrast, single mothers were less likely to both initiate breastfeeding and breastfeed exclusively to 6 months (79). In a Nova Scotian longitudinal cohort study (n= 4,533) by Brown *et al.* most of the factors associated with early cessation of breastfeeding before 6 months of age were related to social determinants of health (47). Those included less than high school education (HR 1.66, 95% CI 1.35-2.04), lowest neighborhood income quintile (1.35, 1.13-1.60), single motherhood (1.43, 1.10-1.41), pre-pregnancy obesity (1.43, 1.23–1.65), and smoking throughout pregnancy (1.39, 1.21–1.60). Other significant, potentially modifiable factors associated with early breastfeeding cessation were no early (< 1 hour after birth) breast contact by the infant (1.44, 1.29–1.62) and no intention to breastfeed (1.78, 1.44–2.16) (47). Intention to breastfeed for a shorter time was found to have a strong impact on early breastfeeding cessation elsewhere as well (92,93).

In addition, maternal negative beliefs and attitudes towards breastfeeding, particularly lower self-efficacy, were found to be associated with poorer breastfeeding outcomes, impacted by own's and others previous experiences and cultural expectations (65,92). A 2019 review by Bahorski *et al.* found that mother's perceived breastfeeding self-efficacy was as an important predictor for all breastfeeding outcomes (65). Ritchi-Ewings' *et al*. longitudinal study (n=70) found that mothers who were still breastfeeding at eight weeks postpartum were more likely to have previous positive breastfeeding experience than those who never initiated or had early cessation (92). From a maternal perspective, a 2019 review of 10 studies exploring maternal

reasons for breastfeeding cessation found perceived insufficient milk supply and breastfeeding difficulties (e.g. breast and nipple pain) as the most common reasons (91). Maternal thoughts that their milk is not satisfactory for the infant and that other foods are better at improving child's sleep or eating behaviors were also common (91).

3.6.2. Complementary feeding determinants

Early introduction of complementary foods and liquids other than human milk before 6 months of age are infant feeding practices that contradict the national recommendations (4,5). The types of first complementary foods, and the order in which they should be introduced, are explicitly described in the NHTI recommendations (5). Research from Canada and from other HIC similar in their breastfeeding rates and maternity leave policies, report that mothers find it challenging to wait until 6 months to introduce complementary foods (6,18,19,94,95).

Reasons for early complementary feeding initiation are varied and often reflect maternal concerns, societal norms, and misconceptions, rather than the infant's readiness or nutritional reasons (18,19,94). For example, mothers (n=756) from United Kingdom (UK) reported that infant hunger and interest in eating complementary foods, weight, and caregiver wanting to change infant behavior were the top reasons for the early introduction of complementary foods (94). Characteristics of mothers who chose to introduce complementary foods for other reasons than developmental readiness were younger in age, had attained fewer years of education, were single, were first time mothers, and were working in non-skilled occupations (94).

Complementary feeding is seen by some mothers as an opportunity to bring the family together, as the child can be part of the family meals, and the partner is more included the feeding (19). Some mothers view this as another fun and exciting activity to do with their child, where others think complementary foods can help to improve sleep patterns (18). All of these can prompt early introduction of complementary foods. A qualitative study from Australia, in which most of the mothers introduced complementary foods before 6 months, found that early complementary foods introduction was influenced by subjective and group norms, peer influences, infant cues indicating early readiness, and food labelling inconsistencies (18). Similarly, Swedish qualitative study (n=45 mothers) found that while mothers recognize the importance of the dietary patterns for the health and the wellbeing of their children, they also "compromise" on healthy diet because of social considerations, their goals of integration of the

young child into the family life setting, and the pressures (e.g. lack of time and energy) of everyday life (19).

Another important predictor of early complementary foods introduction is the type of the feeding (6,18). Exclusively breastfeeding mothers found complementary feeding advantageous for infant growth and weight gain, suggesting they may commence early complementary feeding (18). On the contrary, formula feeding mothers believed that if the infant is already "feeding off the shelf" (e.g. formula fed), there is no harm in introducing early complementary foods (18). The latter is also supported by a Canadian study that demonstrated significant early introduction of complementary foods among mothers who were formula feeding compared to any breastfeeding ($p<0.05$) (6). Although mothers are familiar with the WHO recommendations, they may not fully understand the true signs of readiness to complementary foods (18). They are also under pressure from peers and significant others, as well as they receive conflicting information from various sources (18).

3.6.3. Responsive feeding determinants

Feeding interactions are dyadic in nature, influenced by both maternal and infant factors (96). Responsive feeding, specifically, is determined by the expression and perception of infant feeding cues. Infant's sex, age, temperament, developmental maturity, and feeding method all influence the amount and clarity of infant cues, which are diverse and highly variable across and within individuals (96).

Conversely, the perception and interpretation of infant cues could be influenced by maternal psychological factors and mediated by sociodemographic characteristics (e.g. education, race, and socioeconomic status) (65,97–101). In their longitudinal study on various income populations, Stifter & Moding reported that mothers who used food for reward or soothing practices had higher family incomes, perceived themselves to be more responsive, and had higher self-efficacy (101). Barrett *et al*. found a positive association between high perceived self-efficacy and restrictive feeding style among low-income mothers, while lower self-esteem was found to be negatively associated with feeding to sooth (97). Other factors may also be at play: studies with low-income populations found that food insecurity and depressive symptoms were related to more controlling and less responsive feeding styles (98,102). These mixed results among different socioeconomic status suggest different parental approaches to feeding may

depend on the available resources. Issues related to restricting unhealthy food choices (97), pressuring to feed when food supply is available, or restricting food when supply is limited, have been suggested among research with low-income parents (102).

Infant weight and appetite may also trigger unresponsive feeding styles (21,103,104). In a large cross-sectional, study of mothers and infants (n=1,920) from UK, Fildes *et al*. found that the pressuring feeding style was associated with greater concern about underweight (OR 1.88, 95% CI 1.29–2.75), and lower infant appetite (0.5, 0.47–0.75) (104). In contrast, the restrictive feeding style was associated with higher appetite (1.44, 1.09–1.89), suggesting that parents who perceive their infant to be underweight or eating insufficient amounts may pressure more, while parents of overweight children may restrict their child's food intake (104). This was consistent with Harrison *et al*. which also found that mothers tend to misjudge their infants weight, usually perceiving infants as being underweight and failing to recognize overweight infants (21). This weight misconception could lead to maternal concerns that result in the use of controlling practices, as demonstrated in a small qualitative study that analyzed parental phone calls to a parenting helpline during mealtimes interactions (105). The results of this study indicated that parents engage in non-responsive feeding practices in response to high levels of anxiety due to "bad" (e.g. infant's refusal of complementary foods or textured food) mealtime (105). Misconceptions regarding infant "healthy weight" and social norms of infant growth (e.g. "more is better" for growth percentile) could play an important role in shaping parental feeding responsiveness (104).

3.7. Sociocultural context to IYCF practices

Differences in IYCF practices around the world suggest that feeding choices are far from being individual decisions (83). Choices around IYCF practices are often made within a social context, influenced by "societal and group norms, public policy and the availability of appropriate care and support, both professional and lay" (83). In a sample of 4,690 women residing in US, the majority of whom were multiparous (68%) and had previous breastfeeding experience (82%), mother's intention to exclusively breastfeed postpartum was higher when the infant's father (OR=7.44, 95% CI 6.20-8.92) or maternal grandmother (2.45, 2.01-2.99) preferred exclusive breastfeeding over other feeding (11). Similarly, in a survey with 2,041 mothers 4 weeks postpartum, those who believed their family members or healthcare providers

preferred exclusive breastfeeding were the most likely (>95%) to initiate breastfeeding (106). Elsewhere, mothers with more vicarious experience of formula feeding (seeing someone/relative or close friend giving their infants formula milk) were less likely to be breastfeeding at 6-8 weeks, regardless of their own personal experience ($p<0.05$) (31). A 2020 longitudinal study reported that relatives, friends, professionals, and media are all sources of IYCF information for mothers of children aged 2 to 54 months (107).

Sociocultural factors such as an unsupportive culture and negative attitudes around IYCF practices are strong predictors of feeding behaviours (9,16,94,108,109). Both a lack of breastfeeding role models and a high prevalence of formula feeding increases negative attitudes and beliefs towards breastfeeding (e.g. painful and difficult) (108,109), which in turn reduces maternal self-efficacy to breastfeed (92). If public breastfeeding is not normalized, mothers could feel stigma, shame, and personal embarrassment with regards to breastfeeding in public spaces (16). In particular, mothers who breastfeed beyond 12 months report concealing their breastfeeding behaviour to protect themselves from unsolicited judgement and comments (9). Similarly, the introduction of complementary foods has also been associated with social determinants including convenience, pressure from others, and the perception that introduction of these foods would be fun (94). One qualitative study reported that mothers felt they were constantly juggling conflicting advice (22).

A recent review by Chan & Whitfield exploring the breastfeeding knowledge and attitudes among non-caregivers, reported that although most people are very well aware of "breast is best" public health message, key IYCF knowledge gaps, as well as a lack of exposure to breastfeeding and negative public perceptions of breastfeeding still exist (32).

Following these findings, Chan & Whitfield (2019) conducted a cross-sectional study with the general population (n=229) in Nova Scotia to explore IYCF knowledge, identifying a meaningful IYCF knowledge gap among several population subgroups, despite high self-confidence in knowledge (23). Although most respondents (86%) chose human milk as the best food for the newborn infant, respondents also thought breastfeeding should be terminated around 18 months, earlier than the recommended 24 months, and only 10% of respondents knew vitamin D was an exception to exclusive breastfeeding. Major gaps were found around complementary feeding, as age to begin with complementary foods perceived to be around 9 months with vegetables as the preferred (36%) first complementary foods (rather than 6 months, and iron-rich

foods). Moreover, only 7% of respondents considered iron content as the reason for choosing the first complementary foods. As for cow's milk, respondents thought it should not be introduced earlier than 12 months, later then the recommended 9 to 12 months. The correct IYCF knowledge was lower among men, non-parents, young adults (19-29 years) and low-income adults (<$50,000 per year). Given the strong social influences on IYCF decisions, these results indicate a potential perpetuation of non-evidence-based decisions and non-compliance to NHTI recommendations in Nova Scotia (23).

3.8. IYCF knowledge, attitudes, and beliefs among young, non-parent men

Non-parent, young men are a group of interest due to their role in perpetuating social norms as part of the general public, but also in their potential support role and contribution to infant feeding decisions as future fathers and as other family members. As Alianmoghaddam *et al*. reported, several women described receiving crucial breastfeeding support from other male family members who were not the father of the baby such as their fathers, brothers, and grandparents (110). Despite this potential, there are only a small number of studies focusing on the IYCF knowledge, attitude, and beliefs of men who have not yet have children.

A 2020 study by Camel *et al*. aimed to assess and compare breastfeeding exposure, attitudes, and knowledge between undergraduate non-fathers' students of different races (111). The authors found that despite differences in exposure and attitudes between white (n=713) and African American (n=117) participants, breastfeeding knowledge among these young, educated men was poor in both groups, with only 6% of African American and 8% of white participants correctly identifying the three assessed health benefits of breastfeeding. The ability to identify the current American Academy of Pediatrics breastfeeding exclusivity recommendations was similarly poor (111).

Moreover, literature suggest that characteristics of this subgroup (e.g. younger age, and lack of previous exposure to breastfeeding) are associated with less favorable attitudes towards breastfeeding (25–27,112–116). An online American survey measuring infant feeding attitudes among 502 men of reproductive age, using the Iowa Infant Feeding Attitude Scale (IIFAS), found a significantly lower score among men who did not have children compared to fathers (p=0.007) (116). In a different study, low-income British white men perceived breastfeeding as sexual act, and described embarrassment and masculinity fears around their partner breastfeeding

in public; less favorable attitudes of, and beliefs about breastfeeding were more pronounced among younger participants and those who did not yet have children (27). Younger participants also viewed breastfeeding negatively because of a perceived negative impact on women's body shape. Mass media was found as a fueling source to perceive breastfeeding as sexual and exposing activity, and in perpetuating IYCF misconceptions (e.g., formula is preferable, breastfeeding can 'pass on cancer') (27).

Although some evidence suggests that more positive attitudes can be mitigated through exposure to breastfeeding and previous experience (25,111,113,114), public exposure of the breast remains a controversial act even among those who hold generally positive attitudes (26,28). In several focus groups with students (n=47) residing in Nova Scotia and New Brunswick designed to explore their attitudes towards public breastfeeding, all participants wanted their children to be breastfed (28). However, most of the students, regardless of gender, preferred breastfeeding be discreet, or only acceptable if in a private area. Men described discomfort looking at a naked breast, specifically seeing the nipple or large exposed areas of the breast, and fear of staring or "being a pervert." As such, formula feeding was found to be safer and convenient (28). A more recent study by Chan and Whitfield (2022) presented photos of breastfeeding in different locations to general adults in Nova Scotia. They found that men and non-parents experienced lower emotional comfort seeing breastfeeding in public compared to women and parents (24). Given the strong influence of societal and cultural norms on caregiver's feeding choices (8,83) it is essential to understand how the knowledge, attitudes, and beliefs of young, non-parent men are formed.

3.9. Gender theory

Given that this study focuses on men, it is essential to explore how gender and masculinity ideologies may inform IYCF knowledge, attitudes, and beliefs. Previous research has linked men's endorsement of hegemonic-traditional masculine beliefs to negative ideas of breastfeeding, particularly public breastfeeding (26,27). Hegemonic masculinity endorsement has been found to be associated with a range of adverse consequences, including unhealthy lifestyle practices, negative attitude towards women's equality, negative beliefs towards fathers role in caregiving, and more (117). However, literature in the area of men's psychology and masculinity now recognizes that masculinity is multifaceted, dynamic, and contextual, rather

than an inherent trait. Even within the so-called hegemonic masculinity, there are variations based on race, ethnicity, social class, sexual identity, and physical capability. In fact, gender roles are changing through social learning and social construction and evolving through the life course. Men at different ages and stages in life (e.g. fatherhood) shift between social identities, with different orientations towards masculine gender roles. For example, adolescents between the ages of 12-and 15 years have the steepest increase in masculinity, whereas older men might develop less rigid masculine gender roles (117). In their critical review, Thompson and Bennett claim that there are at least two types of generations in masculinity ideologies measures (118). They describe a shift from the first generation of hegemonic-traditional masculinity ideology in North America, where men were respected for being the breadwinner or the head of the family, to the second generation of different groups of masculinities constructed by local and cultural features, to the third generation, encompassing family-based masculinities (118). The unique time period between adolescence and fatherhood may bring forth different manifestations of masculinity, for instance, second generation norms such as less strain to perform under masculinity norms, which in turn may shape men's IYCF ideas.

4. Research gap and significance

Research exploring the IYCF knowledge, attitudes, and beliefs of young, non-parent men is limited. Despite numerous studies that have found less knowledge and favorable breastfeeding attitudes among this population subgroup, there is lack of in-depth qualitative work on this topic; particularly among varied samples, and regarding the full range of IYCF practices. Most research to date concentrates on breastfeeding, with little attention paid to the timing and quality of complementary feeding, or responsiveness during feeding, despite the importance of both these factors during the first 2 years. Using a qualitative social constructivist approach this research focused on better understanding the IYCF knowledge, attitudes, and beliefs among young, non-parent men in Nova Scotia.

This study provides insights into the reasons behind the IYCF knowledge deficits among this population subgroup in Nova Scotia, expanding on the work by Chan & Whitfield (23), as well as trends among IYCF attitudes and beliefs (24). Results from this study may inform public health strategies to improve IYCF outcomes in Nova Scotia.

5. Research objective

To explore the knowledge, attitudes, and beliefs regarding the full range of IYCF practices (breastfeeding, as well as complementary and responsive feeding) held by young, non-parent men (19-29 years) in Nova Scotia, and better understand their construction.

6. Theory and methodology

6.1. Social constructivism

Social constructivism is an approach which recognizes the sociocultural constructions in shaping human beings' knowledge, attitudes, and beliefs (119). Social constructivism regards the properties of the person, inherent or acquired, as constructions that are a product of a particular historical and cultural contexts and assumes that social phenomena have multiple perspectives rather than one truth (119). It challenges the essentialist position of an autonomous person that pre-exists society and social life. Some sociocultural factors such as exposure to IYCF and media have been found to have a role in constructing young men's meanings of breastfeeding (see Section 3.8); however, an in-depth understanding of constructs that constitute Nova Scotian young, non-parent men's IYCF knowledge, attitudes, and beliefs was lacking.

Guided by the constructivist approach, this research relied as much as possible on participants' subjective meanings of IYCF (120). This was reflected in the discussion guide by including more general and broad questions to capture the context of participants' lives and settings (120). We also explored the interaction among participants, which allowed us to extend the inquiry beyond the individual into social, political, and economic realms (119).

6.2. Researcher's positionality

Given that this research study was designed to explore the IYCF knowledge, attitudes, and beliefs of young, non-parent men, I must reflect on my position which informs my own knowledge, attitudes, and beliefs in this area. As an internationally trained pediatric dietitian, and a mother of two little girls, I have gained a substantial knowledge and experiences in this realm. I am also a newcomer to Canada and have experienced feeding my children and breastfeeding them in two different cultures, which also constructed the way I perceive IYCF recommendations. While I strongly support breastfeeding in all its forms and am passionate about responsive feeding, I am also ambivalent towards other NHTI recommendations and can relate to mothers who experience challenges in their breastfeeding journey; therefore, bringing a balanced perspective to this research.

I acknowledge that as a woman, a mother, and a healthcare professional, I was in a position of power while conducting the FGD. Therefore, it was important for me to maintain a safe and non-judgmental atmosphere, where participants could feel free to share their opinions.

To minimize potential desirability bias, I chose not to divulge my personal background as a mother and as a dietitian.

6.3. Research methods

6.3.1. Recruitment and sampling

The population subgroup of interest was recruited via purposive and convenience sampling. Participants were recruited using a poster that was posted mainly on social media platforms (e.g. Facebook, Instagram) as well as in diverse public spaces in the Halifax Regional Municipality (HRM) area popular among young men (e.g. public libraries, health centres, gyms, pubs, grocery stores etc.) (see **Appendix B**). Local businesses and organizations were contacted via email and/or phone to ask permission to advertise our study among their patrons and/or employees. Prospective participants were invited to reach us to us via email or phone for information about participation, or alternatively filled out a form with their contact information using a button "sign up" on a Facebook ad. During the first contact with a prospective participant, they were explained about the research and the consent process in greater length. If the participant met the eligibility criteria and wished to participate, they were invited to attend the appropriate FGD according to their residency area.

Participants were eligible to participate if they:

- were men aged 19-29 years old,
- non-parents,
- currently lived in Nova Scotia,
- were proficient in speaking basic English, and
- had no educational background in nutrition.

To enhance validation, as a final step before data collection, a pilot focus group was conducted with peers in the MAMA Lab to review the FGD procedures and discussion guide. Their comments were used to make adjustments before conducting the research focus groups. This practice also helped me to reflect on my moderation skills and acknowledge my bias in using certain rhetoric or body language.

6.3.2. Data collection

Data was collected through FGD with non-parent, young men, 19-29 years old. In line with the constructionist approach, FGD are especially useful in allowing for varied and broad data to be captured (121) and ideal for capturing cultural norms and learning how these are reproduced in everyday discussions (122). Moreover, the interactive effect of the group setting has been found to elicit ideas and discussion that allow researchers to observe attitudes and beliefs which may not arise from individual interviews (121). The latter is particularly important due to the lack of personal involvement in infant feeding practices among non-parent, young men.

A total of 5 FGD were conducted between April 2021 and July 2021 hosting between 3 to 5 participants per group. Three FGD were conducted with participants from the HRM area, and 2 FGD were conducted with participants from eastern and southwestern areas of Nova Scotia with the aim to capture a geographically diverse sample. Data collection with participants residing in different locations was intended to compare the emergent themes between the focus groups, and examine differences in knowledge, attitudes, and beliefs of participants living in rural versus urban areas. Although sample size in focus groups may vary, smaller number of participants per FGD was recommended to generate rich discussion while allowing time for all participants to engage and interact (123). The number of participants (3-5 per group, with 21 in total) in this research study aligned with past research about breastfeeding attitudes using focus groups in Canada (28).

FGD were conducted through different modalities (in-person and online) in accordance with public health guidelines during the COVID-19 pandemic. The first FGD was conducted in-person in a sizable room that met the MSVU COVID-19 safety protocols, while the rest of the FGD were conducted online using Microsoft Teams, a secure online platform approved by Mount Saint Vincent University. Participants provided written, informed consent (see **Appendix C**) and completed a brief questionnaire designed to collect relevant demographic information (see **Appendix D**); collected in-person or digitally. The FGD were facilitated by me and another research assistant, using a dedicated FGD guide (see **Appendix E**) and lasted approximately 90 min. As per the constructionist approach, the discussion guide included general and broad questions to capture the context of participants' lives and settings (120). All 4 online FGD were audio and video recorded (the in-person FGD was only audio-recorded). Following completion

of the FGD, each participant received $20 remuneration. Participants also were provided with two transit tickets (valued at $5.50), if they were using public transportation to attend the first in-person FGD.

6.3.3. Data analysis

Data analysis was conducted concurrently alongside data collection. First, one round of FGD was completed in the HRM area and transcribed verbatim by me. The rest of the FGD were transcribed verbatim by a research assistant and then cross checked and edited by me. All the transcripts were coded and analyzed using MAXQDA software (v. 20.2.2). Transcription and initial coding of the FGD while continuing recruitment allowed for reflection and adjustments for the next rounds. For example, the discussion guide was refined after the first FGD for better flow and clarity, as well as to ensure we do not exceed the 90 minutes' time period. During coding and interpretation, notes were taken to acknowledge my own bias.

Thematic analysis using Braun and Clarke's 6 phases were employed as a method for "identifying, analysing and reporting patterns within data" (124). At first, I read the transcripts several times to familiarize myself with the data and to identify common patterns and emergent themes. For example, common themes of breastfeeding support, openness to discuss breastfeeding, and knowledge of breastfeeding benefits were identified. Later, I systematically coded the full dataset by reading the transcripts line by line and identifying codes. When all the transcripts were coded, I began to sort and merge the codes into themes and explore connections. Further analysis was conducted to identity repeating themes across focus groups and their prominence in each focus group. As a flexible form of analysis, thematic analysis can be used with different frameworks (124). As such, the emerging themes were explored and analyzed within the constructivist approach to identify social constructs which impact IYCF knowledge, attitudes, and beliefs. Reviewing and defining the themes meaningfully was an iterative process between Dr. Whitfield and me. Emergent themes were later presented to, and reviewed by the committee members, with the purpose of discussing meanings and data interpretation. Members suggested tweaks to the themes and theme titles, so the names of themes were changed to better describe the theme's contents.

6.3.4. Ethical considerations

Ethical approval was provided from the Mount Saint Vincent University Research Ethics Board (see **Appendix F**). To ensure voluntary participation and to reduce the potential for coercion, the research team explained the study and outlined the protocol, consent form, and the withdrawal options upon the first contact with the prospective participants. Participants were provided with a paper copy or a digital form of the consent form to provide written informed consent upon arrival at MSVU for their scheduled FGD or before their dedicated online FGD, respectively. Prospective participants were reminded in writing in the consent form of their ability to withdraw participation at any point during the study, and again verbally at the beginning of the facilitated FGD. If the participant decided to withdraw before the scheduled FGD, no data would have been collected so no action was required. If a participant were to decide to withdraw during or after data collection, any data collected from the participant up to that point would have been retained for analysis, however such a scenario did not occur. At the beginning of the FGD, participants were reminded they did not need to answer questions they were not comfortable with and of their option to leave the FGD anytime, without having to explain why they chose to withdraw.

At no point during the FGD were participants asked to share personal identifying information. Confidentiality of the participants was protected by removing any identifying information (e.g. workplace, age, name) from the transcripts and giving pseudonyms by which they will be referred in any publication or other communication of the research findings. Participants were informed that they would not be anonymous to the researcher or to other FGD participants in their group, but they may choose to share as much as they feel comfortable sharing in the group setting. The short demographic questionnaires were linked to the participant using the pseudonym. Only the research team has access to the list linking names, demographic questionnaires, and pseudonyms that could be linked back to written consent forms containing participant identities. Electronic communication with the participants was confidential, using bcc or single recipient emails, using only the lab's '@msvu.ca' email account. The identifying names list and all hard copies of consent forms and questionnaires are stored separately in a locked filing cabinet in locked research offices at the MAMA Lab (207C, Centre for Applied Research). All digital data is stored in a password protected cloud storage, accessible only to members of the research team.

6.3.5. Dissemination plan

The results of this research were presented at an academic nutrition conference (e.g. Canadian Nutrition Society) and will be published in a peer-reviewed journal (e.g. Maternal and Child Nutrition, or the Canadian Journal of Dietetic Practice and Research).

7. Results and discussion

7.1. Characteristics of study participants

A total of 21 young, non-parent men participated in the study, distributed across five focus groups, as described in **Table 1**. Participants were mainly white (71%), had a mean (SD) age of 25 (3.2) years, had completed post-secondary education (67%), were from an urban central living area (81%), were single (67%), and only a few were planning to become fathers in the next 5 years (14%). One third of the participants were not born in Canada, having moved from South Asia, Europe, or the Middle East during their childhood or early adulthood years.

Table 2. Demographic characteristics of study participants.

CHARACTERISTIC	n (%) or mean ± SD
Participant Age, *years*	25 ± 3.2
Marital status	
Single	14 (67)
Married or common-law	5 (24)
Other	2 (9)
Residency	
Cape Breton	4 (19)
Central (Halifax area)	15 (71)
South Shore (Lunenburg, Shelburne, Yarmouth, Queens)	1 (5)
Valley (Digby, Annapolis, Kings, West Hants)	1 (5)
Geographic area*	
Urban	17 (81)
Rural	3 (19)
Annual household Income (CAD)	
< $30,000	7 (33)
$30,000 to $59,999	4 (19)
$60,000 to $99,000	6 (29)
> $100,000	4 (19)
Highest education completed	
High school diploma	8 (38)
College degree	2 (9.5)

Undergraduate degree	9 (43)
Graduate Degree	2 (9.5)
Ethnicity	
White	15 (71)
South Asian	5 (24)
African Nova Scotian/white	1 (5)
Born in Canada	
Yes	14 (67)
No	7 (33)
Average years in Canada	3.7 ± 2.6

* Not all variables add to n=21 because some participants chose to skip questions.

In this study, most of the participants reported that they were breastfed as infants (81%), about half had seen more than 10 women breastfeed, but only a few recalled seeing someone they knew, such as their mother, other family members, or a friend, breastfeeding (see **Table 2**). Most participants also reported they had never given IYCF advice for parents (90%). Each study participant is described in a vignette biosketch in **Table 3**.

Table 2. Exposure to IYCF and parenting plans.

CHARACTERISTIC	n (%)
Being breastfed as a baby	
Yes	17 (81)
No	2 (9.5)
Do not know	2 (9.5)
Number of breastfeeding women seen	
≤5	10 (48)
6 to 24	8 (38)
≥25	2 (9)
Do not know	1 (5)
Plan to have children	
Yes	10 (48)
Years to become a parent	

2 to 5	3 (30)
5 to 7	0
≥8	6 (60)
Do not know	1 (10)
No	5 (24)
Do not know	6 (28)
Gives IYCF advice to parents	
Daily	1 (5)
Less than a monthly	1 (5)
Never	19 (90)

Table 3. Biosketch of study participants.

PSEUDONYM	BIOSKETCH
Riley (FGD 1)	A 29-year-old White man from the urban Halifax area, Riley was born in Canada but spent 15 years living in the United States. He has completed college and one year of university and has a total annual household income between $100,000 and $149,999. He is in a common-law partnership and does not plan to have children in the future but has friends with children.
Andrew (FGD 1)	Andrew is a 25-year-old White man from the urban Halifax area who was born in Canada. He completed an undergraduate degree and is currently a student. His total annual household income is between $30,000 and $39,999. Andrew is single, does not plan to have children in the future, but has some nieces and nephews.
Ajay (FGD 1)	Ajay is a 25-year-old South Asian man from the urban Halifax area, originally from India. He has lived in Canada for five years and has completed an undergraduate degree. With a total annual household income between $40,000 and $49,999, Ajay is single, but plans to have children in the future.
Eithan (FGD 1)	A 22-year-old White man from the urban Halifax area, Eithan is originally from Israel, but has lived in Canada for 8 years. A university student with a total annual household income of less than $10,000, he is single, but wants to become a parent in the future. Has friends with children.

Maxim (FGD 1)	A 29-year-old White man from the urban Halifax area, Maxim is originally from Russia but moved to Canada 2 years ago. He has completed a graduate degree and has a total annual household income of more than $150,000. Married, he has not yet decided if he wants to become a parent in the future, but he has friends with children.
Jake (FGD 2)	Jake is a 23-year-old White man of Acadian identity from the urban Halifax area, where he has lived his entire life. He is a young professional with an undergraduate degree and total annual household income between $100,000 and $149,999. Jake is single and has not yet decided if he wants to become a parent in the future.
Ryan (FGD 2)	Ryan is a 20-year-old White man from the urban Halifax area who grew up as an only child. An undergraduate student, with a total annual household income between $80,000 and $89,999, Ryan is single, but hopes to have children one day.
Arun (FGD 2)	A 19-year-old Indian man from the urban Halifax area, originally from India, Arun moved to Canada 3 years ago. An undergraduate student with a total annual household income between $10,000 and $19,999, Arun is single, and has not yet decided if he wants to become a parent in the future.
Darsh (FGD 2)	Darsh is a 19-year-old man of Indian identity from the urban Halifax area. Originally from India, Darsh moved to Canada less than a year ago. An undergraduate student with a total annual household income of less than $10,00, he is single, but plans to become a parent in approximately 8 to 10 years.
Graham (FGD 2)	A 24-year-old White man from the urban Halifax area, Graham was born in Canada and has lived in Nova Scotia for his whole life. He completed an undergraduate degree and is currently a student with a total annual household income of less than $10,000. Single, Graham does not plan to become a parent in the future.
Brendan (FGD 3)	Brendan is a 24-year-old man of mixed identity (African Nova Scotian/White) from urban Cape Breton. A military employee with a high school education and a total annual household income between $80,000 and $89,999, Brendan recently got married and plans to have children in the next two years.

Steven (FGD 3)	A 25-year-old White man from urban Cape Breton, Steven is a young professional with an undergraduate degree and a total annual household income between $50,000 and $59,999. Single, Steven has not decided if he wants to become a parent in the future, but has a younger niece and a nephew and grew up babysitting all his life.
Lucas (FGD 3)	A 27-year-old White man from urban Cape Breton, Lucas was born in Canada. He is a young professional with a college education and a total annual household income between $80,000 and $89,999. Lucas is in a common-law partnership but has not yet decided if he wants to become a parent in the future. Some of his friends have, or are starting to think about having children.
Michael (FGD 4)	A 24-year-old White man from the urban Halifax area, Michael was born in Canada and is originally from Ontario. Michael completed a high school education, and has a total annual household income between $10,000 and $19,999. Growing up in churches with his younger siblings, Michael was surrounded by children, and now many of his family and friends are starting to have children. He plans to have children in the next 10 years.
Todd (FGD 4)	Todd is a 29-year-old White man who has lived in the urban Halifax area for the last 11 years. Born in Canada, and originally from Cape Breton, Todd completed a graduate degree and has a total annual household income between $80,000 and $89,999. Todd is single but plans to become a parent in the next 2-5 years. The majority of his friends are now having children.
Rick (FGD 4)	Rick is a 28-year-old White man from the urban Halifax area. Rick was born in Canada, completed an undergraduate degree, and has a total annual household income between $100,000 and $149,999. In a common law relationship, Rick plans to become a parent in 3 years. He has two siblings who have children.
Kumar (FGD 4)	A 23-year-old man of Pakistan identity from the urban Halifax area, Kumar moved to Canada 3 years ago. An undergraduate student with total annual household income between $10,000 and $19,999, he is single and doesn't plan to have children in the future.
Sean (FGD 5)	Sean is a 28-year-old White man from rural Cape Breton who was born in Canada. He completed a high school education and has a total annual

	household income between $30,000 and $39,999. Single, he doesn't plan to have children in the future. Two of his siblings have children.
Martin (FGD 5)	Martin is a Canadian-born, 28-year-old White man living in rural Yarmouth County, but is originally from Halifax. He completed an undergraduate degree and has a total annual household income between $70,000 and $79,999. Martin hasn't yet decided if he wants to become a parent in the future.
Liam (FGD 5)	Liam is a 25-year-old White man who has lived in the urban Halifax area for the last few years, but who is originally from Truro. He completed an undergraduate degree and has a total annual household income between $70,000 and $79,999. Single, Liam plans to become a parent in the next 8-10 years.
Gerry (FGD 5)	A 21-year-old man of East Indian identity, Gerry lives in the rural Annapolis Valley area, but is originally from the Caribbean. An undergraduate student with a total annual household income of less than $10,000, he is single, and plans to become a parent in the next 12 years.

7.2. Emergent themes and analysis: Knowledge, attitudes, beliefs

This research study sought to explore the IYCF knowledge, attitudes, and beliefs of young, non-parent Nova Scotian men and the factors that play a role in shaping IYCF ideas among this subgroup. Based on the theory that one's knowledge, attitudes, and beliefs arise out of interactions with others and are historically and socially constructed, the FGD were conducted under the constructivist approach principles; thus, included broad and general questions in order to capture a wide range of subjective responses (120).

Three main overarching themes emerged from the data: "shifting masculinity norms," "experiences of alienation," and "using intuitive heuristics," as shown in the conceptual model (see **Figure 1**).

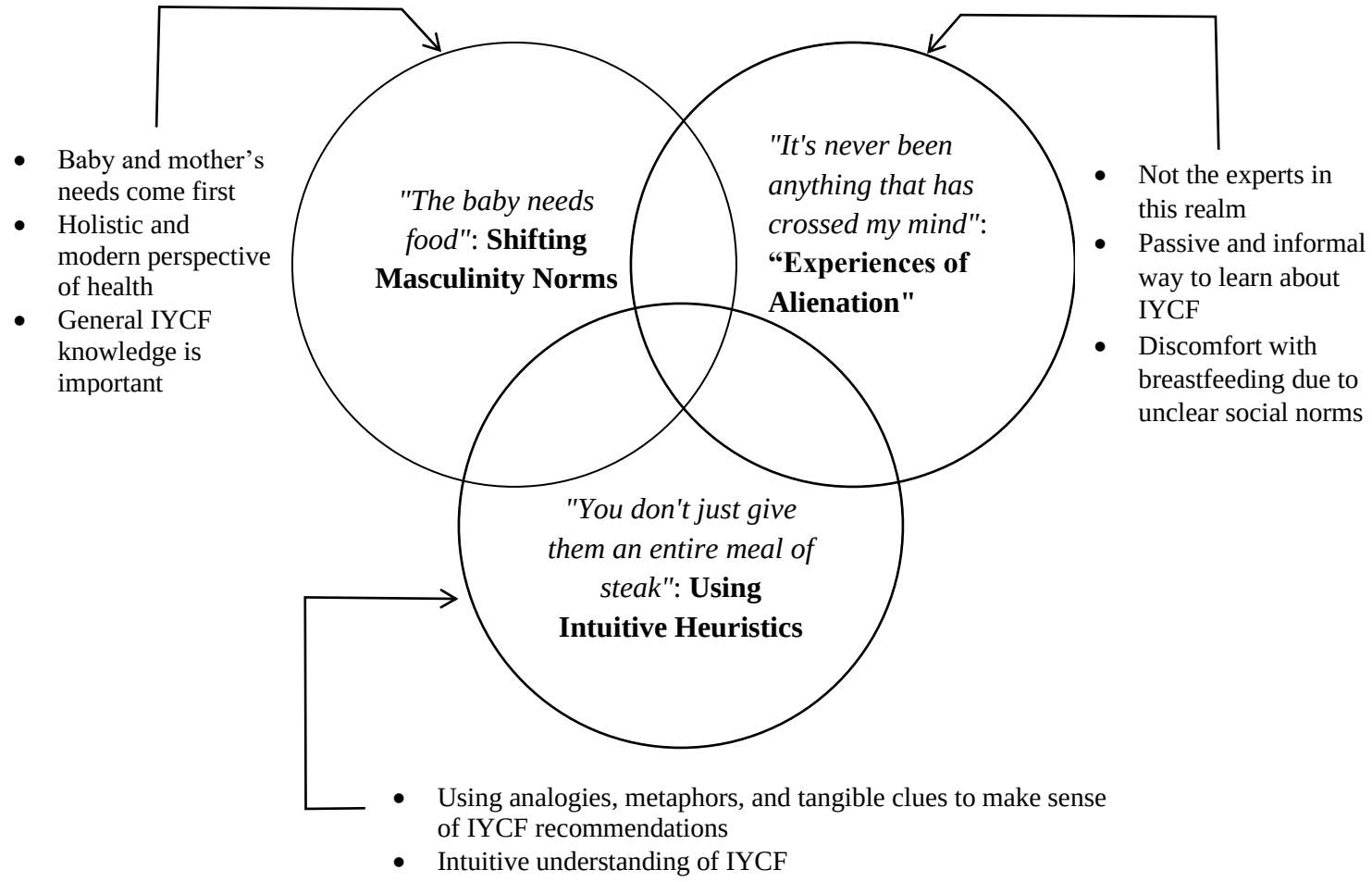

Figure 1. A conceptual model of young men's IYCF knowledge, attitudes, and beliefs

A Venn diagram was employed to illustrate the overlap between the three themes that captured participants' perspectives. Driven by shifting masculinity values, young men in this study demonstrated supportive and modern[4] IYCF ideas. However, simultaneously, participants' narratives revealed alienation from the IYCF realm through a lack of IYCF confidence, passiveness, and confusion. For instance, in the context of breastfeeding, these young men prioritized the well-being of mothers and infants and embraced women's bodily autonomy;

[4] 'Modern' is a term used in this thesis to describe a conceptual shift in young men's IYCF ideas which aligns with contemporary ways of thinking in western societies and is not necessarily bound to a specific period of time. Examples of contemporary ways of thinking among young men (as compared to more traditional hegemonic masculinity) include emotional openness, curiosity, focus on individualism, and endorsement of well-being (132).

however, they still reported confusion regarding acceptable behaviours while interacting with breastfeeding women. Moreover, young men demonstrated awareness of many IYCF discourses and some important IYCF knowledge; however, they believed it was not their place to discuss these issues with caregivers (e.g. “not the experts in this realm”). Furthermore, although young men supported IYCF education for non-parents, they also noted that they would probably not engage with it until they became fathers, thus relying on informal sources of knowledge. Finally, the third theme, “using intuitive heuristics,” is theorized as participants’ subconscious strategy to make sense of the unfamiliar topic of IYCF, both in their modern and alienated ideas.

In the following sections, I will describe the main themes and subthemes, explore their meanings, and contextualize the findings to the literature.

7.2.1. “The baby needs food”: Shifting masculinity norms

A central theme that was found across all FGD was general openness and inclusiveness in participants’ breastfeeding attitudes, in contrast to previously reported restrictive attitudes. Participants appreciated IYCF as an important learning opportunity, and were aware of popular health trends. This theme discusses a shift in young men’s ideas and includes three subthemes: “baby and mother’s needs come first,” “holistic and modern perspective of health,” and “general IYCF is important”.

Baby and mother’s needs come first

A relatively novel rhetoric was identified in the young men’s breastfeeding narratives prioritizing the well-being of the infant and the mother. Participants strongly believed that human milk was the best first nutrition source for an infant and presented highly supportive breastfeeding attitudes. The majority of the participants discussed breastfeeding openly and showed minimal signs of discomfort with this topic. Despite previous work among men noting perceptions of breastfeeding as inappropriate, humorous, embarrassing, and sexual (27,28,125), here participants expressed genuine rhetoric in which breastfeeding was termed “normal,” “completely natural,” and just like “eating an apple.”

In addition, participants were also highly supportive of public breastfeeding and women’s choice of where and how to breastfeed. Most participants noted that breastfeeding should happen anywhere the dyad found comfortable. In probing to determine whether some locations were

more appropriate to breastfeed than others, a consensus was that there should not be any difference by location, as the ultimate requirement was simply that the infant was fed. Rick (28 years, Halifax; FGD 4) explained,

> *The baby is hungry when the baby is hungry, so you feed them regardless if they're hungry at the doctor's office or if it's at a park bench or at the mall, or wherever it may be.*

Other participants believed that certain locations were not conducive for breastfeeding; however, these beliefs were expressed as a consideration for the infant and the breastfeeding woman rather than the general public, as Liam (25 years, Halifax; FGD 5) stressed,

> *As the individual doing it, yeah, I'm sure a clean location, a quiet location, like somewhere where you're not going to have people moving in your close proximity or somewhere where people aren't going to be you know, making loud noises that could frighten or startle your child, like those kind of things could come into play. But none of those things, you know, affect me, the onlooker because, as it's been said, when a child's hungry, a child's hungry, and wherever you're at, you're at [sic].*

Participants in the present study did not express restrictive attitudes towards the exposure of breasts in public. They believed the use of a cover should be at the mother's discretion based on the comfort of herself and her infant. Riley (29 years, Halifax; FGD 1), emphasized:

> *I think it should be the woman's choice if she wants to cover or not, maybe some women might feel insecure, some others might be totally empowered or emboldened to just do it and it's fine. I think that's great.*

The three quotes above by Rick, Liam, and Riley demonstrate a shared pattern of prioritizing the infant and mother and represent the general modern breastfeeding attitude among participants in the current study. The realization that infants do not have a feeding schedule and their needs should be prioritized in the context of public breastfeeding is an unexpected finding, given that previous studies with men reported that the appropriateness of a breastfeeding location was mostly determined based on privacy level (16,24,28,116). In some studies, the presence of other people around the breastfeeding mother, especially men, and how much the mother was

covered contributed to men's less favorable attitudes towards breastfeeding in public (28,116). Magnusson *et al*. reported that perception of privacy is more important than the breastfeeding setting itself, hypothesising that men were more concerned for self and other bystanders rather than the mother (116), which stands in contrast to our findings.

The need to cover up while breastfeeding was another purportedly controversial topic, with previous reports indicating the need for blankets or covers to shield the act of breastfeeding from onlookers, even among those who generally hold positive breastfeeding attitudes (26,28). One of the explanations is that men often associate breastfeeding in public with excessive exposure and nudity, as the first thing they notice is the naked breasts (27,28). Other men fear being perceived as deviant watching a breastfeeding woman or worry about predatory attention from other men towards their breastfeeding partner (27,28). This is attributed to western societies where breasts are sexualized, rather than being seen as a food source (28). More traditional masculine ideology may similarly perpetuate negative views of breastfeeding by framing not just breasts, but women, as sexual objects (116). In contrast, most of the participants in the current study supported breastfeeding in public, regardless of location and whether it was done discreetly. While some participants empathized with the infant and envisioned feeding "underneath a dark blanket" as an unpleasant experience for the infant, others recognized the woman's choice to decide; both reasonings prioritized the feeding needs of the infant over any sexual connotation from not using a breastfeeding cover. Even when some participants were prompted to hypothesize a situation where it was their partner breastfeeding in public, their ideas of public breastfeeding remained unchanged or included enthusiastic comments, as shared by Steven (25 years, Cape Breton; FGD 3): *I'd feel good for them, because I'd know that you know, breastfeeding is healthy for the baby, so, 'You go'.* Steven points to a genuine understanding of the feeding function of the breasts that was shared among the participants in the current study. This may have translated to their belief that breastfeeding can be done anywhere under any terms, suggesting a shift in young men's values.

Participants' recognition of a woman's choice of where and how to breastfeed may be interpreted as a respect for her bodily autonomy. This resonates with the contemporary local and global discourse of women's empowerment and efforts to challenge gender norms and promote women's rights. For example, as recently as 2017 there was extensive global media coverage of women's rights through social media movements such as #MeToo and #TimesUp (126). Given

the increased use of social media among young adults (127), young men may have been exposed to this topic. Second, their ideas might be more locally constructed by Canadian political and social values. In early 1990s, Michael Kaufman, a Canadian pro-feminist, co-founded the “Men for Women’s Choice” movement (e.g. the White Ribbon) to end violence against women and girls, which has become a global men’s movement in more than ninety countries (128). In his book “The Time Has Come,” Kaufman discusses the importance of engaging men in the fight for women’s rights and stresses the shift that has happened in men’s lives and ideas since the feminist revolution (128). Moreover, as part of the G7 group and as the summit host in 2018, Canada created the first gender equality advisory council to advance gender equality and ensure women empowerment is integrated in all G7 work (129). Messages about consent and personal safe space are also meant to be part of health education curriculum in Canadian schools, according to Sex Information and Education Council of Canada guidelines (130). A 2022 study among Canadian youth (15-24 years) confirmed that sexual consent is one of the topics they reported to have learned through public education and other community settings (131). Considering that the age of the participants coincides with the time frame of such movements, it may not be surprising that young men wish to act respectfully regarding women’s bodies.

Clearly, some of the participants were self-aware of the modernity of their shared outlook on breastfeeding. They hypothesized that this shift in their attitudes was a result of changes in societal norms around breastfeeding in their generation. Michael (24 years, Halifax; FGD 5) explained:

> *I feel like now it's a bit less of a stigma, and I think you know, the focus is more on "The baby needs food," rather than like, "This woman is showing herself off," like, that's not what it's about and I think that, yeah, for my peers absolutely they wouldn't mind but maybe, maybe the older generation, some of my parents' friends maybe or my grandparents, they might have different feelings…*

Others attributed this shift in their perspective to an active effort on their part to unlearn the socially constructed sexualization of breasts and embrace their biological function. Andrew (25 years, Halifax; FGD 1), who divulged previously discussing breastfeeding with his sisters,

said that he actively changed his thoughts about breastfeeding, which was met with voices of agreement in the background from the other participants. He said,

> *...When I was younger I used to see it [breastfeeding] and think, 'Man that's weird,' but now I've grown up and kind of trained myself to be like, it's natural, it's something that has to happen."*

Similarly, Brendan (24 years, Cape Breton; FGD 3), explained that as a young child, when he first saw his friend's mom breastfeeding, he was shocked at seeing "Her boobies out", however, as he got older, he realized that this was not subversive, but just a form of feeding a child. Maxim (29 years, Halifax; FGD1) also shared how he felt when he first saw his mother breastfeeding his younger brother:

> *And I think I remember that I felt awkward. But again, I tried to change my perception of it [breastfeeding]. Mm, yeah, I wouldn't want my feelings to affect anything [discomfort for the mother-infant dyad].*

Feelings of awkwardness seeing a breastfeeding woman for the first time or at a very young age is not novel (27,28,111). However, evidence that men use rhetoric of centring the mother and the infant, and self-rationalization of public breastfeeding is very limited. When Spurles *et al.* conducted their FGD in 2011 with university students from Nova Scotia and New Brunswick they also reported that participants framed breastfeeding in terms of the 'baby needs' in both groups of men and women (28). However, while men in that study wanted their future children to be breastfed, they also had restrictive attitudes towards breastfeeding in public, unlike the participants in the current study. More recently, participants in Chan & Whitfield's study also framed breastfeeding in public with phrases such as 'her decision' and 'as long as the mother is comfortable' (24). However, the authors defined these phrases as neutral breastfeeding attitudes that simply describe the feeding situation. Given the findings of this study, I argue that the use of this rhetoric may be reflective of changed values among the general public, particularly among young men, rather than neutrality towards breastfeeding which is less effective in supporting breastfeeding (25).

In fact, our participants' ideas greatly align with 2019 evidence of new masculinity health-related values that emerged among Canadian young men from Western provinces (British

Colombia, Alberta, Saskatchewan, and Manitoba) (132). Using a mixed methods design, Oliffe *et al*. interviewed 30 young men (ages 15-29) with the aim to understand health-related values among this subgroup and followed up with a quantitative survey (n=600) to test the inductively derived masculine values. With a close mean age and demographic characteristics to our participants (mostly single, educated, white men), those young men defined a man as someone who put the wellness of others ahead of themselves, contrasting the long-lasting claim that young men are typically hedonistic. The study revealed that young men's narratives have purposely shifted from the conservative masculine practices of earlier generations, as they believe that now it is more acceptable to show care for others and be open to new ideas and ways of thinking (132). Similarly, participants in the current study also demonstrated selflessness and emotional openness by showing care and empathy for the needs of the mother and the infant by prioritizing breastfeeding over their own potential feelings of discomfort.

In summary, participants' meanings of breastfeeding revealed sensitivity and caring for others, respect for women's autonomy, and empathy to maternal experiences. Along with the novel, modern outlook on IYCF and the centering of mother's choice and infant's comfort among participants, undercurrents of breastfeeding discomfort still emerged from these discussions (see Section 7.2.2). However, even when feelings of awkwardness around breastfeeding were recognized, any discomfort was overcome by self-rationalizing that breastfeeding was a natural act, and therefore they strove to act in ways that put the baby and the mother's wellbeing first.

Holistic and modern perspective of health

In addition to their modern breastfeeding attitudes, young men in this study demonstrated awareness of the connection of IYCF and mental health and believed in the superiority of natural over industrialized foods. Gender is known to influence health attitudes (117,133) and nutritional knowledge, beliefs, and habits (134). While women are generally more knowledgeable about nutrition and practice healthy behaviours (134–138), men are often perceived to be estranged from their health and more likely to make suboptimal nutrition choices (e.g. larger meal portions, higher consumption of red meat and alcohol) (133,139,140). Men also tend to have a stigma surrounding mental health and seeking help (117). The differences are partially explained by socially constructed gender norms which associate masculinity with risk-taking, self-reliance,

and excessive emotional control (117) compared to feminine ideals of concern with aesthetic aspects (134) and embracing the main feeder role (141). Factors such as low education and socioeconomic status were associated with higher adherence to masculinity norms and fewer health promoting behaviours in Canadian men (142). However, building on Oliffe *et al*. and others (127,132,143), this subtheme discusses a positive shift in young men's awareness and attitudes towards health and well-being issues.

Feeding provides an opportunity to lay the foundation for children's healthy mental and social development; however, feeding is also a potential challenge for parents which can have various implications on their well-being (75). Surprisingly, participants in the current study were aware of the strong connection between feeding and the mental health of both children and parents. They viewed feeding as more than just a means for nutrition and recognized its social and emotional values. Liam (25 years, Halifax, FGD 5) described:

> *It's important that the connection between the parent and the child be there, that it be an interactive experience between the two participants, and that it's one that allows for kind of the development of that secure bond and to create that kind of, uh, connection.*

Liam points to the benefits of the connection between the caregiver and the child throughout both stages of breastfeeding and complementary feeding. Specific to breastfeeding, a "strong bond" and "emotional connection" between the mother and the infant were the most commonly discussed advantages of breastfeeding, along with the idea that it is a "natural" practice. Although participants revealed that they did not have a deep understanding of the mechanism, they strongly believed that the bonding effect of breastfeeding ultimately supports early child development. Participants also considered the mental toll that breastfeeding might have on mothers, as evidenced by Andrew's (25 years, Halifax; FGD 1) thoughts:

> *I'm just kind of thinking out loud where it might be [that] the mother's really tired and then, their hormones are all thrown off, and then the baby won't stop crying and you have to get up every twenty minutes to feed it and I'd imagine that could take a toll on mental health.*

Andrew is acknowledging that breastfeeding might be challenging, presenting a potential disadvantage and obstacle to breastfeeding. This realistic awareness of breastfeeding challenges is unexpected given his self-reported lack of IYCF knowledge, and yet might be attributed to the knowledge he has acquired from his sisters who were breastfeeding as he had reported. Clearly, these narratives indicate an awareness of the mental health aspect of feeding as an important issue for both parents and children.

Consideration of food allergens was another health issue that was discussed in most FGD. When participants were prompted to describe the ideal first complementary foods, they mentioned various allergens (e.g. egg, dairy products, shellfish, and nuts) as foods that would be beneficial to gradually introduce to prevent the development of food allergies. Familiarity with common allergens may not be surprising given the strong awareness to food allergies in Canadian culture (e.g. food allergen labelling requirements, national food allergy awareness month, allergen free policies in public spaces, etc.). However, participants' understanding that allergens should be gradually introduced among the first complementary foods was compatible with the NHTI recommendations (see **Appendix A**), yet unexpected given their reported minimal IYCF exposure and lack of familiarity with these recommendations.

Participants' awareness of both mental health and food allergies may indicate their overall approach to health rooted in their shifting masculine values (132). In addition to openness and selflessness, Oliffe *et al*. also found that young men endorsed well-being as another health-related core value, which the authors deemed a unique finding in both men's health and masculinities literature (132). The men in that study valued feeling and looking well as means of better life quality and longevity. They also valued emotional and intellectual strength as core masculine values, meaning they believed men should be able to express their feelings and recognized the value of knowledge rather than physical strength. Oliffe *et al*. explain that in contrast to previous generations of men, this age group (e.g. millennials) grew up in an abundance of electronic health and lifestyle information, and health promotion campaigns (132). Another recent study from Sweden also highlights the growing health consciousness among young people born after the year of 2000 (127). This qualitative study included interviews with young people (n=49) to understand an unexpected trend of abstinence or reduced alcohol consumption among adolescents from European countries, Australia, and North America. The study identified various social mechanisms and generational changes that may have increased

awareness of health and lifestyle modification for health among young people. They found that young people are more concerned of the health risks of drinking, more health-oriented, and experience more room for individual choice and less peer pressure to drink. The authors suggested that the current generation of young people experience early maturation and act as "more responsive, individualized, reflective and adult-like actors than in earlier generations" (127).

Translated to our current study, participants clearly demonstrated emotional openness by freely discussing mental health as opposed to feelings of embarrassment, weakness, and stigma, a marked change in men's attitude from previous research (117). Their appreciation of well-being and awareness of health-issues may reflect their absorption of IYCF messages from various sources. As evidenced in other studies, men are usually well-aware of public health campaigns regarding breastfeeding (e.g. 'breast is best,' skin-to-skin) (16,25,26,120,122). Similarly, food allergy prevention and mental health are both areas of public health concern in Canada (61,75). Mental health discourse has also become more popular in Canadian culture, for example, beginning of Bell's let's talk campaign in 2010, and especially given the rise of mental health issues following the COVID-19 pandemic.

In addition to participants' awareness of health and well-being, they also seemed to endorse popular nutritional trends, as noted in their IYCF perceptions based on what they viewed as healthy in adult nutrition. Most of the participants in the current study believed that "natural" nutrition was superior to processed and commercially available products. Therefore, participants valued breastfeeding as the ideal first food choice for an infant. Arun (19 years, Halifax; FGD 2) explained:

> *...if you give them milk from outside or any other thing, there is a chance that it might be contaminated by something, and babies don't have that much immunity to fight things. So, mother's milk is naturally the best thing that's made because it has the right temperature, it has the right nutrients, and right stuff. And if for any reason the mother cannot give the baby milk, because of any biological problem or anything like smoking or drugs in their blood stream, they should go for the baby feeding formulas, after carefully checking of [sic] them.*

Arun stresses the compatibility of human milk to the infant's needs versus the danger in formula use because of its industrial nature. Most participants considered formula the second option if breastfeeding was not possible for any reason or if the mother has been drinking alcohol, smoking, or consuming drugs. The presence of possible toxins in the breastmilk was mentioned as the second most common breastfeeding disadvantage after the mother's discomfort (e.g. tiredness, physical discomfort, mental impact). Less commonly, a few participants asserted that formula feeding might be a better choice because it is scientifically created and can provide adequate nutrients that could be missing in breastmilk produced by a person consuming a typical western diet. This is similar to the findings of Jolly *et al*. and Pollock *et al*., highlighting that men falsely believe that breastfeeding women require special diets and must avoid certain foods to produce high-quality milk (26,144).

While formula endorsement was uncommon, a general distrust of the food industry was much more prominent among participants in all five focus groups. Although infant formula is made under robust standards (e.g. Codex) (145), both infant formula and cow's milk were perceived as commercial and modified products that should be used with caution due to potentially harmful ingredients. Some participants referred to news stories from other countries about inadequately produced infant formula causing infant illness, while others noted fears of unknown additives and preservatives. Similarly, providing cow's milk to infants in the complementary feeding stage was addressed with conflicting attitudes. Participants recognized the nutritional benefits of cow's milk; however, they also reflected on the commercialization of cow's milk in recent history. They wondered whether cow's milk was really as reliable and healthy as it was portrayed for many years and if intake of cow's milk should be limited given the lack of insights into modern dairy production and popular media discourse around high dairy consumption and health concerns. The recent changes in Canada's Food Guide, such as recommending water as the drink of choice and focusing more on plant-based diets (146), may have also contributed to their ideas, as many participants were familiar with Canada's Food Guide.

Using the same rationale as breastfeeding being 'natural' nutrition, most participants also perceived that first complementary foods should be natural and neutral in taste without any additives. For example, vegetables and fruits were thought to be the ideal first foods for infants compared to processed foods or those with high sugar and salt content (e.g. processed meats,

carbonated drinks, and juices). However, in direct contrast to the stated aversion for commercially produced foods, there was an unexpected common belief among three focus groups (1, 4 & 5) that pre-prepared "baby foods" were appropriate first foods for an infant. Martin (28 years, Yarmouth; FGD 5) shared:

> *I'm sure they've got a lot of different vitamins and nutrient sources in there, uh, already prescribed so that the baby is getting the proper amount of nutrition.*

Disagreement from other participants was not noted, perhaps due to a different perception of industrialized foods, or their growing popularity in Canada (121). Since Martin points to the product's nutritional value, one potential explanation for these commercial baby foods' acceptance or preference is the strategic marketing or 'health washing' of these products with certain health claims and labels (e.g. fortified, organic, natural ingredients). In contrast to formula which usually has a standard packaging and textual features, many "baby food" products contain eye-catching visual features such as bright colours and images of vegetables and fruits. Such visual stimuli may attract young men's attention and correspond to their preference of natural foods may, thus shaping their favorable ideas on "baby food," compared to formula. Another participant mentioned "the side of the jars in the baby food aisle" as his primary source of IYCF knowledge. Therefore, it seems likely that young men's IYCF perceptions are also constructed by the baby food industry.

In summary, this subtheme discussed the new awareness of young men for health and lifestyle and their endorsement of modern nutrition beliefs. Participants' meanings of IYCF revealed an appreciation of and openness to discuss mental health, distrust in industrialized foods, but also 'health washing' in the baby food industry.

General IYCF knowledge is important

Since literature surrounding IYCF education for young, non-parent men is limited, young men's attitudes towards about IYCF education were also unknown. In this section, the third subtheme within the 'shifting masculinity norms' theme, I will discuss participants' interest in learning about IYCF.

Rooted in prosocial beliefs, most participants agreed that it was important for non-parents to have a general knowledge of how to feed children. Many believed that knowing the IYCF

"basics" would help them to take better care of a child if they suddenly need to "step-in" (e.g. emergency situations), or to be accommodating and respectful of other parents around them. Some participants noted that familiarity with general IYCF principles could provide friends and family with more confidence in their ability to care for their children. Others explained that having IYCF knowledge would help them better understand and support their colleagues with children, as explained by Andrew (25 years, Halifax; FGD 1):

> *Makes you more empathic to other people who are having to deal with something like that. So, if your, if your co-worker has to go feed their kid, then, instead of thinking, 'Man they're being so lazy they're just going for a break or something', you realize, 'Okay, now they have to actually go feed this thing to keep it alive, so let's not be super hard on them'.*

As seen in Andrew's example, many participants were mindful of parental experiences and their different needs. Participants were surprisingly empathetic and supportive, repeating the pattern of being emotionally open and selfless. Given that our participants have not yet experienced fatherhood, and most of them reported minimal exposure to children, it would have been expected for them to be less sensitive to parental experiences. Oliffe *et al*. found that the value of being selfless among young men is linked to "social connectedness," helping others, and contributing to the community (132). It may be interpreted that young men's desire to know the basics of IYCF is their subconscious attempt to connect with their community. Knowing how to feed a child may be a bridge for young men to fit within a community where many of their friends and colleagues already have children.

With this meaning in mind, some participants wondered why IYCF was missing from their curriculum in school and post-secondary education programs. Although a few mentioned that they had learned somewhat about breastfeeding in their post-secondary education (e.g. psychology), most reported no formal education on IYCF. Participants believed that children are a fundamental part of the general public; therefore, IYCF should become broadly known by providing educational training in workplaces and be taught in schools. Kumar (23 years, Halifax; FGD 4) shared:

> *Now that I think about it, I think all adults should know the basics about all the babies [sic], like, do's and don'ts like… I think it--these things should be taught*

at high school or maybe the universities that like, you know in case of emergency if you're--if you end up with a baby you know. Like, you should know at least something. You shouldn't be lost.

Kumar is noting the practicality of this topic to everyday life and advocating for more IYCF education. He is also noting his feelings of loss in this realm and lack of experience, believing that even a basic level of knowledge would suffice – a shared terminology among all participants. These findings support Oliffe *et al.*'s suggestion to invest in health education, particularly for young men, to improve health among this subgroup and ease transitions, such as embarking on fatherhood (132). Oliffe *et al*. explained that young men are generally more inclusive and curious due to processes of globalization, individualism, and deviation from traditional masculinity norms, presenting an ideal time frame for health education (132). Given this interest of young men in learning more about IYCF, there is potential to move beyond previous recommendations to develop breastfeeding curriculum only to health science students (115) and expecting fathers (27,147), broadening to ongoing education for all young students (111). Education for young men and continued public exposure could further improve their IYCF knowledge, attitudes, and beliefs and could help young men take a more active role in supporting optimal IYCF practices.

Overall, the three subthemes within 'shifting masculinity norms' demonstrate mostly unexpected IYCF attitudes and beliefs among young, non-parent men. Participants' supportive breastfeeding attitudes, modern health beliefs, and interest in learning about IYCF were interpreted as a derivate of changed masculinity values and gender norms among some young men. Although generalizations should not be made, there are grounds to consider this subgroup as inclusive and open to IYCF practices, which may indicate a shift in IYCF perspectives of young men in this western society.

7.2.2. "It's never been anything that has crossed my mind": Experiences of alienation

The second major theme emerging from this research focuses on the disconnect between participants' novel perceptions of IYCF, as discussed above (see Section 7.2.1), with their actual IYCF involvement and experiences. The young men in this study expressed alienation from IYCF, reflected in their lack of knowledge, experience, and confidence. These findings were similar to IYCF experiences and perspectives among fathers (147,148), suggesting that IYCF

alienation may begin pre-fatherhood. Such feelings of alienation could be explained more broadly as being constructed by traditional gender roles and social norms that exist in western societies. For instance, starting in childhood, gendered upbringing encourages girls more than boys to learn caregiving and nurturing skills (128). Thus, it is possible that young men are perceived by society as less responsible and less trusted than young women when it comes to taking care of an infant or a young child. In addition, popular media has a role in portraying men as not naturally inclined to child-rearing, lacking confidence in parenting, and having a secondary role compared to their female partners (149). Eventually, young men may internalize these stereotypes, thus viewing themselves as unequal partners regarding parenting decisions, and hold misconceptions about the importance of their role in IYCF (25,147–149).

This theme includes three subthemes: "not the experts in this realm," "passive and informal way to learn about IYCF," and "discomfort with breastfeeding due to unclear social norms."

Not the experts in this realm

Drawing upon their minimal IYCF experiences, exposure, and education, young men in this study believed they had limited IYCF knowledge. They often felt unsure of their knowledge, adding caveats to their statements to indicate that they were just guessing, or noting that their answers could be wrong. Most participants could also not imagine themselves giving IYCF advice to caregivers and were extremely uncomfortable with this idea as was expressed by uncomfortable giggles in all focus groups. Participants perceived parents, health professionals, and women as the experts in this realm because they were deemed more familiar, more experienced, and/or as possessing more knowledge about children. Martin (28 years, Yarmouth; FGD 5) speaks to his lack of exposure and confidence in this realm:

> *I have very, very, very rarely been around an infant child and when I was, I was certainly not at a point where I would even dare offer any opinion on how to feed them.*

An interesting discussion developed around the legitimacy to critic parents' practices. Although a few participants wondered if there was a respectful way to approach parents, the consensus was that it is not socially acceptable to critique parents' practices, and young men are

not in a position to intervene. Most participants agreed that even if they saw a parent acting in a harmful way (e.g. giving wine to a one-year-old), they will not be comfortable to speak out, as Graham (24 years, Halifax; FGD 2) pointed out:

> *There is almost certainly never going to be a situation where I'm going to be comfortable telling a parent what's better for their child than they think is good for the child. Like, if I don't see a parent doing something that I know is directly and incredibly harmful, then I'm not going to walk up to somebody I see bottle feeding and say, 'Oh, you know, you should be breastfeeding, it's better.*

Others explained that they could not give advice in a situation they did not identify with or had not experienced, like the ability to breastfeed. Brendan (24 years, Cape Breton; FGD 3), explained, "*Yeah, I don't got uh, I don't got the hardware [sic] so I don't think it's my place".* Most participants also recognized the importance of professional advice when it comes to child nutrition and considered health professionals as a reputable source instead of them.

These data shed some light on the attitudes of young men towards the IYCF expertise role, perceiving themselves inferior in this realm compared to others. South Asian participants imagined being more confident sharing their IYCF knowledge with their family members than others in the FGD. However, low IYCF confidence was generally a shared theme among our culturally diverse sample. These findings are in contrast to Chan & Whitfield's findings of generally high IYCF confidence among adults in Nova Scotia, weakening the hypothesis that young men are comfortable with perpetuating non-evidence based IYCF information (23). However, since the authors did not compare the confidence scores between the different sub-groups studied, it was possible that young men would score lower than other subgroups.

Young men's low IYCF confidence could be interpreted in a few ways. First, young men could understand the responsibility and consequences of their IYCF advice on infant health, hence do not share in order to act responsibly and avoid putting an infant at risk, as evidenced by their potentially changed values (see Section 7.2.1). Secondly, Brendan (24 years, Cape Breton; FGD 3) said that he would be more comfortable with advising about an older child— "once they start eating normal". This may reflect men's general alienation from infant feeding decisions, particularly from breastfeeding, due to the woman's great involvement at this stage and the

perception that this is a “woman’s realm” (112). This perception is partially constructed by the idea that breastfeeding is biologically owned by woman and has a greater impact on the mother, as was previously reported among a small UK sample of fathers (112). Lack of IYCF confidence is not only a temporary stage in young adulthood, as feelings of alienation continue into fatherhood and, as a result, could hinder men’s intention to become fathers, their enjoyment of fatherhood, and decrease support given to partners and children (148).

Self-perceived insufficient knowledge was another key aspect that contributed to participants’ lack of IYCF confidence. Concrete lack of knowledge was mainly seen around participants' familiarity with specific IYCF recommendations, potentially related to a larger lack of understanding of child development. Specifically, participants struggled to identify the recommended time to terminate breastfeeding, the time to initiate complementary feeding, and the ideal first complementary foods. Eithan (22 years, Halifax; FGD 1) shared his confusion:

> *But I'm not sure how that would work and how the baby would go from breastfeeding, which is like, sucking right, and just drinking, to chewing. Not sure how that works.*

Steven (25 years, Cape Breton; FGD 3) incorrectly guessed the recommended age to introduce complementary foods, saying,

> *You can start giving them [children] soft foods, kind of foods that will melt in their mouth or you know, they're able to gum them, like soft fruits and veggies, at like two or three years old, and then more like crunchy, or hard foods once their teeth come through. But I, I could be wrong.*

The above quotes show a lack of knowledge around some child’s developmental milestones, such as the age in which children are capable of eating soft texture foods. Steven (25 years, Cape Breton; FGD 3) was also well aware that his answer “could be wrong”, although he was correct in voicing that first complementary foods should be soft in texture. Despite participants’ lack of familiarity with these specific timings related to IYCF recommendations and their lack of confidence in their knowledge, they demonstrated strong understanding in other areas of IYCF. This is consistent with the literature showing that young men usually have a mix of correct and incorrect IYCF knowledge (25–27,111). Studies that have focused on

breastfeeding indicate that young men generally know that breastfeeding is healthy, cost-effective, and creates mother-infant bonding (25,26); however, men have a mistaken perception that formula is equivalent to breastmilk and lack knowledge about the long term benefits of breastfeeding (25). Conversely, participants in the current study unexpectedly recognized breastmilk as protective against childhood obesity and food allergies and saw its changing content as an advantage compared to formula. They mentioned some of the health benefits for the mother as well (e.g. preventing postpartum depression, cancer, and weight control), thus demonstrating a more comprehensive understanding of breastfeeding. The evidence from this current study suggests that young men may be becoming more knowledgeable about breastfeeding, however foundational child development knowledge and other IYCF content areas are still lacking, which affects their confidence in this realm.

Informal and passive way to learn about IYCF

In accordance with their self-reported lack of IYCF knowledge, most participants reported receiving no formal education on the topic, and/or previous interest in learning about it. Instead, their primary sources of IYCF knowledge were the experiences of their family and friends with children, and different media platforms. Ryan (20 years, Halifax; FGD 2) explained,

> *I think my ideas same as Graham's were, just came through like an informal grapevine type of situation where you hear something about--someone is teething and that means something or, this mom at the gym is having struggles with this and that's how you sort of hear something but I've never gone like a formal--formal education or read something about it. It's just been snippets of —hear something here and hear something there.*

As Ryan describes, participants absorbed IYCF information mostly through informal and passive ways. As such, media has been found to be a major platform for these young men to learn about popular IYCF discourses. For example, Liam (25 years, Halifax; FGD 5) mentioned seeing public service announcements about normalizing breastfeeding in public, stressing that he has “no practical real-world experience” beyond these messages. Gary (21 years, Annapolis Valley; FGD 5) mentioned social media as a platform where he has learned about the ‘mom-

shaming' trend for choosing infant formula, as well as about the "fed is best" movement. Steven (25 years, Cape Breton; FGD 3) remembered the Nestle commercial which depicted their formula "as the greatest". A few others also mentioned seeing depictions of infant feeding in movies, or popular TV shows on Netflix ("Babies," "Working Moms"). Eithan (22 years, Halifax; FGD 1) recalled:

> *Yeah, there was this scene in a Seth Rogen movie, where the wife has been drinking the night before and then she goes to feed the baby--Like breastfeed the baby, and he's like, "No, stop, you drank [alcohol] last night!*

In support of the literature from Canada and elsewhere (24,27), these findings verify that media is a major source of IYCF influence. Although it was previously associated with mostly negative influences (27), it seems like the media has been informative for our participants to learn about IYCF discourses, strengthening the evidence that media can play an important role in changing social norms and values among men (24,150). Our participants demonstrated an informed attitude towards digital information by recognizing it as a common, great, easy, and fast source of information, but also dangerous source as it may contain false information.

Participants' lack of engagement in the IYCF realm was revealed when describing their main sources of IYCF information. Many participants mentioned passive learning of IYCF through the experiences of their siblings or friends with children by "just being around it", or "having watched it happen", instead of taking an active role in pursuing IYCF knowledge. Similarly, two participants vaguely recalled seeing IYCF pamphlets at the doctor's office but had refrained from actively engaging in the content. Among the participants who had friends with children, a consensus was that they did not discuss IYCF with their parent peers. Maxim (29 years, Halifax; FGD 1) shared:

> *I do not have any kids … some of my friends have kids, but we don't share the intimate feeding conversations with them, so don't know much about it.*

Some of our participants also admitted that they will not engage in learning about IYCF until it becomes relevant, such as when they themselves are expecting a child. Todd (29 years, Halifax; FGD 4) explained:

It's never been anything that has crossed my mind, so there'd be no reason to kind of look for it, unless I was about to have a child and then that's when I would like, look to Health Canada to get the recommendations and to learn, because they would be my first starting point.

Here we found that young men's sources of IYCF knowledge are not only limited, but their motivation to engage with IYCF information is also low. The finding that young men are not included in IYCF discussions with their friends who are fathers may not be surprising given evidence from others noting that men do not discuss IYCF with other men, and in some cases also lack the confidence to do so with their partners, despite having good knowledge and supportive attitudes (112). It can be taboo among men to share experiences related to their children, a practice known to be more socially acceptable and popular with women (20). In addition, talking about any health-related practice can sometimes be viewed as an excessive and feminine practice, as was reported from an interview study with men categorised as pursuing health-promoting lifestyles (127). Furthermore, the passiveness of young men can also show that this topic is simply not on their minds, as explained elsewhere, is "shelved" in the teenage and young adult years and re-emerges when the appropriate time comes (112). Our participants believed that they would learn when they were expecting a child or became fathers, however, research conducted with fathers has shown that waiting to learn may be too late (147,148). New fathers have revealed similar feelings of IYCF alienation, with fathers feeling excluded from feeding decisions and belittled by the healthcare professionals, and experiencing barriers to engaging with support and stigma in seeking help (147,148). Although some of our participants felt quite confident in their ability to search for reliable IYCF information (e.g. Health Canada), others thought that it may be beneficial for them to be instructed about what resources are available.

Infant feeding, like other domestic and child rearing practices, is usually not taught through formal instruction, but instead through the media, learning from family members and friends, and self-teaching (151). Other studies that support the integration of breastfeeding education before fatherhood through public or post-secondary education systems, explain that it may be beneficial in changing social norms around breastfeeding given young men's lack of motivation to learn about at the early stage of their lives (25,111). However, education interventions aimed towards improving knowledge and attitudes may not be effective enough if

men still feel uncomfortable and lack the confidence to voice their IYCF knowledge and actively participate in IYCF discussions (112), therefore additional interventions beyond education are likely needed (see Section 8).

Discomfort with breastfeeding due to unclear social norms

As previously discussed (see Section 7.2.1), despite participants' modern IYCF attitudes, polarized attitudes towards specific breastfeeding situations were revealed among some participants. When asked about viewing breastfeeding, men explained that context including their rapport and the relationship with the breastfeeding woman matters. Liam (25 years, Halifax; FGD 5) explained the difference:

> *To use the bus example, 'Oh hey, do you know what the next stop is?' Um-hm, I probably wouldn't engage [a breastfeeding woman] just because I want, a little bit more consciously, to give her the space that she needs and at least some semblance or ideal that there is privacy in that moment. Whereas you know, if it's a friend of mine or someone I know … I would have no issue like 'Hey, do you want anything out of the fridge,' like 'Oh yeah,' continue a conversation you know and just be a little bit more informal during that moment because we have kind of that relationship or bond of trust that we've already created over a period of time.*

In contrast, others believed it would feel more awkward to see someone familiar breastfeeding. Andrew (25 years, Halifax; FGD 1) explained that seeing a co-worker breastfeeding would be more uncomfortable because he would not normally see them in a situation where they are "wearing less clothes than they normally are". Riley (29 years, Halifax; FGD 1) agreed, however, added that discomfort would be short-lived since breastfeeding is "part of life". The split between participants' ideas suggests confusion among some young men on the socially acceptable behaviour in engaging a breastfeeding woman. Maxim (29, Halifax; FGD 1) explained,

> *I got in my head that, 'Okay if it's—if it's mom, it's okay, or if it's a relative it's okay,' but it still—I didn't get the understanding of, 'Okay, what if it's a friend? What if it's a random person? Like, what should I do?' And I guess I didn't,*

still haven't got [sic] this unders—social understanding of like, what—what's the correct move here?

Some participants hypothesized that their minimal exposure and the rare sight of breastfeeding women may contribute to those awkward feelings. There was a consensus that seeing more breastfeeding in public would make breastfeeding seem more routine and eventually normal. Past research has also shown that there is often a conflict between the cognitive and the actual acceptance of breastfeeding, and that breastfeeding attitudes are contextual (16,24,28). Even for men who consider themselves in a complete support with public breastfeeding, "uneasy" feelings or embarrassment appears when it comes to their partner breastfeeding or being in close proximity to a breastfeeding stranger (27,125). It is plausible that assumptions of public breastfeeding involving excessive public exposure, or that breastfeeding women need privacy still exist among some participants in this sample.

More specifically, culture was discussed as a highly engrained driver of comfort with breastfeeding, difficult to surpass even with regular exposure to breastfeeding in public. For instance, those in a conservative culture that sanctifies modesty could feed awkward feelings towards breastfeeding despite a desire for modern outlooks, as shared by Kumar (23 years, Halifax; FGD 4):

I come from a very conservative environment and culture so I do have that-- that kind of bias but Um-hm, I think it's wrong, like, it should be a woman's choice and uh, like, it's my problem, like I shouldn't feel that way. But you know there's-- subconsciously, I do feel a little awkward but I shouldn't.

On the other hand, culture was identified with increased breastfeeding normalcy, particularly among participants with South Asian identity. Ajay (25 years, Halifax; FGD 1) stated:

Yeah, probably if it [breastfeeding] happens more often, people more often see [sic], it will be more normal, you know, things you see once or twice, just seems abnormal, but if things you see every day, it becomes normal for you.

The South Asian participants in our study mentioned that it was common for them to see their family members and neighbours breastfeeding at their house and recalling discussions about

breastfeeding with their grandmothers or other family members. This was less common among participants who were raised in Canada, possibly due to the typical nuclear family living arrangements of western cultures, where it is no longer common to live in the same household with other family members or previous generations (152). Being breastfed as an infant, seeing anyone breastfeed in person, having a close friend or family member breastfed, or discussing the topic of breastfeeding are all types of exposure that were previously found to be positively related to improved breastfeeding attitudes among men (104). It is possible that participants' relatively high exposure to breastfeeding, as self-reported through the demographic questionnaires, could have mitigated the discomfort and explain why only a few participants reported confusion regarding socially appropriate behaviours around breastfeeding women.

Breastfeeding beyond infancy was another confusing aspect for our participants. While some thought that breastfeeding should be continued for the first two years at least, as recommended by the NHTI, most believed breastfeeding should be terminated somewhere between the child's first and second birthdays. Participants' only reference to breastfeeding beyond infancy was the media, where it was depicted as abnormal above a certain age, especially when the child has reached certain developmental milestones such as eating independently or speaking clearly. Thus, participants felt that there was a certain age when breastfeeding would no longer be appropriate, could create codependency, and elicit an adverse social response. Rick (28 years, Halifax; FGD 4) shared:

> *I know every pop culture reference I've ever seen where it's like a toddler that can actually run and are still breastfeeding, that you always get that weird look from bystanders in the TV shows or movies. Maybe it's just a perception that I have based on our society, but in my mind, two and a half years old, I think, any later than that, it's--should be all solid foods.*

Breastfeeding beyond infancy and breastfeeding in public are two topics that unfortunately still carry stigma in Nova Scotia (117). Chan & Whitfield reported that the general public in Nova Scotia, especially men, younger participants, non-parents, and urban dwellers, were less comfortable with images of women breastfeeding an older child, and in public locations (24). Although participants of the current study supported breastfeeding, they did not mention normalization in the context of breastfeeding beyond infancy which is possibly related

to the strong popular media influence on them. Exposure to breastfeeding through advertisements and social media is effective at increasing awareness and acceptance of breastfeeding among both male and female students and the general public (141,142). It has also been suggested elsewhere that ignorance about the benefits of long-term breastfeeding is another explanation for suboptimal perceptions of breastfeeding beyond infancy, and although our participants have demonstrated some proficiency in this area, further exploration using quantitative tools may be informative. For now, tackling this gap in knowledge, as well as depicting older children breastfeeding through the different media channels may have the most influence on young men's attitudes.

In conclusion, young men reported experiences of alienation from the IYCF realm, despite modern IYCF attitudes and genuine beliefs that learning about IYCF is important. Given previous reports of IYCF alienation in fatherhood, these findings have meaningful implications on IYCF outcomes including ambivalence towards IYCF decisions, and impeded confidence and involvement in IYCF. Efforts should be made through both formal and informal channels to help men feel included in the infant feeding realm by increasing education, and efforts to empower boys and men to engage in IYCF.

7.2.3. "You don't just give them an entire meal of steak": Using intuitive heuristics

The third main theme that emerged represents the reasoning processes used by participants to construct their explanations of IYCF recommendations. A shared pattern among many participants was to make quick and intuitive inferences, also referred to as *heuristics*. In the field of psychology, heuristics are described as automatic forms of reasoning intended as mental shortcuts that are not always rational but help people understand the world (153,154). Heuristic thinking can be fast and correct, but it can also introduce bias; this was true of our study. Participants' intuitive reasoning was constructed by their childhood experiences and information they had recently learned or heard; they also created metaphors and analogized IYCF to familiar experiences from their daily life and used tangible cues to make sense of IYCF. There is a large body of literature on the use of various heuristics, including controversy around their effectiveness in human reasoning and decision-making (155,156). This section intends to showcase the use of heuristics among our study sample, rather than add to the literature on the effectiveness in reasoning of heuristics.

Availability heuristics is one of the three common heuristics as it describes a thinking process where easy examples that are cognitively available come to mind (157). For example, some participants associated the acquisition of IYCF knowledge with other important life skills, such as knowing how to perform cardiopulmonary resuscitation or understanding the Canadian democratic elections process, as noted by Riley (29 years, Halifax; FGD 1):

> *...Even if someone who doesn't want to exercise their ability to vote if they're able to, they should at least know that this is how you do it if you choose to do it. It's, I think there are things that people should be made aware of.*

Another type, *representativeness heuristics*, is the process of generalizing a specific experience to a universal one while excluding other relevant data (157). When participants were probed about IYCF, for some, it resembled their own experiences feeding and taking care of other living things like their pets, as Arun (19 years, Halifax; FGD 1) described: "I've also had many baby pets so, it's almost the same for--like pets and infants so, yeah." Andrew (25 years, Halifax; FGD 1) analogized the way he perceives meat should be introduced to an infant for the first time:

> *Uh, it's, it's kind of a weird analogy, but if you're like cleaning a table with some new product, you don't just dump the product on the thing, you try it in one area, see how it reacts and then--So I think the same sort of thing should probably be done with kids. You don't just give them an entire meal of steak. You give them a small piece.*

Andrew's analogy was taken from a completely different realm, one that was perhaps more readily available in his mind. Participants also made comparisons between IYCF and adult nutrition and their own eating habits. For example, one participant wondered aloud if it was possible to breastfeed while also introducing complementary foods and concluded that it was, given that adults can eat regular foods and also drink cow's milk. Another participant believed that extended breastfeeding would not provide the infant with sufficient required nutrients, using the reasoning that liquid diets cause weight loss in adults. Finally, another participant believed it was appropriate to give a child anything to eat, referring specifically to processed meats, so long as it was in moderation, a typical principle touted in adult nutrition recommendations. These

examples show that participants used several common types of heuristics. In some of these cases, heuristic thinking controlled participants' judgment by generalizing the infant feeding realm and presented bias. Relying on automaticity and effort reduction processes can lead to adverse decision making, also referred to as "heuristic traps" (157). This describes subconscious flawed thinking processes based on cognitive and psychological biases" (158). For example, the "anchoring trap" is a common mental phenomenon in which the mind gives disproportionate weight to the first information it receives, initial impressions, or previous thoughts (158).

Using tangible clues by referring to childhood developmental millstones (e.g. teething, crawling, and running) was another strategy to determine *when* and *how* infants and young children should eat, and it is another form of heuristic thinking as it focuses attention on familiarity (157). For example, men in this study perceived teething as a prerequisite milestone before introducing "hard" and "crunchy" foods, and as a possible sign of terminating breastfeeding. In this instance, heuristics use was inappropriate, as in reality there is wide variability in timing of infants' teething, and it is not necessarily related to feeding practices. Lucas (27 years, Cape Breton; FGD3) explained:

> *I don't know if there is a right time to introduce solids. I mean, at the point of teeth, the poor mother. You probably should start giving him something other than breastmilk. And I mean, when the teeth come in, you are capable of chewing and eating solids, so I don't know if there's a right time.*

Like Lucas, most participants struggled to identify the right timing to introduce complementary foods, thus relying on tangible and easy cues to help their judgment. Teething was the main sign that was discussed in the context of introducing meat to infants. According to the NHTI recommendations, it is essential to include meat and meat alternatives as the first complementary foods starting at six months of age as these foods support the required iron needs (see **Appendix A**). However, when participants were probed about meat and meat alternatives as the first complementary foods, they were intuitively hesitant about whether infants could digest meats before their teeth came in. In addition to teething, crawling and running were other milestones identified by the participants as stages when children become more active and able to use utensils, which these men saw as signs of readiness to start complementary feeding - another faulty perception.

In contrast to the incorrect conclusions stemming from intuitive thinking, participants' intuition proved accurate in some IYCF areas, including the process of complementary food introduction, the rationale behind it, and elements of responsive feeding. For example, there was a consensus among the participants that foods should be of soft texture and gradually introduced, as recommended in the NHTI guidelines (see **Appendix A**). Participants also intuitively understood the importance of complementary feeding and mentioned some correct explanations: the need for more nutrients and energy as children got older, learning eating behaviours, and developing eating skills (e.g. learning how to chew and strengthen oral muscles). Participants' use of intuition was demonstrated in Eithan's (22 years, Halifax; FGD 1) intuitive understanding of the introduction process of complementary foods:

> *I don't think a baby will just start eating solid food on day number 500 after it was born, like maybe you'd have to condition it -- just do maybe once every few meals, do a solid meal, in a way, and then breastfeeding, and then solid, and then, start adding up the amounts of the solids.*

Participants also easily identified the main features of responsive feeding: the interaction between the child and the caregiver, feeding based on hunger and satiety cues, and allowing the child choice and independence. Many participants perceived an ideal feeding situation as social, enjoyable, and as a learning opportunity that supports child development. When probed to identify non-responsive feeding interactions, participants visualized a negative experience for both the caregiver and the child, using terms such as "conflict," "fear," "stress," and "trauma". For example, Sean (28 years, Cape Breton; FGD 5) stressed that parents should "keep the discipline away from food." Eithan shared how he felt bad before meals as a child, knowing that his parents would yell at him to eat all of the food served to him. Another participant in the same FGD, Riley (29 years, Halifax; FGD 1), also recalled his childhood experiences, sharing how his stepdad forced him to finish his plate:

> *I think a lot of parents do make their kids sometimes uh, like, 'Clean your plate, finish your food', but I don't think that's always healthy. I had a stepdad when I was younger who always did that, even if it was a food I didn't like. Like I remember there were raw tomatoes on a salad, that kind of thing and I*

didn't like them--they made, they made me gag and he wouldn't let me like, leave the table unless I ate all my food and it's just, you shouldn't do that.

These men's intuitive understanding of complementary and responsive feeding was surprising given participants' self-reported lack of IYCF knowledge and minimal experiences. Tversky and Kahneman (1983) suggest that individuals tend to rely on intuitive and heuristic models of thinking in areas of uncertainty and complexity (158). Intuition, in particular, helps decision-making in situations that are made under time pressure or incomplete information (157), which is suitable for our participants' self-reported position. Prior experience in a certain domain is a critical factor that helps to make automated and intuitive processes more appropriate (156). Thus, participants' intuition constructed by their childhood feelings and experiences around mealtimes may have a role in their correct understanding of complementary feeding rationale and responsive feeding. Compared to specific IYCF recommendations that require knowledge or understanding of early development (e.g. the correct timing to introduce complementary foods), complementary feeding rationale and responsive feeding may be easier to relate with and intuitively understood by young men, given their own experiences. This shows that our exploration beyond breastfeeding using broad and general questions allowed participants' subjective meanings of IYCF to come forth, which leads to a better understanding of the social constructs of young men's IYCF ideas.

In food and nutrition, heuristics have been researched in the context of making food choices and processing nutrition labels (159,160). Rather than using rational and deliberate means of decision making, consumers, under certain circumstances, can make quick and simple food choices by a direct heuristic route modulated by person-, product- and context-related factors (159). Foods' visual and sensory characteristics (odour, shape, colour), shopping under time constraints, the complexity of the nutrition information, and eating motivation are some factors that could lead consumers to make quick and subconscious food choices (159,160). This explains why unhealthy food choices exist even among consumers who notice and understand nutrition label information (159). However, a review by Sanjari *et al*. concluded that given the high probability of situations that activate heuristic thinking in the shopping setting, easy-to-understand front of package nutrition labels with features that correspond to intuitive processing are more likely to assist with making healthy food choices (160). For example, using a familiar meaning of the traffic light colours in the colour-coded labels or the green healthy tick have been

found to intrigue heuristic reasoning, reduce cognitive load, and be effective for making a healthy choice. Even if the nutrition labels are at first unfamiliar, with more exposure and consequently gaining knowledge about the label, familiarity with the label increases over time and foster heuristic choice (160). Applied to the IYCF field, increased education and exposure to IYCF using familiar signals to induce correct heuristic reasoning may increase young men's familiarity and knowledge in IYCF.

Although heuristic thinking was prevalent, this may have been driven by the nature of the focus group, where participants were expected to provide relatively quick answers to questions from an unfamiliar field. Other participants used more deliberate ways of processing along with their intuitive reasoning, as can be seen in Ryan's (20 years, Halifax; FGD 2) explanation in the context of meat introduction:

> *I mean my gut reaction was kind of, Uh-hm?! Because I mean, honestly because I was thinking about a baby eating a steak or something. But I mean, you could mash it up, and I feel like it would make sense.*

Ryan's quote above is an example of a more complex thinking process. His initial "gut reaction" reflects intuitive heuristic processes, which evolved into more logical thinking by suggesting a blender or other kitchen tool to mash the steak into a more age-appropriate texture for consumption. Including rationale helped him make a more informed judgment, which could be referred to as the theory of "dual-processing" effectiveness (146). According to this theory, incorporating logical reasoning is valuable for solving complex and novel problems, where reliance on intuition alone can lead to inappropriate conclusions (156).

To conclude, we found that young men use heuristics to understand IYCF. It may be an important consideration given the biases introduced with this type of thinking in their current IYCF decision-making or when they become fathers. Gendered use of heuristics and its manifestation among parents is beyond the scope of this thesis; however, given the dominant discourse around maternal intuition in IYCF (20,161,162), it warrants future exploration of how intuition plays a role in paternal IYCF decision-making. This section also revealed a meaningful gap in young men's knowledge around children's developmental stages which impacted their ability to correctly identify IYCF recommendations. Therefore, it also supports future educational interventions for this subgroup, as familiar metaphors or tools could be integrated to

aid correct heuristic thinking, which alongside more knowledge and expertise could lead to optimal feeding outcomes.

8. Study strengths and limitations

This study adds to the limited literature on IYCF knowledge, attitudes, and beliefs among the general public beyond caregivers and healthcare providers. To the best of our knowledge, this is the first study to explore the knowledge, attitudes, and beliefs of young, non-parent men regarding the full range of IYCF practices. In expanding the investigation for other feeding stages beyond breastfeeding, we could understand that young men's knowledge, attitudes, and beliefs towards different IYCF practices are likely to be differently constructed. For instance, exploring complementary and responsive feeding stages yielded more attention to participants' use of intuition and personal experiences, which was likely to be overlooked by exploring breastfeeding alone. Additionally, the use of qualitative methods allowed us to gain rich insights into the topic that would likely not be found through surveys, presenting thick descriptions and subjective meanings.

However, some limitations of the methodology used may have introduced bias. First, conducting the focus groups using two mediums (in-person and online) was both a strength and a limitation. Online focus groups proved to be a time-efficient way to collect data but was also essential given the strict public health measures in place for COVID-19 prevention during the study period, which prevented in-person FGD. While online sessions made recruitment easier and may have enhanced participation among people unlikely to travel to campus, it may also have limited participation among men without access to highspeed internet (e.g. in remote areas) or less technically proficient participants. Second, opposite-gender moderators might have influenced discussion dynamics and thus the data collected. Although this issue was acknowledged in the early planning stages and researchers made efforts to build rapport, it cannot be ruled out that participants provided answers they believed would be more appealing to a woman moderator. Spurles *et al*. reported that the positive attitudes of male participants in their focus groups could have been related either to the opposite-sex moderator (28), or due to prior acquaintance, potentially grew out of a pressure to conform to peer expectations (28). In the current study, participants did not know each other or the moderator prior to the FGD, which is likely to minimize this concern. Third, despite the efforts to include a varied sample of young men from different geographical areas in Nova Scotia, the current sample provided insights into a certain portion of the population. Our sample is not representative of young men living in rural and remote areas in Nova Scotia, those with less education, those less technology-oriented and/or

occupied with manual labour. Additionally, given the lack of attention in the literature, sexual orientation was not collected. Although participation was open to anyone who identified as a man, representation of LGBTQ+ people in our sample could not be examined. Future research should include more diverse samples of young men, especially from other racial/ethnic groups and socioeconomic classes (111). Lastly, as with any research employing convenience sampling, participants who chose to participate may have been more interested in health or nutrition-related issues, or infant feeding issues.

9. Conclusions and recommendations for action

This study provided in-depth insights into IYCF knowledge, attitudes, and beliefs among young, non-parent Nova Scotian men. We found that these young men generally held modern and supportive IYCF ideas, but at the same time also felt alienated from this realm. Their narratives showed that young men are knowledgeable and supportive of IYCF practices, mostly through informal learning or use of heuristics to rationalize recommendations. Given this, while men are interested and knowledgeable, more work is still needed to help young men to feel more included, heard, and experienced in IYCF.

We hope these findings will inform future interventions to increase IYCF experience and confidence among young, non-parent men and decrease their feelings of alienation. We advocate for formal IYCF education in the public-school curriculum and/or as part of other mandatory health education programs that show men and women equally in caregiving roles, potentially increasing their competency and developing caregiving skills. Public health IYCF education campaigns and using informal education channels such as the media, could focus on the most stigmatized IYCF areas, such as breastfeeding beyond infancy and in public. Young men should be made aware of the benefits of extended breastfeeding and the legal rights surrounding breastfeeding in public, and understand how breastfeeding women feel, which could help support the development of positive social norms around breastfeeding women. Messages should also support the normalization of men talking about IYCF with caregivers, other young men, and other members of the general public.

We echo existing literature (117,132,163) and encourage clinicians providing care to expectant parents and caregivers of infants and young children to acknowledge the spectrum of masculinity and provide individualized and inclusive care and education. As young men become fathers, their IYCF needs may differ (147,148): clinicians can capitalize on men's modern views and use similar tactics of heuristics to best engage men.

References

1. Koletzko B, Brands B, Grote V, Kirchberg FF, Prell C, Rzehak P, et al. Long-Term Health Impact of Early Nutrition: The Power of Programming. Ann Nutr Metab. 2017;70(3):161–9.
2. Black RE, Victora CG, Walker SP, Qar A Bhutta Z, Christian P, De Onis M, et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. Lancet. 2013;382(9809):427–51.
3. World Health Organization. Infant and young child feeding. [Internet]. 2020 [cited 2020 Nov 2]. Available from: https://www.who.int/en/news-room/fact-sheets/detail/infant-and-young-child-feeding
4. Critch JN. Nutrition for healthy term infants, birth to six months: An overview. Paediatr Child Heal. 2013;18(4):206–7.
5. Critch JN. Nutrition for healthy term infants, six to 24 months: An overview. Paediatr Child Heal. 2014;19(10):547–9.
6. Fegan S, Bassett E, Peng Y, Steel O'Connor K. Adherence to complementary feeding recommendations for infants and implications for public health. Public Health Nutr. 2015;19(4):638–49.
7. Statistics Canada. Breastfeeding practices by province and territory. [Internet]. [cited 2020 Sep 11]. Available from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310009622
8. Rollins NC, Bhandari N, Hajeebhoy N, Horton S, Lutter CK, Martines JC, et al. Why invest, and what it will take to improve breastfeeding practices? Lancet. 2016;387(10017):491–504.
9. Brockway M, Venturato L. Breastfeeding beyond infancy: a concept analysis. J Adv Nurs. 2016;72(9):2003–15.
10. Macvicar S, Kirkpatrick P, Humphrey T, Forbes-Mckay KE. Supporting Breastfeeding Establishment among Socially Disadvantaged Women: A Meta-Synthesis. Birth. 2015;42(4):290–8.
11. Mueffelmann RE, Racine EF, Warren-Findlow J, Coffman MJ. Perceived infant feeding preferences of significant family members and mothers' intentions to exclusively breastfeed. J Hum Lact. 2015;31(3):479–89.
12. Kornides M, Kitsantas P. Evaluation of breastfeeding promotion, support, and knowledge of benefits on breastfeeding outcomes. J Child Heal Care. 2013;17(3):264–73.
13. Hausman BL. Things (not) to do with breasts in public: Maternal embodiment and the biocultural politics of infant feeding. New Lit Hist. 2007;38(3):479–504.
14. Li R, Hsia J, Fridinger F, Hussain A, Benton-Davis S, Grummer-Strawn L. Public beliefs about breastfeeding policies in various settings. J Am Diet Assoc. 2004;104(7):1162–8.

15. Russell K, Ali A. Public Attitudes Toward Breastfeeding in Public Places in Ottawa, Canada. J Hum Lact. 2017;33(2):401–8.
16. Acker M. Breast is best...but not everywhere: Ambivalent sexism and attitudes toward private and public breastfeeding. Sex Roles. 2009;61(7–8):476–90.
17. Dowling S, Brown A. An Exploration of the Experiences of Mothers Who Breastfeed Long-Term: What Are the Issues and Why Does It Matter? Breastfeed Med. 2013;8(1):45–52.
18. Walsh A, Kearney L, Dennis N. Factors influencing first-time mothers' introduction of complementary foods: A qualitative exploration. BMC Public Health. 2015;15(1):1–11.
19. Nielsen A, Michaelsen KF, Holm L. Beyond an Assumed Mother-Child Symbiosis in Nutritional Guidelines: The Everyday Reasoning Behind Complementary Feeding Decisions. Child Care Pract. 2014;20(3):329–46.
20. Matvienko-Sikar K, Kelly C, Sinnott C, McSharry J, Houghton C, Heary C, et al. Parental experiences and perceptions of infant complementary feeding: a qualitative evidence synthesis. Obes Rev. 2018 Apr 1;19(4):501–17.
21. Harrison M, Brodribb W, Davies PSW, Hepworth J. Impact of Maternal Infant Weight Perception on Infant Feeding and Dietary Intake. Matern Child Health J. 2018;22(8):1135–45.
22. Begley A, Ringrose K, Giglia R, Scott J. Mothers' understanding of infant feeding guidelines and their associated practices: A qualitative analysis. Int J Environ Res Public Health. 2019;16(7):1–16.
23. Chan K, Whitfield KC. High confidence, yet poor knowledge of infant feeding recommendations among adults in Nova Scotia, Canada. Matern Child Nutr. 2020;16(2):1–14.
24. Chan K, Whitfield KC. "Too Old" and "Too Cold": Discomfort Towards Photographs of Breastfeeding Beyond Infancy and Public Breastfeeding in Nova Scotia, Canada. J Hum Lact. 2021;38(2):353–63.
25. Van Wagenen SA, Magnusson BM, Neiger BL. Attitudes Toward Breastfeeding Among an Internet Panel of U.S. Males Aged 21–44. Matern Child Health J. 2015;19(9):2020–8.
26. Jolly L, Pagels P, Woodfin G, Silver M, Kindratt T, Gimpel N. Knowledge and Attitudes Toward Breastfeeding in an African American Male Population. J Obstet Gynecol Neonatal Nurs. 2013;42(6):664–71.
27. Henderson L, McMillan B, Green JM, Renfrew MJ. Men and Infant Feeding: Perceptions of Embarrassment, Sexuality, and Social Conduct in White Low-Income British Men. Birth. 2011;38(1):61–70.
28. Spurles PK, Babineau J. A qualitative study of attitudes toward public breastfeeding among young canadian men and women. J Hum Lact. 2011;27(2):131–7.

29. McKee N, Manoncourt E, Yoon CS, Carnegie R. Involving people, evolving behaviour: The UNICEF experience. Vol. 2000, Communication for Development and Social Change. 2008. 254–276 p.
30. Lawrence M gartner, Morton J, Lawrence RA, Naylor AJ, O'Hare D, Schanler RJ, et al. Breastfeeding and the use of human milk. Pediatrics. 2005;115(2):496–506.
31. Bartle NC, Harvey K. Explaining infant feeding: The role of previous personal and vicarious experience on attitudes, subjective norms, self-efficacy, and breastfeeding outcomes. Br J Health Psychol. 2017;22(4):763–85.
32. Chan K, Whitfield KC. Exploring Breastfeeding Knowledge and Attitudes among Noncaregivers: A Narrative Review. Can J Diet Pract Res. 2020;81(2):97–104.
33. World Health Organization. International code of marketing of breastmilk substitutes. World Health Organization; 1981.
34. Canadian Institutes of Health Research. What is gender? What is sex? [Internet]. [cited 2022 Aug 29]. Available from: https://cihr-irsc.gc.ca/e/48642.html
35. World Health Organization, UNICEF. The extension of the 2025 Maternal, Infant and Young Child nutrition targets to 2030. Geneva: World Health Organization; 2018. p. 1–12.
36. Roberts K, Shields M, Groh M de, Aziz A, Rep JG-H, 2012 U. Overweight and obesity in children and adolescents: results from the 2009 to 2011 Canadian Health Measures Survey. Heal Rep. 2012;23:37–41.
37. Shanthi M. World Health Organization. Global Status Report on noncommunicable diseases 2014. World Health Organization; 2014.
38. Finn S, Culligan EP, Snelling WJ, Sleator RD. Early life nutrition. Sci Prog. 2018;101(4):332–59.
39. Victora CG, De Onis M, Hallal PC, Blössner M, Shrimpton R. Worldwide timing of growth faltering: Revisiting implications for interventions. Pediatrics. 2010;125(3):e473–80.
40. Singhal A. The role of infant nutrition in the global epidemic of non-communicable disease. Proc Nutr Soc. 2016;75(2):162–8.
41. Druet C, Stettler N, Sharp S, Simmons RK, Cooper C, Davey Smith G, et al. Prediction of childhood obesity by infancy weight gain: An individual-level meta-analysis. Paediatr Perinat Epidemiol. 2012;26(1):19–26.
42. Trabulsi JC, Smethers AD, Eosso JR, Papas MA, Stallings VA, Mennella JA. Impact of early rapid weight gain on odds for overweight at one year differs between breastfed and formula-fed infants. Pediatr Obes. 2020 Oct 1;15(10).
43. World Health Organization (WHO). Infant and young child feeding : model chapter for textbooks for medical students and allied health professionals. WHO. Geneva, Switzerland. 2009.

44. Miliku K, Robertson B, Sharma AK, Subbarao P, Becker AB, Mandhane PJ, et al. Human milk oligosaccharide profiles and food sensitization among infants in the CHILD Study. Allergy Eur J Allergy Clin Immunol. 2018;73(10):2070–3.
45. Donovan SM, Comstock SS. Human milk oligosaccharides influence neonatal mucosal and systemic immunity. Ann Nutr Metab. 2017;69(2):42–51.
46. From the First Hour of Life: A new report on infant and young child feeding - UNICEF DATA [Internet]. [cited 2020 Jun 25]. Available from: https://data.unicef.org/resources/first-hour-life-new-report-breastfeeding-practices/
47. Brown CRL, Dodds L, Attenborough R, Bryanton J, Rose AE, Flowerdew G, et al. Rates and determinants of exclusive breastfeeding in first 6 months among women in Nova Scotia: a population-based cohort study. C Open. 2013;1(1):E9–17.
48. Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, et al. Breastfeeding and maternal and infant health outcomes in developed countries. Evid Rep Technol Assess (Full Rep). 2007;(153):1–186.
49. De Zoysa I, Feachem RG. Interventions for the control of diarrhoeal diseases among young children: Rotavirus and cholera immunization. Bull World Health Organ. 1985;63(3):569–83.
50. Hauck FR, Tanabe KO. International trends in sudden infant death syndrome: Stabilization of rates requires further action. Pediatrics. 2008;122(3):660–6.
51. Hauck FR, Thompson JMD, Tanabe KO, Moon RY, Vennemann MM. Breastfeeding and reduced risk of sudden infant death syndrome: A meta-analysis. Vol. 128, Pediatrics. 2011. p. 103–10.
52. Kramer MS, Kakuma R. Optimal duration of exclusive breastfeeding. Cochrane Database Syst Rev. 2012;(8).
53. Victora CG, Bahl R, Barros AJD, França GVA, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: Epidemiology, mechanisms, and lifelong effect. Vol. 387, The Lancet. 2016. p. 475–90.
54. Horta BL, Loret De Mola C, Victora CG. Long-term consequences of breastfeeding on cholesterol, obesity, systolic blood pressure and type 2 diabetes: A systematic review and meta-analysis. Acta Paediatr Int J Paediatr. 2015;104:30–7.
55. Government of Canada. Nutrition for Healthy Term Infants: Recommendations from Six to 24 Months. [Internet]. [cited 2020 Nov 10]. Available from: https://www.canada.ca/en/health-canada/services/canada-food-guide/resources/infant-feeding/nutrition-healthy-term-infants-recommendations-birth-six-months/6-24-months.html#a7
56. Pérez-Escamilla R, Buccini GS, Segura-Pérez S, Piwoz E. Perspective: Should Exclusive Breastfeeding Still Be Recommended for 6 Months? Adv Nutr. 2019;10(6):931–43.

57. Butte NF, Lopez-Alarcon MG, Garza C. Nutrient adequacy of exclusive breastfeeding for the term infant during the first six months of life. Geneva; World Health Organization; 2002.
58. Nyhus Dhillon C, Sarkar D, Klemm RD, Neufeld LM, Rawat R, Tumilowicz A, et al. Executive summary for the Micronutrient Powders Consultation: Lessons Learned for Operational Guidance. Matern Child Nutr. 2017;13:e12493.
59. Vos T, Kyu HH, Pinho C, Wagner JA, Brown JC, Bertozzi-Villa A, et al. Global and national burden of diseases and injuries among children and adolescents between 1990 and 2013 findings from the global burden of disease 2013 study. Vol. 170, JAMA Pediatrics. 2016. p. 267–87.
60. Fewtrell M, Bronsky J, Campoy C, Domellöf M, Embleton N, Fidler Mis N, et al. Complementary Feeding: A Position Paper by the ESPGHAN Committee on Nutrition. J Pediatr Gastroenterol Nutr. 2017;64(1):119–32.
61. Abrams EM, Hildebrand K, Blair B, Chan ES. Timing of introduction of allergenic solids for infants at high risk. Paediatr Child Health. 2019;24(1):56–56.
62. Agostoni C, Decsi T, Fewtrell M, Goulet O, Kolacek S, Koletzko B, et al. Complementary Feeding: A commentary by the ESPGHAN Committee on Nutrition. J Pediatr Gastroenterol Nutr. 2008;46(1):99–110.
63. Gunnarsson BS, Thorsdottir I, Palsson G. Iron status in 2-year-old Icelandic children and associations with dietary intake and growth. Eur J Clin Nutr. 2004;58(6):901–6.
64. Hopkins D, Steer CD, Northstone K, Emmett PM. Effects on childhood body habitus of feeding large volumes of cow or formula milk compared with breastfeeding in the latter part of infancy. Am J Clin Nutr. 2015;102(5):1096–103.
65. Bahorski JS, Childs GD, Loan LA, Azuero A, Morrison SA, Chandler-Laney PC, et al. Self-efficacy, infant feeding practices, and infant weight gain: An integrative review. J Child Heal Care. 2019;23(2):286–310.
66. Ventura AK. Associations between Breastfeeding and Maternal Responsiveness: A Systematic Review of the Literature. Adv Nutr An Int Rev J. 2017;8(3):495–510.
67. Disantis KI, Hodges EA, Johnson SL, Fisher JO. The role of responsive feeding in overweight during infancy and toddlerhood: A systematic review. Vol. 35, International Journal of Obesity. 2011. p. 480–92.
68. Hurley KM, Cross MB, Hughes SO. A systematic review of responsive feeding and child obesity in high-income countries. J Nutr. 2011;141(3):495–501.
69. Hohman EE, Paul IM, Birch LL, Savage JS. INSIGHT responsive parenting intervention is associated with healthier patterns of dietary exposures in infants. Obesity. 2017 Jan 1;25(1):185–91.

70. Paul IM, Savage JS, Anzman SL, Beiler JS, Marini ME, Stokes JL, et al. Preventing obesity during infancy: A pilot study. Obesity. 2011;19(2):353–61.
71. Redsell SA, Edmonds B, Swift JA, Siriwardena AN, Weng S, Nathan D, et al. Systematic review of randomised controlled trials of interventions that aim to reduce the risk, either directly or indirectly, of overweight and obesity in infancy and early childhood. Matern Child Nutr. 2016;12(1):24–38.
72. Vazir S, Engle P, Balakrishna N, Griffiths PL, Johnson SL, Creed-Kanashiro H, et al. Cluster-randomized trial on complementary and responsive feeding education to caregivers found improved dietary intake, growth and development among rural Indian toddlers. Matern Child Nutr. 2013;9(1):99–117.
73. Aboud FE, Moore AC, Akhter S. Effectiveness of a community-based responsive feeding programme in rural Bangladesh: A cluster randomized field trial. Matern Child Nutr. 2008;4(4):275–86.
74. Black MM, Aboud FE. Responsive feeding is embedded in a theoretical framework of responsive parenting. In: Journal of Nutrition. 2011. p. 490–4.
75. Buchan JL, Bennett CT. Promoting Infant Mental Health Through Evidence-Informed Interventions to Support Infant Feeding and the Transition to Parenthood: A Clinical Practice Example. Can J Nurs Res. 2020;52(2):100–7.
76. Leanne W, Isabelle G, Moyez L, Stanley Z. Vitamin D-deficeincy rickets among children in Canada. Research. 2007;177(2):161–6.
77. Munns CF, Shaw N, Kiely M, Specker BL, Thacher TD, Ozono K, et al. Global consensus recommendations on prevention and management of nutritional rickets. Vol. 85, Hormone Research in Paediatrics. 2016. p. 83–106.
78. Hollis BW, Roos BA, Draper HH, Lambert PW. Vitamin D and its metabolites in human and bovine milk. J Nutr. 1981;111(7):1240–8.
79. Gionet L. Breastfeeding Trends in Canada. Statistics Canada. 2013.
80. Nova Scotia, Canada. Reproductive Care Program Of Nova Scotia-Perinatal Health Reports Archive [Internet]. [cited 2020 Jul 22]. Available from: http://rcp.nshealth.ca/sites/default/files/data-reports/Breastfeeding_by_DHA_2006-2013.pdf
81. Nova Scotia, Canada.Healthy Eating: Breastfeeding [Internet]. [cited 2020 Jul 22]. Available from: https://novascotia.ca/dhw/healthy-communities/healthy-eating-breastfeeding.asp
82. Statistics Canada. Exclusive breastfeeding, at least 6 months, by age group [Internet]. [cited 2020 Jul 22]. Available from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310009622
83. Mcfadden A, Gavine A, Mj R, Wade A, Buchanan P, Jl T, et al. Support for healthy breastfeeding

mothers with healthy term babies. Cochrane Database Syst Rev. 2017;(2).
84. Harbron J, Booley S, B N, CE D. Responsive feeding: establishing healthy eating behaviour early on in life. South African J Clin Nutr. 2013;26(3):S141–9.
85. Li R, Scanlon KS, May A, Rose C, Birch L. Bottle-Feeding Practices During Early Infancy and Eating Behaviors at 6 Years of Age. Pediatrics. 2014 Sep 1;134(Supplement_1):S70–7.
86. Disantis KI, Hodges EA, Fisher JO. The association of breastfeeding duration with later maternal feeding styles in infancy and toddlerhood : a cross-sectional analysis. 2013;1–12.
87. Brown A, Lee M. Breastfeeding Is Associated with a Maternal Feeding Style Low in Control from Birth. PLoS One. 2013 Jan 30;8(1).
88. Brown A, Lee MD. Early influences on child satiety-responsiveness: The role of weaning style. Pediatr Obes. 2015 Feb 1;10(1):57–66.
89. Karp SM, Lutenbacher M, Dietrich MS. The associations of psychosocial factors and infant feeding beliefs and practices of young, first time, low income mothers. Compr Child Adolesc Nurs. 2010;33(4):268–87.
90. Lumbiganon P, Martis R, Laopaiboon M, Festin MR, Ho JJ, Hakimi M. Antenatal breastfeeding education for increasing breastfeeding duration. Cochrane Libr. 2016;(12):1–70.
91. Mangrio E, Persson K, Bramhagen AC. Sociodemographic, physical, mental and social factors in the cessation of breastfeeding before 6 months: a systematic review. Scand J Caring Sci. 2018;32(2):451–65.
92. Ritchie-Ewing G, Mitchell AM, Christian LM. Associations of Maternal Beliefs and Distress in Pregnancy and Postpartum With Breastfeeding Initiation and Early Cessation. J Hum Lact. 2019;35(1):49–58.
93. Sheehan D, Krueger P, Watt S, Sword W, Bridle B. The Ontario Mother and Infant Survey: Breastfeeding Outcomes. J Hum Lact. 2001;17(3):211–9.
94. Brown A, Rowan H. Maternal and infant factors associated with reasons for introducing solid foods. Matern Child Nutr. 2016;12(3):500–15.
95. Tatone-Tokuda F, Dubois L, Girard M. Psychosocial determinants of the early introduction of complementary foods. Heal Educ Behav. 2009;36(2):302–20.
96. Mcnally J, Hugh-Jones S, Caton S, Vereijken C, Weenen H, Hetherington M. Communicating hunger and satiation in the first 2years of life: A systematic review. Vol. 12, Maternal and Child Nutrition. 2016. p. 205–28.
97. Barrett KJ, Thompson AL, Bentley ME. The influence of maternal psychosocial characteristics on infant feeding styles. Appetite. 2016;103:396–402.
98. Savage JS, Birch LL. WIC mothers' depressive symptoms are associated with greater use of

feeding to soothe, regardless of perceived child negativity. Pediatr Obes. 2017;12(2):155–62.
99. Khalsa AS, Woo JG, Kharofa RY, Geraghty SR, DeWitt TG, Copeland KA. Parental intuitive eating behaviors and their association with infant feeding styles among low-income families. Eat Behav. 2019;32:78–84.
100. Hughes SO, Power TG, Liu Y, Sharp C, Nicklas TA. Parent emotional distress and feeding styles in low-income families. The role of parent depression and parenting stress. Appetite. 2015;92:337–42.
101. Stifter CA, Moding KJ. Understanding and measuring parent use of food to soothe infant and toddler distress: A longitudinal study from 6 to 18 months of age. Appetite. 2015;95:188–96.
102. Gross RS, Mendelsohn AL, Fierman AH, Racine AD, Messito MJ. Food insecurity and obesogenic maternal infant feeding styles and practices in low-income families. Pediatrics. 2012;130(2):254–61.
103. Gross RS, Mendelsohn AL, Fierman AH, Messito MJ. Maternal controlling feeding styles during early infancy. Clin Pediatr (Phila). 2011;50(12):1125–33.
104. Fildes A, van Jaarsveld CHM, Llewellyn C, Wardle J, Fisher A. Parental control over feeding in infancy. Influence of infant weight, appetite and feeding method. Appetite. 2015;91:101–6.
105. Harris HA, Ria-Searle B, Jansen E, Thorpe K. What's the fuss about? Parent presentations of fussy eating to a parenting support helpline. Public Health Nutr. 2018;21(8):1520–8.
106. Odom EC, Li R, Scanlon KS, Perrine CG, Grummer-Strawn L. Association of family and health care provider opinion on infant feeding with mother's breastfeeding decision. J Acad Nutr Diet. 2014;114(8):1203–7.
107. Carruth BR, Skinner JD. Mothers' sources of information about feeding their children ages 2 months to 54 months. J Nutr Educ Behav. 2001;33(3):143–7.
108. Raisler J. Against the odds: Breastfeeding experiences of low income mothers. J Midwifery Women's Heal. 2000;45(3):253–63.
109. MacGregor E, Hughes M. Breastfeeding experiences of mothers from disadvantaged groups: a review. Community Pract. 2010;83(7):30–3.
110. Alianmoghaddam N, Phibbs S, Benn C. New Zealand women talk about breastfeeding support from male family members. Breastfeed Rev. 2017;25(1):35–44.
111. Camel SP, Heathman L, Douglas CC. A Comparison of Breastfeeding Exposure, Attitude, and Knowledge Between Collegiate African American and White Males with no Biological Children. Matern Child Health J. 2020;24(7):875–84.
112. Hounsome L, Dowling S. "The mum has to live with the decision much more than the dad"; a qualitative study of men's perceptions of their influence on breastfeeding decision-making. Int

Breastfeed J. 2018;13(1):1–10.
113. Marrone S, Vogeltanz-Holm N, Holm J. Attitudes, knowledge, and intentions related to breastfeeding among University undergraduate women and men. J Hum Lact. 2008;24(2):186–92.
114. Jefferson UT. Breastfeeding Exposure, Attitudes, and Intentions of African American and Caucasian College Students. J Hum Lact. 2017;33(1):149–56.
115. Dodgson JE, Bloomfield M, Choi M. Are health science students' beliefs about infant nutrition evidence-based? YNEDT. 2014;34:92–9.
116. Magnusson BM, Thackeray CR, Van Wagenen SA, Davis SF, Richards R, Merrill RM. Perceptions of Public Breastfeeding Images and Their Association with Breastfeeding Knowledge and Attitudes among an Internet Panel of Men Ages 21-44 in the United States. J Hum Lact. 2017;33(1):157–64.
117. Levant RF, Wong YJ. The psychology of men and masculinities. 2017.
118. Thompson EH, Bennett KM. Measurement of masculinity ideologies: A (critical) review. Psychol Men Masc. 2015 Apr;16(2):115–33.
119. Burr V. Social Constructionism. Second Edi. Vol. 22, International Encyclopedia of the Social & Behavioral Sciences: Second Edition. Elsevier; 2015. 222–227 p.
120. Creswell JW, Poth CN. Qualitative Inquiry & Research Design: Choosing Among Five Approaches. Forth edit. Vol. 3. SAGE Publications Inc.; 2018.
121. Harris JE, Gleason PM, Sheean PM, Boushey C, Beto JA, Bruemmer B. An Introduction to Qualitative Research for Food and Nutrition Professionals. J Am Diet Assoc. 2009;109(1):80–90.
122. Green J, Thorongood N. Qualitative methods for health research. SAGE Publications Inc.; 2004.
123. McLafferty I. Focus group interviews as a data collecting strategy. J Adv Nurs. 2004;48(2):187–94.
124. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006 Jan;3(2):77–101.
125. Vaaler ML, Castrucci BC, Parks SE, Clark J, Stagg J, Erickson T. Men's attitudes toward breastfeeding: Findings from the 2007 Texas Behavioral Risk Factor Surveillance System. Matern Child Health J. 2011;15(2):148–57.
126. Bowman Williams Lisa Singh Naomi Mezey J, Bowman Williams J, Singh L, Mezey N. #MeToo as Catalyst: A Glimpse into 21 st Century Activism. Univ Chic Leg Forum. 2019:22.
127. Törrönen J, Roumeliotis F, Samuelsson E, Kraus L, Room R. Why are young people drinking less than earlier? Identifying and specifying social mechanisms with a pragmatist approach. Int J Drug Policy. 2019;64:13–20.
128. Kaufman M. The time has come : why men must join the gender equality revolution. 2019.

129. Recommendations from the Gender Equality Advisory Council for Canada's G7 Presidency [Internet]. [cited 2022 Mar 21]. Available from: https://www.international.gc.ca/world-monde/international_relations-relations_internationales/g7/documents/2018-06-04-gender_equality-recommendations-egalite_genres.aspx?lang=eng
130. Provincial/Territorial Resources : Sieccan [Internet]. [cited 2022 Mar 3]. Available from: http://sieccan.org/promising-practices-portal/provincial-territorial-resources
131. Walters L, Laverty E. Sexual health education and different learning experiences reported by youth across Canada. Can J Hum Sex. 2022;31(1):18–31.
132. Oliffe JL, Rice S, Kelly MT, Ogrodniczuk JS, Broom A, Robertson S, et al. A mixed-methods study of the health-related masculine values among young Canadian men. Psychol Men Masculinities. 2019;20(3):310–23.
133. Sloan C, Gough B, Conner M. Healthy masculinities? How ostensibly healthy men talk about lifestyle, health and gender. Psychol Heal. 2010;25(7):783–803.
134. Barbosa LB, Vasconcelos SML, Correia LO dos S, Ferreira RC. Nutrition knowledge assessment studies in adults: a systematic review. Cien Saude Colet. 2016 Feb 1;21(2):449–62.
135. Jasti S, Kovacs S. Use of trans fat information on food labels and its determinants in a multiethnic college student population. J Nutr Educ Behav. 2010 Sep;42(5):307–14.
136. Christoph MJ, An R, Ellison B. Correlates of nutrition label use among college students and young adults: a review. Public Health Nutr. 2016 Aug 1;19(12):2135–48.
137. Roke K, Rattner J, Brauer P, Mutch DM. Awareness of Omega-3 Fatty Acids and Possible Health Effects among Young Adults. Can J Diet Pract Res. 2018 Sep 1;79(3):106–12.
138. Yahia N, Wang D, … MR-P in public, 2016 undefined. Assessment of weight status, dietary habits and beliefs, physical activity, and nutritional knowledge among university students. journals.sagepub.com. 2015 Jul 1;136(4):231–44.
139. Rothgerber H. Real Men Don't Eat (Vegetable) Quiche: Masculinity and the Justification of Meat Consumption. Psychol Men Masc. 2012;14(4):363–75.
140. Bogueva D, Marinova D. Reconciling Not Eating Meat and Masculinity in the Marketing Discourse for New Food Alternatives. In: https://services.igi-global.com/resolvedoi/resolve.aspx?doi=104018/978-1-5225-7350-0.ch014. IGI Global; 2018. p. 260–82.
141. Goulden A, Mann L, Norris D, Rossiter M. Working Mothers' Infant Feeding Experiences During Their Children's Transition to Child Care: A Qualitative Study. J Child Fam Stud. 2022;1–15.
142. Houle J, Meunier S, Coulombe S, Tremblay G, Gaboury I, de Montigny F, et al. Masculinity Ideology Among Male Workers and Its Relationship to Self-Reported Health Behaviors. In:

Basner RC, editor. international Journal of Men's Health. Cambridge: Cambridge University Press; 2015. p. 163–82.

143. Belogianni K, Ooms A, Lykou A, Moir HJ, Belogianni K. Nutrition knowledge among university students in the UK: a cross-sectional study. Public Health Nutr. 2021;1–8.
144. Pollock CA, Bustamante-Forest R, Giarratano G. Men of Diverse Cultures: Knowledge and Attitudes About Breastfeeding. J Obstet Gynecol Neonatal Nurs. 2002 Nov 1;31(6):673–9.
145. Standard for infant formula and formulas for special medical purposes intended for infants. Vol. 72, Codex Stan. 2007.
146. Canada's Food Guide [Internet]. [cited 2022 Jul 25]. Available from: https://food-guide.canada.ca/en/
147. Sihota H, Oliffe J, Kelly MT, McCuaig F. Fathers' Experiences and Perspectives of Breastfeeding: A Scoping Review. Am J Mens Health. 2019;13(3):1–12.
148. Venning A, Herd MCE, Smith DP, Lawn SJ, Mohammadi L, Glover F, et al. "I felt like less than a shadow in the room": Systematic review of the experiences and needs of new fathers. Psychol Men Masculinity. 2021;22(1):135–55.
149. Schmitz RM. Constructing Men as Fathers: A Content Analysis of Formulations of Fatherhood in Parenting Magazines. J Mens Stud. 2016;24(1):3–23.
150. Taillie LS. Who's cooking? Trends in US home food preparation by gender, education, and race/ethnicity from 2003 to 2016. Nutr J. 2018;17(1):1–9.
151. Wolfson JA, Frattaroli S, Bleich SN, Smith KC, Teret SP. Perspectives on learning to cook and public support for cooking education policies in the United States: A mixed methods study. Appetite. 2017;108:226–37.
152. Karmacharya C, Cunningham K, Choufani J, Kadiyala S. Grandmothers' knowledge positively influences maternal knowledge and infant and young child feeding practices. Public Health Nutr. 2017;20(12):2114–23.
153. Tversky A, Kahneman D. Extensional versus intuitive reasoning: The conjunction fallacy in probability judgment. Psychol Rev. 1983;90(4):293–315.
154. Gigerenzer G, Gaissmaier W. Heuristic decision making. Annu Rev Psychol. 2011;62:451–82.
155. Kahneman D, Klein G. Conditions for Intuitive Expertise: A Failure to Disagree. Am Psychol. 2009;64(6):515–26.
156. Evans JSBT, Over DE. Heuristic thinking and human intelligence: A commentary on Marewski, Gaissmaier and Gigerenzer. Cogn Process. 2010;11(2):171–5.
157. Furman N, Shooter W, Schumann S. The roles of heuristics, avalanche forecast, and risk propensity in the decision making of backcountry skiers. Leis Sci. 2010;32(5):453–69.

158. Tversky A, Kahneman D. Judgment under Uncertainty: Heuristics and Biases. New Ser. 1974;185(4157):1124–31.
159. Ma G, Zhuang X. Nutrition label processing in the past 10 years: Contributions from eye tracking approach. Appetite. 2021;156:104859.
160. Sanjari SS, Jahn S, Boztug Y. Dual-process theory and consumer response to front-of-package nutrition label formats. Nutr Rev. 2017;75(11):871–82.
161. Moon RY, Mathews A, Oden R, Carlin R. A Qualitative Analysis of How Mothers' Social Networks Are Established and Used to Make Infant Care Decisions. Clin Pediatr (Phila). 2019;58(9):985–92.
162. Price SL, Aston M, Monaghan J, Sim M, Tomblin Murphy G, Etowa J, et al. Maternal Knowing and Social Networks: Understanding First-Time Mothers' Search for Information and Support Through Online and Offline Social Networks. Qual Health Res. 2018;28(10):1552–63.
163. Roberts S. Domestic labour, masculinity and social change: insights from working-class young men's transitions to adulthood. J Gend Stud. 2017;27(3):274–87.

Appendix A: Nutrition for healthy term infants (0-24 months)

Table 1. Principles and recommendations for infant nutrition from birth to 6 months.

	Principle	**Corresponding Recommendation(s)**
1	Breastfeeding is the normal and unequalled method of feeding infants.	Exclusive breastfeeding for the first 6 months.
2	Breastfeeding initiation and duration rates increase with active protection, support, and promotion.	Implement Baby-Friendly Initiative in hospitals and community health services.
3	Supplemental vitamin D is recommended for breastfed infants.	Daily vitamin D supplement of 10 micrograms (400IU) for breastfed infants.
4	First complementary foods should be iron-rich.	Meat, meat alternatives, and iron-fortified cereal as infant's first complementary foods.
5	Routine growth monitoring is important to assess infant health and nutrition.	Use WHO Growth Charts for Canada for optimal monitoring of children's growth.
6	Feeding changes are unnecessary for most common health conditions in infancy.	• Explain that feeding changes do little to manage infantile colic. • Educate about the wide variation in normal bowel function, noting that true constipation is rare. • Reassure that reflux or 'regurgitation' is common and rarely needs treatment. • Manage mild to moderate dehydration from acute gastroenteritis with continued breastfeeding and oral rehydration therapy
7	Breastfeeding is rarely contraindicated.	Acceptable alternatives to breastfeeding should be offered to mothers who are HIV-infected. Most medications are compatible with breastfeeding; mothers using medications and drugs should be approached case-by-case.
8	For infants who cannot be exclusively breastfed for personal, medical, or social reasons health professionals should inform parents about the importance of breastfeeding, the	

	personal, social, and economic costs of feeding breast milk substitutes, and the difficulty of reversing the decision not to breastfeed. Families should be individually counselled to make a fully informed choice not to breastfeed, and on the use of breast milk substitutes.

Table 2. Principles and recommendations for the nutrition of older infants (6 to 12 months) and young children (12 to 24 months)

	Principle	**Corresponding recommendation(s)**
9	Breastfeeding is an important source of nutrition for older infants and young children as complementary foods are introduced.	Support breastfeeding for up to 2 years and beyond, as long as mother and child want to continue.
10	Supplemental vitamin D is recommended for infants and young children who are breastfed of receiving breastmilk.	Recommend a daily vitamin D supplement of 10 micrograms (400 IU) for infants and young children who are breastfed or receiving breast milk (until the child's diet contains 400IU vitamin D).
11	Complementary feeding, along with continued breastfeeding, provides the nutrients and energy to meet the needs of the older infant.	• Recommend gradually increasing the number of times a day that complementary foods are offered while continuing to breastfeed. • Recommend iron-rich meat, meat alternatives, and iron-fortified cereal as the first complementary foods. Encourage parents and caregivers to progress to introduce a variety of nutritious foods from the family meals. • Ensure that lumpy textures are offered no later than nine months. Encourage progress towards a variety of textures, modified from family foods, by one year of age.
12	Responsive feeding promotes the development of healthy eating skills.	• Encourage responsive feeding based on the child's hunger and satiety cues. • Promote offering finger foods to encourage self feeding. • Encourage use of an open cup, initially with help.
13	Iron-rich complementary foods help to prevent iron deficiency.	• Continue to recommend a variety of iron-rich foods. Ensure that foods such as meat and meat alternatives and iron-fortified cereal are offered a few times each day.

		• If parents and caregivers are introducing cows' milk, advise them to delay until 9-12 months of age. Recommend limiting cow milk to no more than 750 mL per day.
14	Foods for older infants and young children must be prepared, served, and stored safely.	• Recommend infants and young children always be supervised during feeding. • Recommend parents and caregivers avoid offering hard, small, and round, or smooth and sticky, solid foods that may cause aspiration and/or choking. • Promote safe food preparation and storage to prevent foodborne illness. Recommend avoiding products that contain raw or undercooked meat, eggs, poultry, or fish; unpasteurized milk or milk products; unpasteurized juice; and cross-contamination between cooked and uncooked foods. • Advise parents and caregivers not to give honey to a child under one year of age (to help prevent infant botulism).
15	From one year of age, young children begin to have a regular schedule of meals and snacks, and generally follow the advice in Canada's Food Guide.	• Recommend a regular schedule of meals and snacks, offering a variety of foods from the four food groups. • Recommend foods prepared with little or no added salt or sugar. • Explain to parents and caregivers that nutritious, higher-fat foods are an important source of energy for young children. Encourage continued breastfeeding or offering 500mL per day of homogenized (3.25% fat) cows' milk. • Advise limiting fruit juice and sweetened beverages. Encourage offering water to satisfy thirst.

		• Encourage parents and caregivers to be role models and instil lifelong healthy eating habits.
16	Some infants may not be breastfed for personal, social, or rarely, medical reasons. Their families need support to optimize the infant's nutritional well-being. The International Code of Marketing of Breast-Milk Substitutes advises health professionals to inform parents about the importance of breastfeeding, the personal, social, and economic costs of formula feeding, and the difficulty of reversing the decision not to breastfeed. Individually counsel those families who have made a fully informed choice not to breastfeed on the use of breast milk substitutes.	

Appendix B: Recruitment poster

MOUNT SAINT VINCENT UNIVERSITY

MAMA Lab

Looking for research participants: men, 19-29 years old from Nova Scotia!

Researchers at Mount Saint Vincent University are looking for young men to participate in an *online* focus group to discuss feeding infants and young children.
(NO prior knowledge of infant feeding is required)

- If you are a man between the ages of 19-29 and are **not a parent**, we would like to hear from you.
- You will participate in only **one** group discussion (90 min), using online software from the comfort of your home.
- You will receive **$20** cash as a thank you for your participation.

For more information, contact us:
focus.groups@msvu.ca
(902) 943-5652 | www.mamalab.ca

This study was approved by the Mount Saint Vincent University Research Ethics Board (#2020-207)

Appendix C: Written consent form

Consent Form

Exploration of infant and young child feeding knowledge, attitudes, and beliefs held by young, non-parent men in Nova Scotia.

Researchers

Dr. Kyly Whitfield, Main Researcher, Assistant Professor

Linda Mann, Associate Professor

Phillip Joy, Assistant Professor

Department of Applied Human Nutrition, Mount Saint Vincent University

Phone: (902) 457-5978

E-mail: kyly.whitfield@msvu.ca

Ms. Olga Levin, MSc AHN Student

Department of Applied Human Nutrition, Mount Saint Vincent University

Email: olga.levin@msvu.ca

Introduction

We invite you to take part in a research study about *infant and young child feeding*. This form offers you key information to help you decide if you want to join the study. We will explain the purpose of the study, the risks, and benefits, and what you will be asked to do. Please ask the research team if you have any questions about anything in this form. You may decide not to join, or you may leave the study at any time. Taking part is completely voluntary.

Who are doing the study?

Researchers in the Department of Applied Human Nutrition at Mount Saint Vincent University (MSVU) is leading this study. A Mount Saint Vincent University New Scholars Grant is funding this study.

Potential Conflict of Interest

The researchers have no conflicts of interest to report.

What is the purpose of the research?

Health Canada, with other national groups, have developed a set of guidelines outlining the best ways to feed children under two years old. However, many of these guidelines are not actually followed by parents across Canada, especially in Nova Scotia. By doing this study, we hope to learn what Nova Scotians know about feeding young children. We also hope to better understand their different attitudes and beliefs towards feeding infants and young children.

Study Procedure

Who can join the study?

A member of the research team will talk to you via email or phone to decide if you can take part in this study.

To take part in this study, you must:

- ✓ be a man aged 19 to 29 years,
- ✓ not be a parent,
- ✓ be currently living in Nova Scotia,
- ✓ and be able to speak basic English.

What will happen if I join the study?

If you meet the requirements listed above and want to take part in this study, we will ask you to join one focus group discussion. The focus group discussion will be:

· directed by two research assistants, with about 4-6 other people.

· done at the MSVU campus/ rural community center/ online, depending on COVID-19 provincial public health guidelines.

· between 60 to 90 minutes.

All MSVU COVID-19 safety protocols and public health guidelines for physical distancing and sanitation will be followed. If we meet in person, as part of these protocols, we will call you for a health screening 24 hours before the group discussion, and again before you enter the meeting

room. Upon your arrival, you will be asked to sign a COVID-19 information letter. This document ensures that you voluntarily agree to take part in the study and willing to provide your name and contact information for COVID-19 tracing purposes. You will then complete a survey asking for basic information about yourself such as your age and income, which will take about 5 minutes.

If you attend the online focus group, we will send you electronic copies of the consent form and the questionnaire to your email address. You will be asked to fill those out and send it back to us via email prior to the online meeting. This online meeting will take place on a university platform (e.g. Teams, Collaborate, or GoToMeeting), which we'll ask you to access via a computer or tablet with an internet connection, and with your camera and microphone switched on. When all focus group participants have signed into the virtual meeting, the research assistant will begin the discussion.

During the focus group discussion, we will ask you to share your opinions on different topics related to infant and young child feeding. The group discussion will be video-recorded, converted to text, and analyzed.

Do I have to join this study?

No. Taking part in this study is completely voluntary and will not cost you anything. You will not lose any services, benefits, or rights you would normally have if you decided not to join. If you decide to take part in the study, it should be because you really want to volunteer. As a thank you for your time and contribution, you will receive $20 paid in cash or via Interact e-transfer. If the focus group meets in person, we will give you back the money for the bus tickets *or* parking pass, depending on your mode of transit.

You can stop your participation and leave the focus group at any time. If you wish to leave, please tell one of the research assistants; you do not have to give a reason for your decision. You also do not need to answer any questions that you do not feel comfortable answering. If you decide to leave the study after you arrive but before we start the focus group discussion, we will not include any of your information in our reports, and you will receive the money for the parking pass *or* bus tickets. If you choose to leave after the recorded focus group discussion has started or the focus group has been completed, any information collected to that point will be used and you will not be able to change your mind about including your information in the

research. We will give you both the parking *or* bus tickets money (if in-person) and the $20 thank you.

What will happen to my information?

We will respect and keep privately all the information you give to us. Your records will be stored in a locked cabinet in the Department of Applied Human Nutrition. Digital records (such as the recorded FGD) will be stored immediately in a password secured OneDrive folder. Information that has your identity (such as this consent form) will be stored separately. Only the main researcher and/or designate could access it. You will not be anonymous to the researchers or to other participants in your group. However, participants will be asked to respect each other's privacy and not to repeat what is said in the focus group to others. Your real name will be replaced by a nickname, and any information that could tell who you are (i.e., your workplace, age, etc.) will be removed from our reports. At no point during the focus group discussion, we will ask you to share personal information about who you are. If you participate in-person, the COVID-19 information letter will be scanned to the MSVU ethics office and safely stored for one year; original copies will be shredded and digitally removed. All documents will be kept for five years and then securely destroyed.

We may present the study results at scientific meetings and publish them in a scientific journal. We may use ideas and sentences you said, however only after removing any details that could tell who you are.

In the unlikely event that you or another participant mention information to the researcher which indicates potential self-harm, harm to others, or child or elder abuse during the group discussions, the researcher must report such information and confidentiality cannot be guaranteed. Following the Nova Scotia Children and Family Services Act, the researchers must report suspected child abuse (physical abuse, emotional abuse, sexual abuse) or neglect to Child Welfare Services and the researchers would provide them with the section of the audio recording having such information.

Risks

We believe that there is minimal risk involved with taking part in this study (e.g., risk of social discomfort if you disagree with a participant in this focus group). We think this risk is not much higher than other discussions you may have in your everyday life.

Benefits

You will not receive direct benefits from taking part in this study other than $20 to thank you for your attendance. We hope that the information learned from this study can be used to inform future research, or potentially even future education programs about the feeding of young children.

Questions and further information

If you would like further information about this research, please do not hesitate to contact Dr. Kyly Whitfield, the main researcher, at kyly.whitfield@msvu.ca, or by phone at (902) 457-5978. If you have questions about how this study is being conducted and wish to speak with someone who is not directly involved in the study, you may contact the MSVU Research Office at (902) 457-6350 or via e-mail atresearch@msvu.ca. The ethical components of this research study have been reviewed by the University Research Ethics Board and found to be following Mount Saint Vincent University's Research Ethics Policy.

Research Results

If you wish, you can look up a summary of the study results at www.mamalab.ca in 2022.

Consent Form for Participant Participation

PARTICIPANT AUTHORIZATION:

I have read or had read to me this information and authorization form and have had the chance to ask questions which have been answered to my satisfaction before moving forward. I understand the nature of the study and I understand the potential risks and benefits. I understand that I have the right to withdraw from the study at any time. I have received a copy of this consent form for future reference. I freely agree to participate in this research study.

Print name of Participant: _____

Signature: _____Date: _____

STATEMENT BY PERSON PROVIDING INFORMATION ON STUDY AND OBTAINING CONSENT

I have explained the nature and demands of the research study and judge that the participant named above understands the nature and demands of the study. I have explained the nature of the consent process to the participant and judge that they understand that participation is voluntary and that they may withdraw at any time from participating.

Print name of Person Explaining Consent: _____

Signature: _____Date: _____

Appendix D: Demographic questionnaire

QUESTIONNAIRE: YOUNG, NON-PARENT MEN

Exploration of infant and young child feeding knowledge, attitudes, and beliefs held by young, non-parent men in Nova Scotia.

IDENTIFICATION INFORMATION		
Subject Identification Code: _____	Focus group: _____	
QUESTIONS		
1. How old are you?		
2. What is your marital status?	• Married • Widowed • Separated/divorced • Single • Other:	
3. Which best describes where you live?	• Cape Breton • Highlands (Pictou, Antigonish, Guysborough) • Central (Halifax area) • Northern (Colchester, Cumberland, East Hants) • South Shore (Lunenburg, Shelburne, Yarmouth, Queens) • Valley (Digby, Annapolis, Kings, West Hants)	
	• Urban	• Rural
4. What is your approximate annual **household** income before tax?	• Less than $10,000 • 10,000 to $19,999 • $20,000 to $29,999 • $30,000 to $39,999 • $40,000 to $49,999 • $50,000 to $59,999	• $60,000 to $69,999 • $70,000 to $79,999 • $80,000 to $89,999 • $90,000 to $99,999 • $100,000 to $149,999 • $150,000 or more

5. What is the highest level of education you have completed?	• Middle school (grade 8) • High school (grade 12) • College • University (undergraduate degree) • University (graduate or professional degree)
6. What racial or cultural group(s) do you self-identify with?	
7. Were you born in Canada?	• Yes • No → What year did you arrive to Canada? _____
8. Were you breastfed as a baby?	• Yes • No • I don't know
9. Approximately how many women have you ever seen breastfeeding?	
10. Do you plan to have children in the future?	• Yes → In approximately how many years do you expect to want to become a parent? _____ • No • I don't know
11. How often do you advise parents on infant feeding?	• Daily • Monthly • Less than monthly • Never

Thank you for your participation!

Appendix E: Discussion Guide

Exploration of infant and young child feeding knowledge, attitudes, and beliefs held by young, non-parent men in Nova Scotia

Online Focus Group Discussion (FGD) Guide

Consent Process and Demographics Questionnaire

Facilitator greets all participants and ensures all consent forms and demographic questionnaires have been completed before participation.

Materials and Supplies Needed

- Computer with internet connectivity
- Pen and markers for facilitator
- Notebook for facilitator
- PowerPoint slides
- FGD guide for facilitator

Introduction

1. Welcome
   - Facilitator introduces themselves
   - Review purpose of study, use of data

Sample script:

"Welcome everyone, thank you so much for making the effort to be here today. My name is _____, and this is_____. We are both Applied Human Nutrition students at Mount Saint Vincent University (explain our roles). As you know from the consent form, we have gathered you here today to ask you about feeding young children. We want to learn what young men who do not have children know and think about feeding children under 2 years of age. As members of the community, future fathers, friends or relatives of parents to young children you may have a role in infant feeding decisions.

As a reminder, today we will be audio-recording our discussion, and it will then be converted to text for analysis. All data will be used for research purposes only. During the process of converting the audio to text, I will use nicknames instead of your names and all potentially identifying information that you share will be removed (e.g., names, workplace etc.) so all the information you give us will be confidential. Also, remember that you don't need to answer any questions you don't feel comfortable responding to, and you can leave at any time. However, if you leave after the recorded session has started, any information that has been recorded to that point could be used for analysis".

2. Explanation of the Process

- General information about FGD process
- Logistics

Sample Script:
"If you have not participated in a focus group before, these discussions are commonly used in research to better understand an issue. This focus group will last approximately one to one and a half hours. We want to learn from you, whether you have positive, negative, or neutral comments. In a focus group, we do not necessarily want the group to reach a consensus, but rather gather information from everyone in the group.

3. Focus group guidelines

- Group expectations may be provided by facilitator and added to by the group (max. 5 min). Should remain posted in the ChatBox throughout FGD.

Sample Group Expectations:

- All group members should participate- There are no right or wrong answers to the focus group questions. We want to hear many different viewpoints and would like to hear from everyone. We hope you can be honest even when your responses may not be in agreement with the rest of the group

- "What's said in the room stays in the room" – all information shared must be kept confidential. We ask that you please don't share any identifying information on our participants with other outside of this group.
- This is a safe space, and all opinions are respected- we don't seek to reach an agreement.
- "Share the air"- One speaker at a time, no side conversations. In respect for each other, we ask that only one individual speak at a time in the group.
- Turn off cell phones or set to vibrate if necessary. Please mute your microphone if there is a sudden loud noise in the background and avoid distractions.
- Ask the group if they have any more to add to the group guidelines.

Turn on Audio Recorder

Address any final questions or concerns, and then notify all members that you will start recording and the discussion will begin.

Warm up exercise: Go around the group, each member can introduce themselves briefly. "You can share anything you like, what has drawn you to participate in the study or what is your connection to infants and young children".

IYCF FGD Questions:

Introduce categories, questions can be used to help guide discussion, allow time for participants to think and answer. Probes may be used if appropriate.

Category	**Questions (*Probes)***
General IYCF Knowledge and Source	1. What do you know about feeding children under 2 years? Where do you think your ideas about feeding babies and young children come from? • *Did you learn about IYCF in (high) school?* • *Do you learn about IYCF in the media?*

	• *Do you learn about IYCF from family and friends (distinguish between hearing and seeing)?* • *Have you heard about the Health Canada recommendations for IYCF? Do you think most Canadian men would know that the Health Canada recommendations for IYCF exist?*
Perceptions of Breastfeeding ~20 min	2. What do you think is the best food for a newborn baby? 3. Tell me a little bit about breastfeeding. Do you know of any advantages or disadvantages of breastfeeding? What about formula? • *Physical health benefits? Emotional benefits?* • *For baby? For mom?* • *Have you ever given breastfeeding advice?* 4. Have you ever seen anyone breastfeed in public here in Nova Scotia? What was your reaction? What do you think about women breastfeeding in different places? • *Do you think they should cover up? Go into a different/special room? Are there places that are more/less "appropriate" (e.g., food court vs classroom vs doctor's waiting room etc.)* • *Would you react differently if it was someone you knew vs a stranger?* • *How do you think your peers (friends/co-workers) would feel seeing breastfeeding women in real life?* 5. When do you feel like children are old enough to stop breastfeeding? • *Health Canada recommends breastfeeding until 2 years or beyond. What do you think about this recommendation?*

Perceptions of Complementary Feeding ~20 min	6. Now we are going to talk about something called "complementary feeding". This is when babies start eating food and drink other than just breast milk or formula. Tell me a bit about what you know about introducing food and drink to babies (*What foods or drinks should be given to babies first? When should this happen? Why? Where have you heard about this (i.e. media, friends or family, personal experience, etc.)?* • *Do you know of any benefits of introducing appropriate food and drink to a baby at the right time?* • *Have you ever given advice about complementary feeding? What was it about?* • *Do you think it is important for non-parents to know about complementary feeding? When do you think parents learn about complementary feeding?* 7. What did you think about babies eating meat or meat alternatives as their first food? 8. What do you think about babies or young children drinking cow's milk? • *What do you think are the risks or benefits associated with drinking cow's milk?* 9. Do you know of any food or drink that can cause harm to a child under 2 years of age? *<u>if there is time</u>* • *How can that food/drink cause harm?*
Perception of Responsive feeding	10. So far, we have discussed "what to feed". Now let us talk about "how to feed". If you were to describe an ideal feeding, what would that look like to you? Think about more about the behaviour of the feeding, rather than what is being fed.

~20 min	• *Examples to an ideal vs non-ideal feeding and why? Where are your ideas come from?* • *What could be the benefits of a mutual interaction during the feeding?* • 11. <u>*Only explain if has not been brought up*</u>: There is a term called "Responsive feeding". This is when parents/caregivers base the feeding on baby's signs (not the clock/schedule). They start feeding when the baby shows that they are hungry and stop when the baby shows that they are full, create eye contact and interact with them during the feeding. This behaviour applies to all feeding stages such as breastfeeding on cue, introducing complementary foods, and feeding an older child. • *Have you heard about responsive feeding? What else do you know about it?* • *What could help caregivers to practice more responsive feeding and what makes it harder (social norms, maternal/infant factors)?*
General Final Questions	12. Do you feel that it is important for Nova Scotians to know about feeding babies and young children? 13. How do you perceive your role in the infant feeding realm (as a future parent/family member/friend of parents to young children)? 14. Any final thoughts?

Appendix F: MSVU Research Ethics Board clearance certificate

University Research Ethics Board (UREB)

Certificate of Research Ethics Clearance

☒	Clearance	☐	Secondary Data Clearance	☐	Renewal	☐	Modification	☐	Change to Study Personnel

Effective Date	**March 10, 2021**	**Expiry Date**	**March 9, 2022**

File #:	**2020-207**
Title of project:	Exploration of infant and young child feeding knowledge and attitudes held by adults in Nova Scotia
Researcher(s):	Kyly Whitfield
Supervisor (if applicable):	n/a
Co-Investigators:	Linda Mann; Phillip Joy
Version :	1

The University Research Ethics Board (UREB) has reviewed the above named research proposal and confirms that it respects the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* and Mount Saint Vincent University's policies, procedures and guidelines regarding the ethics of research involving human participants. This certificate of research ethics clearance is valid for a period of **one year** from the date of issue.

Researchers are reminded of the following requirements:			
Changes to Protocol	Any changes to approved protocol must be reviewed and approved by the UREB **prior** to their implementation. **Form: REB.FORM.002**	**Info: REB.SOP.113**	**Policy: REB.POL.003**
Changes to Research Personnel	Any changes to approved persons with access to research data must be reported to the UREB immediately. **Form: REB.FORM.002**	**Info: REB.SOP.113**	**Policy: REB.POL.003**

Annual Renewal	Annual renewals are contingent upon an annual report submitted to the UREB **prior** to the expiry date as listed above. You may renew up to four times, at which point the file must be closed and a new application submitted for review. **Form: REB.FORM.003** **Info: REB.SOP.116** **Policy: REB.POL.003**
Final Report	A final report is due on or before the expiry date. **Form: REB.FORM.004** **Info: REB.SOP.116** **Policy: REB.POL.003**
Privacy Breach	Researchers must inform the UREB immediately and submit the Privacy Breach form. The breach will be investigated by the REB and the FOIPOP Officer. **Form: REB.FORM.015**
Unanticipated Research Event	Researchers must inform the UREB immediately and submit a report to the UREB within seven (7) working days of the event. **Form: REB.FORM.008** **Info: REB.SOP.115** **Policy: REB.POL.003**
Adverse Research Event	Researchers must inform the UREB immediately and submit a report to the UREB within two (2) working days of the event. **Form: REB.FORM.007** **Info: REB.SOP.114** **Policy: REB.POL.003**

*For more information: http://www.msvu.ca/ethics

Brenda Gagné,

Research Ethics Coordinator

Halifax Nova Scotia B3M 2J6 Canada Tel
902 457 6350 • msvu.ca/ethics