INFLUENCING FACTORS ON RURAL MATERNITY CARE PRACTICE

EXPLORING THE SOCIO-ECOLOGICAL INFLUENCES ON FAMILY PHYSICIANS' AND RESIDENTS' COMMITMENT TO RURAL MATERNITY CARE: A SCOPING REVIEW

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A Thesis Submitted to the School of Graduate Studies in Partial Fulfillment of the Requirements for the Degree Master of Science (Global Health).

McMaster University MASTER OF SCIENCE (2024) Hamilton, Ontario (Global Health)

TITLE: Exploring the Socio-Ecological Influences on Family Physicians' and Residents' Commitment to Rural Maternity Care: A Scoping Review

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NUMBER OF PAGES: ix, 116

Lay Abstract

Family physicians (FP) are often the sole care providers of maternity care (MC) in rural communities. Unfortunately, there is a declining number of FPs choosing to provide comprehensive maternity care (CMC). In addition, centralization has resulted in rural maternity center closures across the country. Rural women and families that must travel to access MC experience increased levels of stress, personal costs, and increased rates of adverse outcomes. With fewer FPs available to provide CMC alongside maternity centre closures, rural communities face challenges in ensuring safe and accessible care for expectant mothers. Addressing this issue is vital to protecting the health and well-being of rural families.

Although research exists regarding the challenges FPs encounter when providing CMC in rural areas and what influences resident practice intentions, there has yet to be a synthesis of the literature over the last 30 years. To address this, a scoping review was conducted to explore the research on the influences on FPs' and residents' commitment to practicing rural MC. This scoping review can help understand what factors have been most influential over time, emerging challenges, and what socio-ecological levels to target for intervention.

Abstract

Background: Rural maternity care in Canada is in crisis, with many communities losing local services. This forces rural women and families to travel for care, leading to heightened stress, expenses, and adverse outcomes. Family physicians, often the primary providers of rural maternity care, are decreasing in numbers, exacerbating the problem. Without enough providers, rural communities struggle to offer safe and accessible maternity services, risking the health of expectant mothers and families.

Objective: This research aims to gain a comprehensive understanding of the socio-ecological influences that shape the commitment of family physicians and residents to practice rural maternity care.

Methods: A scoping review was conducted, and database searching occurred in Ovid Medline, Ovid Embase, Ovid Emcare, and Web of Science. Primary studies and literature reviews in English were included if they discussed family physicians' and residents' experiences and perspectives in practicing and training for rural maternity care. Articles were restricted to the past 30 years. Thematic analysis was applied to analyze the data, and results were reported in tabular format.

Results: Influencing factors were categorized into themes and contextualized across the socio-ecological model: 1) individual factors (i.e. interests, attitudes, motivation, burnout, risk), 2) interpersonal factors (i.e. lifestyle, interprofessional relationships, mentors), 3) organizational factors (i.e. training and professional development, work environment and practice characteristics, resources, regulation and privileging), 4) community-level factors (i.e. practice setting and location, job availability, community context), and 5) systematic factors (healthcare system structure, public policy, legal and regulatory framework).

Conclusion: The most salient influencing factors included challenges with Family Medicine residency training and role models, call schedule sustainability and interprofessional collaboration, as well as preserving clinical skills and financial stability with low procedural volume in rural communities. There is a need to implement evidence-based interventions targeting training, recruiting role models, interprofessional collaboration and call, and effective rural remuneration.

Acknowledgements

I am deeply grateful to my supervisor, Dr. Patricia McNiven, for her continued guidance, insightful feedback, and patience throughout this process. Her encouragement and dedication have been invaluable in shaping my ideas and refining my research. I would also like to thank Dr. Anne Niec and Dr. Michael Klein for their contributions as members of my committee. Their expertise and thoughtful feedback have significantly enriched the quality of this work. Learning from women who are so committed to women's health has been inspiring. Finally, I would like to thank my support system of family, partner, and friends for their ongoing motivation. I have learned a lot through this process, most notably that research does not always go as planned! I feel privileged to have had the opportunity to write this thesis and be supported along the way.

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List of Abbreviations

CFPC: College of Family Physicians of Canada

CMC: Comprehensive Maternity Care

C-Section: Cesarean Section

FP: Family Physician

FM: Family Medicine

HCP: Healthcare Professional

MC: Maternity Care

OB: Obstetrician

OBGYN: Obstetrician-Gynecologist

SDG: Sustainable Development Goal

WHO: World Health Organization

Declaration of Academic Achievement

The following is a declaration that the content of the research in this document has been completed by Isabel Tansey and recognizes the contributions of Dr. Patricia McNiven, Dr. Anne Niec, and Dr. Michael Klein in both the research process and the completion of the thesis.

CHAPTER 1 INTRODUCTION

Improving global maternal health is a priority for the World Health Organization (WHO) in achieving the Sustainable Development Goals (SDG) (WHO, 2024). Part of SDG 3, Good Health and Well-Being, involves addressing disparities in accessing and receiving quality maternal healthcare services (WHO, 2024). Although Canada's healthcare system is well-developed, rural women encounter barriers to accessing maternity care (MC) compared to their urban counterparts (Goodridge & Marciniuk, 2016). Limited access to healthcare facilities, transportation challenges, socioeconomic disparities, and shortages of healthcare providers (HCPs) contribute to these barriers (Kozhimannil et al., 2016). The geographical distance to intrapartum care exacerbates the issue, leading to adverse maternal and neonatal outcomes. As a result, rural communities often experience higher rates of perinatal mortality, preterm delivery, and unplanned out-of-hospital births (Grzybowski et al., 2011).

Rural maternity services are under stress in Canada and other developed countries, leading to the attrition of MC centres (Kornelsen et al., 2023). The diminishing availability of maternity services in rural areas not only impacts the childbirth experience but also jeopardizes the health of mothers and newborns (Kornelsen & Grzybowski, 2006). Furthermore, research by Klein et al. (2011) highlights that the scarcity of maternity services in rural regions undermines community sustainability across medical, social, and economic dimensions, as maternity and newborn care serve as foundational pillars for sustaining communities.

Family physicians (FPs) play a crucial role in providing rural MC, offering comprehensive care throughout prenatal, intrapartum and postpartum periods (Pearson et al., 2020). However, the number of FPs providing intrapartum care has declined over the last 30

years, leading to increased reliance on specialists concentrated in urban areas (Godwin et al., 2002). Despite this, research indicates that FPs achieve equivalent or superior outcomes for low-risk patients compared to obstetric specialists (Kidd et al., 2013). Additionally, FPs provide continuity of care, which is highly valued by patients (Public Health Agency of Canada, 2009). Further, FPs offering MC in rural communities are cost-effective, with fewer interventions and lower overall costs than obstetricians (OB) (Walters et al., 2015).

The challenges FPs face while providing intrapartum MC in rural communities are well-documented in the literature. For example, professional isolation, limited educational resources, and strained professional relations with specialists influence MC practice (Fredrickson et al., 2023; Taylor et al., 2023). These obstacles, along with lifestyle impacts and access to clinical support services, contribute to the stress experienced by rural FPs (Fredrickson et al., 2023; Taylor et al., 2023). Moreover, there is sufficient evidence of factors influencing FM resident practice intentions. For instance, Kabir et al. (2021) found that experiences during residency and medical school, lived experience and rurality, personal values, and colleague support influenced intentions for practice. Understanding and mitigating these challenges are imperative for improving rural MC provision and supporting the commitment of FPs to maternal and child health.

There is a notable gap in the literature synthesizing the factors influencing FPs and residents' commitment to practicing rural MC. Therefore, this scoping review aims to address that gap by exploring the extent of the literature, summarizing what exists, and providing a future direction for research in training, practice and policy.

Authors Note: In this paper, "mother" and "maternal" will be used to describe the birthing population. I acknowledge that not all mothers and birthers are cis-gender women. Maternal and maternal represent the health needs of those who give birth to babies while recognizing the unique needs of women and gender-diverse birthing populations. Additionally, the term "woman" will be used, yet it does not dismiss those who identify as gender diverse.

CHAPTER 2 BACKGROUND

2.1 Rural Health

Where people live can significantly impact their health status and healthcare needs. Substantial differences exist between rural and urban populations regarding health outcomes (Stockton et al., 2021).

Defining "rural" in Canada is a complex task, with rurality indices attempting to encompass it through variables such as distance to advanced and primary care facilities, population number and density (Miller et al., 2012). Rural health is the well-being of individuals in rural regions and typically involves greater distances to healthcare facilities and essential services than those in urban settings (FDA, 2021). Consequently, rural residents have a limited scope of health services and providers compared to urban residents (CIHI, 2023). As a result, rural Canadians face reduced life expectancy, elevated mortality rates, increased chronic illness risk factors, higher rates of hospitalization and emergency room visits, and limited access to after-hours medical care when compared to their urban counterparts (Goodridge & Marciniuk, 2016).

The limited availability and accessibility of rural health services have profound implications for rural communities' well-being and health outcomes (Dassah et al., 2018). Accessibility in rural health refers to the ease with which individuals can physically and economically reach healthcare services (Buzza et al., 2011). This includes proximity to healthcare facilities, transportation options, affordability of services, and barriers such as geographical distance, lack of public transportation, or financial constraints (Buzza et al., 2011). Availability in rural health refers to the presence and readiness of healthcare services to meet the local community's needs (Buzza et al., 2011). This includes the number of healthcare facilities, the range of services offered, healthcare professionals (HCP) availability, and medical equipment

(Coombs et al., 2022). Availability also considers the capacity of healthcare facilities to accommodate patients without long wait times or shortages of resources (Coombs et al., 2022). Addressing the challenges of accessibility and availability in rural health is essential for ensuring equitable access to quality global healthcare.

Accessibility to rural healthcare poses significant challenges due to the proximity of essential health services (Buzza et al., 2011). Patients must often travel extensive distances to reach the nearest clinic or hospital, compounded by inadequate transportation infrastructure and poor travel conditions that further impede access to care (Kornelsen et al., 2021). Moreover, the financial burden associated with seeking healthcare services in rural areas can be prohibitive, particularly for those with limited financial resources or lacking comprehensive health insurance coverage (Kornelsen et al., 2021). Out-of-pocket transportation fees and geographical isolation can lead to delayed care, exacerbating health issues and potentially leading to otherwise preventable complications (Kornelsen et al., 2021).

The availability of healthcare services in rural regions presents barriers due to a shortage of resources, including healthcare facilities, essential equipment, and HCPs (Coombs et al., 2022). Despite almost one-fifth of Canadians (18%) residing in rural communities, they are served by only 8% of practicing physicians (Bosco & Oandasan, 2016). Rural communities encounter ongoing challenges in recruiting and retaining FPs and other HCPs (Wilson et al., 2020). Factors contributing to this challenge include low wages, unfavourable working conditions, limited professional development opportunities, and the preference of HCPs for urban or densely populated areas with more resources (Mbemba et al., 2016). As a result, disparities in healthcare access persist between rural and urban areas.

It is essential to recognize that rural healthcare services cannot feasibly match those available in urban settings due to the lower population density, which often does not sustain the demand for specialized HCPs and advanced equipment (Kornelsen et al., 2023). For instance, in a small town with a population of 3000, the infrastructure and patient volume cannot support the practice of highly specialized medical professionals like OBs or the installation and maintenance of sophisticated equipment such as MRI machines. However, rural communities are still proportionately underserviced (Kornelsen et al., 2023). This limitation emphasizes the need for tailored approaches to healthcare delivery in rural areas that prioritize accessibility, adaptability, and resource allocation based on these communities' specific needs and constraints.

2.2 Family Physicians and Rural Health

Rural family medicine (FM) has long been recognized as a cornerstone of healthcare provision in underserved areas, catering to the unique needs of rural populations (Soles et al., 2017). Sustainable rural health care necessitates generalist training for providers, encompassing comprehensive clinical, emergency, and surgical skills to maintain core services, prevent turnover, and address recruitment challenges in small hospitals (Kornelsen et al., 2023). FPs are key in bridging this gap by offering comprehensive services, including acute and emergency care, inpatient care, and maternity services (Young, 2017). However, recent trends indicate a concerning decline in physicians choosing to practice in rural areas, particularly in FM (Young, 2017). This trend has significant implications for healthcare access and quality in rural regions. According to Soles et al. (2017), rural communities experience several challenges in recruiting and retaining physicians, such as geographical isolation, limited resources and infrastructure, and the absence of educational and employment opportunities for physicians' families. As a result,

rural communities in Canada are experiencing a growing disparity in healthcare access compared to urban areas, exacerbating existing health inequities.

In Canada, FPs comprise over 50% of the physician workforce, yet only 14% practice in rural areas (CIHI, 2014). Medical education has an important role to play in providing adequate training for rural and remote practice. There is clear evidence that physician characteristics, training environments, and a rural training curriculum are important factors that interact with one another and influence recruitment and retention (Rourke, 1995). The decision to practice in rural regions has been associated with many factors, including being from and having the opportunity to train in a rural area (Miller et al., 2012). Practitioners are most comfortable in environments similar to those they have trained in. Early exposure to rural environments and MC plays a significant role in decision-making about practice scope and location (Miller et al., 2012). Many programs find it difficult to provide these experiences, but they are essential for the broad scope of family practice that rural communities require. The last decade has had numerous new rural and northern training sites open, increasing opportunities to learn MC in a rural environment.

To enhance the recruitment and retention of FPs in rural regions, residency programs actively recruit students from rural backgrounds and provide consistent exposure to rural settings throughout medical school, residency training, and ongoing support for practicing in rural areas (Rural Family Medicine Review, 2016; Holst, 2020). For instance, the Northern Ontario School of Medicine (NOSM) in Ontario has developed a Rural Generalist Pathway to align medical training to fill gaps in community needs (Humphrey, 2024). Moreover, 12 additional FM programs across Canada have introduced a Rural Stream, including the University of British Columbia, the University of Alberta, and McMaster University, prioritizing students who will commit to practicing in rural and remote areas (Humphrey, 2024).

Rural streams are beneficial for recruiting and retaining FPs in rural communities and ensuring a comprehensive practice scope. Myhre et al. (2018) conducted a cross-sectional questionnaire survey involving 651 graduates from the University of Alberta and the University of Calgary's FM residency programs. Their study aimed to discern the scope of practice differences between graduates from rural and urban programs (Myhre et al., 2018). The findings revealed that graduates from rural programs exhibited a more comprehensive range of practice areas, including postnatal and intrapartum care, palliative care, emergency care, long-term care, office-based and in-hospital procedures, and care for rural and Indigenous populations (Myhre et al., 2018). Interestingly, regardless of the program completed, those practicing in rural locations demonstrated a broader scope of practice than their urban counterparts (Myhre et al., 2018).

The rural streams' emphasis on a comprehensive scope of practice is essential for FPs in small communities. Despite the push for rural medicine training in Canada, recruiting and retaining FPs in rural areas remains a significant challenge.

2.3 Rural Maternity Care

Improving global maternal health is a priority for the WHO in achieving the SDGs (WHO, 2024). Maternal health encompasses the well-being of women during pregnancy, childbirth, and postnatal periods (WHO, 2024). SDG Target 3.1 calls for reducing the global maternal mortality ratio (MMR) to less than 70 per 100,000 by 2030 (WHO, 2024). Part of this goal involves addressing disparities in accessing and receiving quality maternal healthcare services (WHO, 2024). While maternal mortality is relatively uncommon in industrialized nations, there are still opportunities for prevention (Cook & Sprague, 2019). In Canada, maternal mortality, defined as death during pregnancy or within 42 days after delivery, fluctuated between

8.16 and 9.42 per 100,000 live births from 2020 to 2022 (Statistics Canada, 2023). Although the MMR has remained relatively stable over time, there has been an increase in the last ten years (Statistics Canada, 2023). Furthermore, a global report from international organizations, including the WHO and UNICEF, suggests that Canada's MMR could be up to 60% higher than what Statistics Canada reports (UNPF et al., 2019). The Society of Obstetricians and Gynaecologists of Canada concurs, citing surveillance issues that likely contribute to underreporting (Cook & Sprague, 2019).

Universality, accessibility and comprehensiveness are core features of the Canadian healthcare system (Government of Canada, 2023). However, rural women and infants face significant health inequities in accessing MC compared to their urban counterparts due to limited access to healthcare facilities, transportation challenges, and socioeconomic barriers (Kozhimannil et al., 2016). While variability exists between rural health regions, rural residence is correlated with lower socioeconomic status (Hughes Large & Webber, 2013). Pregnant individuals in rural areas are statistically more likely to live in disadvantaged neighbourhoods, have increased parity and deliver at a younger age, all of which are linked to poorer maternal outcomes (Hughes Large & Webber, 2013). From a geographical perspective, the increased distance to intrapartum care is also associated with adverse maternal and neonatal outcomes, including significantly increased rates of perinatal mortality, NICU admission, preterm delivery, severe maternal morbidity and mortality, and unplanned out-of-hospital delivery (Lisonkova et al., 2016; Grzybowski et al., 2011). In addition, the scarcity of HCPs in rural areas compounds these issues, reducing the availability of MC services and skilled birth attendants (Kozhimannil et al., 2016).

Rural MC in Canada is provided through several models (Miller et al., 2012). Rural intrapartum services are often delivered by FPs, nurses, and midwives (Miller et al., 2012). While some care teams function without operative backup, other communities have backup provided by obstetrician-gynecologists (OBGYNs), general surgeons, FP-anesthetists, or surgical-trained FPs (Miller et al., 2012). Many rural communities cannot access intrapartum services (Hughes Large & Webber, 2013) In communities lacking local services, most women will travel elsewhere for care. Depending on the distance to the nearest referral center, they may be away from their home and community from 36 weeks gestation until delivery (Miller et al., 2012). This separation often leads to significant stress for women and their families and rates of adverse outcomes increase with socioeconomic vulnerability (Miller et al., 2012). The adverse outcomes associated with stress and socioeconomic disadvantage may result in increased maternal and neonatal morbidity (Lisonkova et al., 2016).

Rural maternity services in Canada and other developed countries are under stress. There has been extensive research in the past few decades on the attrition of rural maternity services in Canada and internationally alongside the adverse health and social consequences of losing local services (Sutherns & Bourgeault, 2008; Kornelsen et al., 2023; Orrantia et al., 2022; Kozhimannil et al., 2016). The loss of rural maternity services negatively impacts the well-being of mothers, their birth experience and their newborns (Hoang et al., 2014). Moreover, the closure of maternity services in rural regions affects rural communities' sustainability, as highlighted by Klein et al. (2011), who identified maternity and newborn care as essential pillars for sustaining communities across medical, social, and economic dimensions.

Studies have revealed many negative impacts associated with travel for rural pregnant women, including stress, financial strain, separation from family and community, and disrupted

care (Korenelsen & Grzybowski, 2011; Hoang et al., 2014). Specifically, those who must travel for care tend to experience more complicated deliveries, higher rates of prematurity, increased neonatal care costs, and a higher likelihood of labour induction compared to women who do not have to travel (Korenelsen & Grzybowski, 2011). It is suggested that these adverse birth outcomes may result from the heightened physiological and psychological stress associated with travel and birth in an unfamiliar environment, disrupting the normal labour process (Hoang et al., 2014).

The closure of rural maternity services over the past three decades stems from multiple factors, including insufficient volume, HCP shortages, safety concerns, cost challenges, and an emphasis on regionalization and subsequent centralization (Grzybowski et al., 2015). Regionalization and centralization present an enduring challenge. Regionalization in healthcare involves organizing a structured system to enhance patient outcomes by directing them to facilities best equipped to handle their specific medical needs (Lorch, Myers & Carr, 2010). Economic considerations often drive this approach, as not all hospitals can maintain the necessary resources for every medical condition (Lorch, Myers & Carr, 2010). Consequently, hospitals with fewer than 500 annual births face a higher risk of closing obstetrics departments, particularly small ones facing financial challenges (Albrecht et al., 2019; Mennicken et al., 2014). Closure trends vary by location and hospital type, with non-academic medical centers and rural areas experiencing more closures (Combier et al., 2013).

Since the inception of universal health insurance in Canada in the late 1960s, federal and provincial governments have prioritized cost efficiency, equitable service delivery, enhanced citizen involvement, and heightened decision-maker accountability (Church & Barker, 1998). Under fiscal constraints, regional health authorities seek cost reductions through service

restructuring and consolidation (Klein et al., 2002). Miewald and colleagues (2011) note that while initially appearing logical, these measures often fail to achieve anticipated cost savings due to the health and economic risks of hospital closures in smaller, rural communities.

The closure of rural maternity centers worsens existing disparities in maternal and newborn health outcomes, disproportionately affecting women and newborns in rural areas who already encounter barriers to healthcare access. Grzybowski et al. (2011) conducted a rural British Columbia (BC) study, revealing a positive correlation between distance to service and adverse maternal and newborn outcomes. Specifically, women residing more than four hours away from MC services were found to be at a 3.17 times higher risk of experiencing perinatal mortality compared to those with local services (Grzybowski et al., 2011). Moreover, the study indicated that women living two to four hours away experienced a higher induction rate, while those residing one to two hours away faced a six times higher rate of unplanned out-of-hospital delivery or delivery at the side of the road (Grzybowski et al., 2011).

These findings align with Lisonkova et al. (2016), who, in a retrospective population-based cohort study, observed that women in rural areas exhibited higher rates of severe maternal and neonatal morbidity, along with a lower rate of Neonatal Intensive Care Unit (NICU) admission compared to their urban counterparts. Additionally, Harrington and colleagues (2023) conducted a nationwide analysis in the United States, revealing that pregnant individuals in rural areas faced a higher risk of Intensive Care Unit (ICU) admission and mortality compared to their urban counterparts.

Ensuring the health and well-being of mothers and infants in rural settings is paramount for achieving optimal maternal and child health outcomes. Access to quality maternal healthcare services in rural areas correlates with improved maternal health, reduced maternal mortality

rates, and better infant birth outcomes (Lisonkova et al., 2016). Additionally, promoting maternal health in rural areas yields intergenerational benefits, as maternal well-being during pregnancy significantly influences the health and development of newborns and children (UNICEF, 2019). Therefore, investing in rural MC and addressing barriers to healthcare access are crucial steps in enhancing mothers' and infants' health and well-being in rural communities, ultimately fostering healthier families and stronger, sustainable communities.

2.4 Family Physicians' Role in Rural Maternity Care

In rural Canada, MC is provided predominantly by FPs (Brewer et al., 2009). FPs play a multifaceted role, encompassing prenatal and intrapartum care, postpartum support, and ongoing primary care for mothers and children (Pearson et al., 2020). Historically, FPs provided CMC, which includes intrapartum care (Tepper, 2004). Today, FPs generally follow their patients and provide prenatal care until approximately 20 weeks before referring them to an OB (Marshall et al., 2022). Still, rural communities rely on intrapartum care provided by FPs, and unfortunately, the number of FPs providing CMC has steadily declined since the 1970s (Godwin et al., 2002). Without the provision of rural intrapartum care, women have to travel long distances, sometimes in critical condition, outside of their community to give birth, which has social, psychological, and financial costs (Graves, 2012). As such, FPs play a vital role in allowing people to give birth close to home.

In addition, specialists and subspecialists are more concentrated in urban areas due to higher demand; therefore, rural communities rely on FPs' provision of MC (Cyr et al., 2019). FPs offer safe and effective MC, serving as valuable community resources by delivering comprehensive and continuous care across all stages of life. Research indicates that FPs exhibit

lower intervention rates than OBs while achieving equivalent or superior outcomes for low-risk patients (Walters et al., 2015). Moreover, in a study on MC patient satisfaction, Kidd et al. (2013) found that low-risk patients have greater satisfaction with the care provided by FPs than that offered by a specialist. Finally, women prefer the continuity of care their FPs provide. The Canadian Maternity Experiences Survey highlights the significance of continuity, with 88% of women who received care from the same provider throughout pregnancy and birth emphasizing its importance (Public Health Agency of Canada, 2009).

Further, FPs providing MC in rural communities make economic sense. A retrospective cohort study examined the cost-effectiveness of low-risk MC provided by midwives, FPs, and OBs in hospital settings from the perspective of the Ontario Ministry of Health (Walters et al., 2015). High-risk criteria included conditions such as pre-existing hypertension or diabetes, gestational hypertension or diabetes, multiple pregnancies, previous Cesarean sections (C-section), and certain pregnancy complications (Walters et al., 2015). Costs were assigned to the admitting provider, considering factors like length of hospital stay, newborn transfer to intensive care, and obstetrical interventions (Walters et al., 2015). Results showed that patients cared for by FPs were less likely to undergo specific interventions like induction, augmentation, or C-section, while more likely to have vaginal deliveries and avoid NICU transfers, demonstrating that FPs are more cost-effective than OBs (Walters et al., 2015). The study also found that the cost of delivery by midwives was $5102, by FPs was $5116, and by OBs was $5188, reaffirming previous findings that FPs offer equally safe care with fewer interventions compared to obstetric specialists, even when accounting for patient demographics changes over time (Walters et al., 2015; Mengel & Phillips, 1987).

Sustaining the MC practice of experienced FPs in rural communities has numerous benefits. Nonetheless, documented challenges persist in providing intrapartum care in rural settings. While litigation and malpractice concerns dominated the 1990s, contemporary literature highlights multifaceted obstacles, including lifestyle impacts, limited educational resources, and interprofessional support deficiencies (Fredrickson et al., 2023; Taylor et al., 2023; Marshall et al., 2022).

Eden and Peterson (2018) conducted a study to elucidate the hurdles FPs face in acquiring and delivering CMC. Through semi-structured interviews with FM stakeholders, they identified primary challenges, notably insufficient residency training, obstacles in obtaining hospital credentialing, and strained professional relations with specialists (Eden & Peterson, 2018). Similarly, Rogers (2003) reported that rural FPs have inadequate off-call time, constrained participation in continuing medical education, unavoidable social interactions with patients, and absent colleague support for MC. Accessing clinical support services and encountering frustrations in consulting or transferring care further compound the isolation and stress experienced by rural FPs (Rogers, 2003).

Research conducted in rural New Brunswick highlighted challenges for rural practitioners, including professional isolation, managing complex patient profiles, and preserving professional boundaries (Miedema et al., 2009). Notably, difficulties in maintaining these boundaries correlated with an increased likelihood of rural FPs contemplating departure from their practices (Miedema et al., 2009). Additional studies explored HCPs' experiences in communities with limited maternity services. Grzybowski, Kornelsen, and Cooper (2007) identified significant stressors associated with diminishing birth volumes, ensuring the safety of

local MC in the absence of C-section capabilities, and accommodating women's needs with the constraints of rural practice.

The importance of FPs practicing MC cannot be overstated in rural communities. Research highlights the effectiveness and cost-efficiency of FPs compared to OB specialists, with women preferring the continuity of care offered by FPs. However, challenges such as professional isolation and limited resources persist, highlighting the need for support to sustain experienced FPs in rural areas and ensure continued access to high-quality CMC.

2.5 Family Medicine Training for Rural Maternity Care

Currently, there are 17 FM residency training programs in Canada (CaRMs, 2024). In 2010, the College of Family Physicians of Canada (CFPC) introduced Competency-Based Medical Education with the Triple C-Competency Based Curriculum to prepare FM residents for independent practice nationwide (CFPC, 2022). The CFPC mandates that residents graduate from their two-year programs with competence in full-scope (prenatal, intrapartum, and postpartum) MC. However, FM educators are concerned that programs are struggling to meet this requirement and that residents do not feel competent or confident when they graduate (Biringer et al., 2019). This notion is supported by recent research on early career FPs preparedness to practice in Canada, which found that FPs were not prepared for MC after residency (Aggarwal & Abdelhalim, 2023). Acknowledging these training gaps, the CFPC's Outcomes of Training Project (OTP) recommended expanding FM residency education to three years to meet the needs of communities anywhere in Canada, including rural areas (CFPC, 2024). However, this proposal is in its early stages and still highly debated (Pimlott, 2023).

The shortage of FM graduates filling intrapartum care gaps raises concerns about the availability of FPs in practice, which also threatens the future teachers of FP MC. A 2014

qualitative study in Alberta by Koppula and colleagues explored FP perspectives on teaching primary care obstetrics. They identified barriers including a lack of confidence in teaching, difficulty explaining intuitive decisions, and resident interference with patient-physician relationships (Koppula et al., 2014). Disinterested residents posed a challenge, while teaching interested ones was rewarding (Koppula et al., 2014). Participants highlighted the importance of early exposure to MC to maintain interest in MC careers (Koppula et al., 2014). Recognizing these barriers can aid programs in addressing concerns, such as training FPs as teaching faculty to increase the availability of role models.

Similarly, Biringer et al. (2018) performed semi-structured interviews of Canadian program leaders to identify factors that led to success in FM maternity education. Success was measured by the number of residents achieving competency in intrapartum care, the number of graduates including intrapartum care in their practices, and the program's ability to retain FM MC providers as faculty (Biringer et al., 2018). The identified factors were sufficient clinical exposure, FM role models, an FM-friendly hospital environment, a supportive community of FM MC providers, and support for the education program (Biringer et al., 2018).

A study by Marshall et al. (2022) explored the Canadian FM resident's intent to practice MC and the factors influencing their decision. Residents were interested in providing MC but chose not to include it in their practice for various reasons. It reiterated findings from previous studies that influencers were beyond individual factors but also fit a socio-ecological model at the interpersonal, organizational, community, and public policy levels. While challenges and influencing factors on FPs in rural MC are well-documented, there is a gap in the literature of a comprehensive exploration and synthesis of challenges and opportunities across socio-ecological levels, particularly in examining their influence on FPs and residents in rural MC practice.

CHAPTER 3 RATIONALE

Exploring the socio-ecological influences on FP and residents' commitment to practicing rural MC is critical, given the significant challenges rural communities face. This research explores the multifaceted challenges influencing rural FPs' and residents' decisions to provide intrapartum MC, including lifestyle impacts, inadequate training, and extended on-call time.

While most FPs choose an urban practice and rural FPs opt out of intrapartum care, rural communities experience disparities in healthcare access and outcomes compared to their urban counterparts. The limited availability and accessibility of rural health services exacerbate these disparities, resulting in preventable complications, particularly in maternal and neonatal health. Families are required to travel away from their homes to receive care, which results in social, psychological and financial stress. The observed rural maternal mortality rates, 2.5 times higher than urban rates, underscore the urgency of improving access to quality MC in rural areas (Grzybowski et al., 2011). Improving equitable access to healthcare services, regardless of geographical location, is imperative to uphold the accessibility, universality, and comprehensiveness of health in Canada.

The closure of rural MC centers exacerbates maternal and neonatal health disparities, as evidenced by adverse outcomes associated with travel for MC (Miller et al., 2012). Centralization and subsequent closures stem from various factors, including workforce shortages, safety concerns, and cost challenges, perpetuating the cycle of limited access to CMC in rural areas. Moreover, the closures jeopardize the sustainability of rural communities, highlighting the interconnectedness of healthcare provision and community well-being (Klein et al., 2011).

FPs can provide CMC in rural areas yet face numerous challenges, including insufficient support services and frustrations in accessing resources. Various factors, including geographic

location, healthcare policies, and individual motivations, influence the scope of practice for FPs (Kabir et al., 2022). Understanding these influences is essential for addressing the recruitment and retention of rural FPs and promoting the delivery of intrapartum MC. This research aims to inform targeted interventions to enhance rural MC delivery and improve maternal and neonatal health outcomes by illustrating the socio-ecological factors shaping FM practice.

The existing literature on FPs' rural MC provision found various challenges and influencing factors shaping their practice intentions. However, there remains a gap in synthesizing this information to provide a comprehensive overview for informed decision-making in training, practice and policy development. This research is driven by the imperative to address the disparities in rural MC and the critical role of FPs in mitigating these disparities. By exploring the socio-ecological influences on FPs' and residents' commitment to rural MC practice, this study aims to inform evidence-based interventions to improve access to and quality of maternal healthcare in rural communities. Ultimately, this research contributes to advancing SDG3: Good Health and Well-being by striving for equitable healthcare access and outcomes for women and children, regardless of their geographical location.

3.1 Thesis Objective

This research aims to gain a comprehensive understanding of the socio-ecological influences that shape the commitment of family physicians and residents to rural maternity care practice.

3.2 Research Question(s)

3.2.1 What socioecological influences impact the commitment of family physicians and residents to rural maternity care?

3.2.2 How do individual, interpersonal, organizational, community, and systemic factors contribute to or impede FPs and residents' dedication to providing maternity care in rural settings?

CHAPTER 4 METHODOLOGY

4.1 Design and Description of Methodology

Scoping reviews serve as a method of synthesizing knowledge to discern prevalent trends and identify gaps within an existing knowledge base, aiming to inform research, policy, and practice (Westphaln et al., 2021). They prove particularly valuable when limited peer-reviewed information is available on the subject (Peters et al., 2015). Given the objective of this study, which is to explore the current literature concerning the factors influencing FPs' and residents' commitment to rural MC practice, a scoping review was deemed the most suitable approach. Arksey and O'Malley's framework for conducting scoping reviews was used, which comprises five key stages: formulating the research question, identifying relevant studies, selecting studies, extracting and charting data, and finally, synthesizing and presenting the findings (Colquhoun et al., 2014; Arksey & O'Malley, 2005).

4.2 Identifying the Research Question

The research question is "What socio-ecological influences impact the commitment of family physicians and residents to rural maternity care practice? How do individual, interpersonal, organizational, community, and systemic factors contribute to or impede their dedication to maternity care in rural settings?"

I have chosen to explore socio-ecological influences because the socio-ecological framework emphasizes multiple levels of influence and supports the idea that behaviours affect and are affected by various contexts (Scarneo et al., 2019). While the term "influence" may appear broad, this study has included factors such as perspectives, intentions, opinions, beliefs,

attitudes, education, mentorship, practice, and policy. Socio-ecological influences include what broadly exists in the literature.

This study focuses on FPs and residents due to the ongoing decline in rural MC provision and their crucial role as primary healthcare providers (Deutchman et al., 2021). In rural areas, where physicians are scarce, this decline has been linked to poorer perinatal outcomes, highlighting the importance of FPs in delivering MC (Cohen & Coco, 2009). While acknowledging the contributions of other HCPs in rural MC, such as nurses, nurse practitioners, and midwives, FPs often serve as primary providers for more complicated or high-risk pregnancies. The exclusion of OBGYNs from this study is based on the observation that FPs are more likely to handle MC in rural settings (Deutchman, 2022). This is supported by evidence showing that FPs dominate MC provision in rural hospitals and sometimes provide all MC, including Cesarean deliveries, in rural communities (Roskos et al., 2021).

Moreover, I have chosen the term rural "maternity care" because of its holistic definition. MC can be defined as "the constellation of health services provided by a physician, nurse, midwife, hospital or birth centre to a pregnant person during pregnancy (prenatal care), labour, birth, and after delivery (postnatal care and newborn care)" (Heideveld-Gerritsen et al., 2021). MC, compared to obstetric care, is more inclusive. The holistic definition of rural MC is essential for capturing the multifaceted nature of maternal healthcare needs in rural settings, which often require comprehensive services spanning prenatal, intrapartum, and postnatal care. However, the literature does not use "maternity care" exclusively, and terms such as perinatal, maternal, obstetrics, pregnancy, C-section, delivery, and birth were used additionally.

4.3 Identifying Relevant Studies

An exploratory search was conducted on Medline using terms such as maternity care, obstetrics, rural health services, family physicians, and family medicine residents. A small sample of articles was screened to identify other relevant terms for the search strategy. A thorough search strategy was created in collaboration with an information scientist at the McMaster Health Sciences Library. Several iterations of the search strategy were developed to ensure relevant research was retrieved.

Searches occurred in Ovid Medline, Ovid Embase, Ovid Emcare, and Web of Science. These databases were chosen due to their content on clinical and social aspects of care. A past 30-year time restraint was placed on articles, and only articles in English were included. The most recent search was conducted on January 19, 2024. The database search results were imported into the review management software DistillerSR (DistillerSR, 2024). The search strategy used in Ovid Medline can be found in Appendix A. The search strategy contained terms related to the desired population of FPs and residents, such as primary care, primary practice, primary healthcare, family practice, and family medicine residents. Terms related to the intervention, rural maternity care, such as maternal health, obstetrics, cesarean section, delivery, pregnancy, and rural health, were used. Finally, terms related to the outcome and influences were used, including attitudes, beliefs, intentions, experiences, practice patterns, internship, residency, education, curriculum, and policy.

4.4 Study Selection

One reviewer independently conducted title, abstract, and full-text screening of relevant articles using DistillerSR. Any reasons for exclusion during full-text screening were noted on

DistillerSR. DistillerSRs AI algorithm was utilized for error-checking and to screen duplicate errors. Results of all searches were reported using the DistillerSR Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)-SCR for reporting scoping reviews (DistillerSR, 2024; Tricco et al., 2016). The PRISMA-SCR is more useful for scoping reviews, which aim to answer broader questions compared to systematic reviews (Tricco et al., 2016).

4.5 Inclusion and Exclusion

Inclusion and Exclusion criteria are outlined according to the PICO framework (population, intervention, comparator, outcome) in Table 1 below (Erikson & Frandsen, 2018).

Table 1

PICO Framework

Population	• Publications that mention family physicians, primary care physicians, primary practice physicians, family practice physicians, family medicine residents, and general practitioners • Publications in English originating from Canada are the focus, along with additional research from the United States, Australia, New Zealand, the UK, and the European Economic Area, because of their relevance to the Canadian context. • This selection allows for a meaningful comparison because all chosen countries are high-income nations following the Western biomedical model of maternity care. This method is consistent with previous research on women's health and healthcare delivery, which used similar criteria for selecting eligible study countries (Christy et al., 2021).
Intervention or Issue	• Publications using the term maternity or obstetric care, maternal health services, maternity care services, and specific to rural health, rural maternity care, rural obstetric care, rural maternal health services

Comparison/Study Designs	• N/A
Outcomes	• Outcomes from eligible studies may include experiences, opinions, attitudes, beliefs, views, and interactions that family physicians or residents have had with rural maternity or obstetric care training and/or practice
Exclusion	• Publications not in English • Publications focused on other healthcare professionals' perspectives besides family physicians or residents • Publications focused solely on the perspectives of patients with no mention of provider perspectives • Publications on reproductive health services not directly related to pregnancy, such as family planning, abortion, HIV, treatment for STIs/STDs, fertility treatment, etc. • Editorials, commentaries, abstracts, protocols

4.6 Charting and Collating Data

Study characteristics such as author(s), year, title, type of study, objectives, methods, country of study, whether the article was about an intervention and relevant findings about physician and resident experiences were extracted. Data extraction was documented in an Excel spreadsheet. Relevant information from articles was extracted for findings, specifically on FPs' and residents' perceptions, experiences, views, attitudes, beliefs, and opinions.

4.7 Reporting and Summarizing Results

Once irrelevant articles were excluded, the remaining were analyzed. Data analysis involved comparing and describing the characteristics of included studies and identifying similarities, differences, and patterns between articles' findings. Findings related to FPs' and residents' experiences, including perceptions, experiences, views, beliefs, and attitudes, were displayed in tabular format (Appendix E). Thematic analysis was conducted, which aims to understand meaning from data (Braun & Clarke, 2012).

An inductive approach was employed, aligning the generated themes with the language used by authors in the articles (Braun & Clarke, 2012). The themes were then coded to specific levels of the socio-ecological model, which considers the complex interplay between individual, interpersonal, organizational, community, and systematic factors (Scarneo et al., 2019). Existing gaps were identified, including research on why new FPs are less interested in the traditional comprehensive practice, the lack of role models in FM MC, the efficacy of alternative payment models for rural FM settings, including their impact on call schedules and collaboration among professionals, and the impact of Covid-19 and telehealth on rural MC practice.

4.8 Quality Appraisal

A quality appraisal may not be suitable for all scoping reviews because the primary aim is to assess the breadth of available research rather than the quality of individual studies (Tricco et al., 2016). Given the diverse methodologies in the included studies, conducting a formal quality appraisal was deemed impractical and was not pursued.

CHAPTER 5 RESULTS

A total of 1,857 articles were retrieved from database searching, and 161 duplicates were removed, leaving 1,696 articles to be included for the title and abstract screening. Of these articles, 1,384 were deemed irrelevant based on the inclusion criteria, leaving 312 for full-text screening. Out of these, 26 were included in the final review, as outlined in the PRISMA Diagram (Figure 1) in Appendix B.

5.1 Descriptive Characteristics

This review included 26 studies. Of these, 13 (50%) were from the United States, 10 (38%) from Canada, 2 (8%) from New Zealand, and 1 (4%) from Australia. All 26 studies included were primary studies, of which 13 (50%) were qualitative studies, 7 (27%) were quantitative, and 6 (23%) were mixed-methods. In terms of data collection methods, 11 (42%) used a survey only, 9 (35%) used semi-structured interviews only, 2 (8%) used focus group discussions only, 2 (8%) used a semi-structured interview with a survey, and 2 (8%) used a semi-structured interview and a focus group discussion.

5.2 Findings

Influencing factors were identified at each of the socio-ecological levels and categorized into themes: 1) individual factors (i.e. interests, attitudes and motivation, burnout, risk), 2) interpersonal factors (i.e. lifestyle, interprofessional relationships, mentors), 3) organizational factors (i.e. training and professional development, work environment and practice characteristics, resources, regulation and privileging), 4) community-level factors (i.e. practice setting and location, job availability, community context), and 5) systematic factors (healthcare

system structure, public policy, legal and regulatory framework). A pilot coding phase was conducted, reviewing five articles to develop a coding schema. This schema was refined, transformed into a coding table, and supplemented with new themes. The summarized findings can be found in Table 4 in Appendix E.

5.2.1 Individual Factors

The individual level focuses on knowledge, attitudes, beliefs, and behaviours. The individual's choices and actions are central, as they interact with other levels of the model. Three key themes were identified, including FP and residents' Interests, Attitudes and Motivation, Burnout, and Risk.

5.2.1.1 Interests, Attitudes and Motivation

One of the challenges identified in FP and residents' practice choice is the lack of interest in MC (Frederickson et al., 2023). As a rural FM resident in Frederickson et al.'s (2023) mixed-methods study mentioned, "It works well to let residents choose their own path. But if not enough people are interested in the OB part of that, the call schedule won't be sustained" (Fredrickson et al., 2023). Moreover, despite MC being a component of FM training, it is noteworthy that several FPs and residents do not perceive it as essential for comprehensive care (Marshall et al., 2022). In Marshall et al.'s (2022) qualitative study on MC intentions among FPs and residents, many practitioners were committed to comprehensive services but commonly excluded intrapartum MC from their definition of comprehensive care; as one participant explained, "[I offer] full-service family medicine. Everything except obstetrics [...]."

In addition, among those respondents who did not plan to offer intrapartum care, some planned to provide prenatal care for pregnant patients up to around 20 weeks and then care for

newborns and pediatric patients (Marshall et al., 2022). This selective care stresses a trend towards more focused practice scopes within FM, reflecting changing priorities and preferences among practitioners.

> *"Ideally it would be a comprehensive family medicine, with the exception of obstetrical care… that would include pediatrics, adolescent and sexual health, care for female and male adults, and geriatrics as well… with the exception of prenatal care past 20 weeks, and obstetrical deliveries."*

Frederickson et al.'s findings (2023) also highlight the reluctance among FPs and residents to engage in MC as a significant challenge to sustaining comprehensive services. This trend reflects shifting perspectives within FM towards more focused practice scopes, emphasizing the need for ongoing dialogue and adaptation to changing healthcare priorities.

Resident and FP attitudes can strongly influence their interest in rural MC. A study by Ruderman and colleagues (1999) explored FP residents' attitudes and plans about practicing MC. This study surveyed University of Toronto FM residents as they entered the program and again two years later when they graduated to document their beliefs and plans around MC practice (Ruderman et al., 1999). Lifestyle and adequate compensation were important factors in shaping residents' beliefs about practicing MC (Ruderman et al., 1999). They found that most trainees have formed opinions and intentions through their inherent beliefs about practicing MC before residency and are unlikely to change them (Ruderman et al., 1999).

A qualitative study by Kornelsen et al. (2012) discovered that FP interest in MC was influenced by various motivations for pursuing advanced skills training. These motivations ranged from receiving encouragement from peers, fulfilling community needs, and improving care competence to deriving professional satisfaction from an expanded skill set (Kornelsen et al., 2012). The significance of self-motivation was highlighted by many FP residents, which involved actively seeking out training opportunities (Kornelsen et al., 2012). Additionally,

concerns regarding health human resources were identified as a driving force behind seeking advanced skills (Kornelsen et al., 2012). As one participant shared:

> *"We were down to one obstetrician and there weren't obstetrical locums around, so we were ending up with really horrible situations. One day I had a prolapsed cord and I got the South African ophthalmologist off the golf course to come and do a C-section, at which point I realized that I could do it better than they could. So then I decided to go away [for training]. It was sort of demand-driven because we didn't have any obstetricians."*

FPs may pursue advanced MC skills driven by motivations like peer encouragement and community needs. Self-motivation and concerns about healthcare resources also play significant roles, as exemplified above by one participant's decision to seek training due to a shortage of OBs in their community, which is particularly important in rural contexts.

5.2.1.2 Burnout

Physician burnout is a crucial challenge in rural MC practice (Barreto et al., 2020; Goldstein et al., 2019; Campbell et al., 2013). In their 2020 study, Barreto and colleagues identified the impact of practicing MC on burnout among early-career FPs. For example, interviewees discussing how intrapartum MC contributes to their experience of burnout emphasized two main factors: stress/fear and time commitment (Barreto et al., 2020). A few interviewees described experiences of poor MC outcomes that led to concern and increased feelings of stress about future MC experiences.

> *"I've had some burnout issues in just my three short years in practice. And I think some of them have been related to the practice of obstetrics for me personally, that had to do with a medical error that occurred. And so, like I said the fear factor of OB I think does play a psychologic role. Because there are complications that can happen, that can be very serious."*

Anxiety related to clinical responsibilities, particularly fueled by past experiences of medical errors or adverse outcomes, can serve as a major source of burnout among HCPs, affecting their well-being and ability to manage their workload effectively. Additionally, they

noted that the time dedicated to intrapartum MC call, which inevitably detracts from their personal lives, can worsen feelings of burnout (Barreto et al., 2020).

> *"I would basically have 6 days off a month and then be on call for the other 24 days around the clock for C-section. And we lived in a really rural community. There was no Walmart, no Target, nothing like that, so the only time that I could ever go do any of that kind of stuff was whenever I was completely off because those places weren't within my 15-mile radius of the hospital.… And so I–they knew I was burning out."*

These findings align with Goldstein et al.'s (2018) research on supporting FP MC providers, which identified burnout as a prevalent issue among FPs involved in MC. Burnout is characterized by a significant risk of physicians leaving their MC roles in this context (Goldstein et al., 2018). Burnout emerges due to the many challenges faced by FP MC providers. Similarly, Campbell et al. (2014) observed comparable outcomes concerning the safety of both patients and practitioners. In their qualitative study with rural FPs, one study participant highlighted the high-risk nature of MC, noting, "Because (obstetrics) is a high-risk area and people burn out. They [SGPT] don't want us having disastrous situations when we are junior" (Campbell et al., 2014). A FM MC model often involves a single physician providing comprehensive prenatal and intrapartum care, committing to attend the delivery to ensure continuity of care for the woman and her family. However, Goldstein et al. (2018) suggest that this model may only be viable for some FPs desiring to offer MC, especially when adequate support is needed to manage work, family, and personal obligations effectively.

Adverse outcomes in childbirth may take an emotional toll on HCPs, eliciting feelings of guilt, inadequacy, or fear of litigation, as observed by Goldstein et al. (2020). Conversely, the joy of participating in births and the continuity of care offered is an emotion that often sustains FP MC providers in their work (Goldstein et al., 2020). There was a strong opinion among workshop attendees that intentionally creating professional support around bad outcomes while

celebrating the unique joys of providing intrapartum care and sharing this support with residents may help FP MC providers continue to practice while motivating a new generation (Goldstein et al., 2020).

Likewise, Barreto et al. (2020) found that MC provision brings joy and protective elements against burnout for FPs. Participants described how including intrapartum MC in practice protects them from feeling burned out (Barreto et al., 2020). They provided examples, including joy experienced from MC provision and the diversity MC brings to their clinical practice (Barreto et al., 2020).

> *"For me personally, coming back to my story of why I chose family medicine and my love of OB and delivering babies, it really brings a lot of joy to my practice as well, and prevents burnout in that sense that I really love taking care of prenatal patients. I like having a young practice. I like doing well-child…and prenatal care. Typically, those babies become my patients, and so, then I've got the whole family."*

This sense of purpose and diversity within FP's clinical work buffers against burnout and fosters renewed excitement for MC practice.

5.2.1.3 Emotional and Physiological Risk

Intrapartum MC is an essential part of the local health services provided in rural communities to meet the needs of women and families. However, rural MC practice can be stressful for care providers, particularly in communities with small volume capacity and limited capability for intervention in an emergency (Campbell et al., 2014; Kornelsen & Grzybowski, 2008).

Using qualitative methods, Kornelsen and Grzybowski (2008) explored the emotional impact of obstetric practice on care providers in rural areas. Participants acknowledged the personal and emotional risks associated with adverse outcomes in parturition (Kornelsen & Grzybowski, 2008). One practitioner shared their experience of enduring a month of

sleeplessness and self-doubt following a "near miss" despite no lasting harm to the mother or baby (Kornelsen & Grzybowski, 2008). This incident led to a critical reassessment of their decision-making processes and the overall safety of local labour and delivery practices (Kornelsen & Grzybowski, 2008).

In resource-constrained settings, many FPs experience internal tension stemming from the awareness of limited options and the obligation to deliver a quality standard of care to all patients, regardless of geographic limitations (Kornelsen & Grzybowski, 2008). This tension is compounded by the lack of access to necessary technology, leading to a sense of responsibility and self-blame in adverse outcomes (Kornelsen & Grzybowski, 2008). Nearly all participants acknowledged that accepting the risk of adverse outcomes affected not only themselves but also all care team members (Kornelsen & Grzybowski, 2008).

> *"But the risks? Yeah, there's the emotional risk of being involved in a critical incident that may lead to post-traumatic on the part of everybody in the room."*

Furthermore, Kornelsen & Grzybowski (2008) found that FPs perceived higher physiological risks than other medical specialties because of the unique nature of MC. For instance, one FP highlighted MC's rapid and unpredictable nature as a significant barrier (Kornelsen & Grzybowski, 2008). They questioned why similar concerns are less prevalent in managing other conditions, such as cardiac issues, within their community (Kornelsen & Grzybowski, 2008). This increased sense of responsibility in MC may result from the perception that patients in MC are young and healthy, leading to unpredictable and sudden complications (Kornelsen & Grzybowski, 2008). Additionally, the emotional and physical stakes of MC, where outcomes can dramatically differ from those in medical contexts where death or serious complications are more expected, further distinguish it from other medical fields (Kornelsen & Grzybowski, 2008).

> *"I guess because ... well, we don't like to see things go wrong and I think that when things go wrong in obstetrics, it's different than when things go wrong during ... at a time where death is more common, I guess."*

This illustrates the increased stress in MC compared to other specialties. Due to the patient's youth and good health, FPs view adverse outcomes as unacceptable.

5.2.2 Interpersonal Factors

The interpersonal level involves relationships with family members, colleagues, and significant others. It examines how interactions and communication within these relationships influence behaviour and decision-making. Lifestyle, Interprofessional Relationships, and Role Models were identified as key themes.

5.2.2.1 Lifestyle

Lifestyle plays a significant role in influencing the decision of FPs and residents to pursue MC practice, particularly within rural settings (Taylor et al., 2023; Marshall et al., 2022; Baretto et al., 2019; Preston et al., 2015; Campbell et al., 2014; Lu et al., 2008; Ruderman et al., 1999; Roberts et al., 1998). Prioritizing lifestyle factors, including work-life balance, stress management, and family responsibilities, is vital for FPs and residents, as doing so can prevent burnout, maintain well-being, and ensure quality care is provided.

Multiple studies highlight the pivotal role of lifestyle concerns in the decision-making process of FPs and residents regarding providing intrapartum MC (Ruderman et al., 1999; Roberts et al., 1998). Their findings emphasized that lifestyle constraints associated with delivering babies significantly influenced FPs' decisions, with many opting out of intrapartum care (Ruderman et al., 1999). Conversely, FPs who consistently delivered babies or intended to do so perceived these lifestyle demands as manageable (Roberts et al., 1998). Moreover, the

absence of explicit expectations for FPs to provide CMC significantly influenced many FPs' decisions to refrain from offering such services (Roberts et al., 1998).

Impact on family life and responsibilities was a commonly cited reason for not providing MC (Marshall et al., 2022; Baretto et al., 2019; Campbell et al., 2014). The factors influencing FP's decision to consider comprehensive MC in their practice were examined in a New Zealand study conducted by Preston et al. (2015), who surveyed 165 FPs on their views. Participants reported that being on-call for MC could adversely affect their lifestyle, family and interests, which deters them from providing it in small, rural communities (Preston et al., 2015). Further, Marshall and colleagues (2022) found that participants consistently cited the impact on their personal and family life as a substantial challenge. For example, participants mentioned difficulties securing childcare, the strain of spending time away from their children, and the complexities of aligning their schedules with their partners (Marshall et al., 2022). These challenges were more frequently mentioned by women practitioners.

> *"… when I finished residency, I always thought I'd do obstetrics. But then I had these twins, and it's been a lot…they're four now and I always thought when they get to kindergarten, perhaps I can go back to obstetrics because I love it. But it just hasn't worked for my family."*

> *"…I wanted to be home for dinner with my family every night… the way I grew up… having dinner with my family every night, that was a priority. I didn't want to be stuck in the hospital every weekend or every evening…I think that really shaped how I practice."*

Additionally, participants were deterred from offering MC due to the unpredictable scheduling and on-call arrangements inherent in labour and delivery (Marshall et al., 2022).

> *"…when doing obstetrics… in the soft call system where you can be called any time from home, you really need to have all of the supports available… to be able to drop off kids at a minute's notice."*

> *"I would love to. It's certainly like my all-time favourite thing to do in family medicine. But my husband is an obstetrician. And realistically balancing two call schedules with family… would be a bit of a nightmare."*

Similarly, Campbell et al. (2014) found that work-life balance, including after-hours call, the demands of emergencies, dealing with scheduled patients at the clinic after attending deliveries overnight, and family commitments shaped FP practice in rural Australian communities.

> *"Obstetrics interrupts the rest of life, both clinical, family life, and sleep. You know to be woken up in the middle of the night ... isn't a particularly pleasant thing, and try getting back to sleep after all the excitement."*

Lifestyle considerations significantly impact FPs' and residents' decisions, dissuading them from practicing in rural areas. A mixed-methods study by Lu et al. (2008) exploring the rural intentions of new FM graduates found family responsibilities and lifestyle factors equally influential in determining long-term practice preferences in urban settings. Despite exposure to rural settings during training, many medical graduates still choose urban practice (Lu et al., 2008). For instance, five graduates expressed sentiments such as, "Once a city person, always a city person" (Lu et al., 2008). Furthermore, some graduates who completed rural training did not continue practicing in rural areas due to their spouses' employment opportunities in urban areas (Lu et al., 2008). This evidence highlights the significant role of personal and family considerations in shaping HCP's practice locations. In rural settings, the demand for 24/7 intrapartum coverage is intensified due to FPs typically having a smaller call group or no other colleagues to share call responsibilities. Additionally, the absence of OBs in rural areas means that if FPs do not remain on call, expectant families must travel outside the community to give birth.

Finally, Baretto et al.'s 2019 study examining the opportunities and barriers for FP contribution to the MC workforce found that fewer FPs in MC will likely magnify the impact on their lifestyle, resulting in higher patient loads for those who remain. This trend raises concerns

because even FPs committed to specializing in MC may experience rapid burnout due to an increased caseload (Baretto et al., 2019). This cycle negatively affects the quality of care provided and discourages potential new FPs from entering MC, thus intensifying the issue (Baretto et al., 2019). As a result, it reduces the number of FPs who can share call.

5.2.2.2 Interprofessional Relationships

Interprofessional relationships among MC professionals significantly impact FP and residents' intentions regarding MC practice. Negative interactions with OBs are prevalent, influencing FPs' decisions not to provide intrapartum care. Roberts et al. (1998) highlight unsupportive practice environments and community OBs as significant deterrents for FPs. Fredrickson et al. (2023) further suggest that "competition" with OBs may detract FPs from practicing CMC.

In Marshall et al.'s study (2022), some FPs recounted negative experiences during MC training or early practice, leading to reluctance to provide MC. One FP mentioned encountering a "toxic" work environment during residency, reinforcing the decision to avoid MC (Marshall et al., 2022).

> *"…I ended up having … several bad experiences with the obstetrician who was on call… it just kind of put me over the edge and said, look, this is…I'm not enjoying this, I'm not having fun. I don't want to get treated like I'm being treated. So, I'm not going to do this anymore."*

In rural practice, the FP is expected to manage more complex situations with only remote obstetrical support, which emphasizes the need for positive and trusting interprofessional relationships.

In their qualitative study on the challenges faced by FPs providing MC, Eden and Peterson (2018) also found that interprofessional relationships, particularly with OBs, posed

challenges, with issues such as turf-related tensions arising. However, such tensions were generally not a significant concern for most participants (Eden & Peterson, 2018). Difficult personalities among certain OBs were cited as a more prevalent issue, with some FPs even considering them adversaries (Eden & Peterson, 2018).

> *"[There are two OBs that] really don't want anything to do with residency there. I think it's personal reasons that they're not sharing, and personalities, more than anything else."*

Most respondents described good interactions and relationships with the OBs in their institution (Eden & Peterson, 2018). They emphasized that these positive relationships built trust over time by demonstrating to the OBs that they are knowledgeable and provide quality CMC (Eden & Peterson, 2018). One respondent remarked, "We have a fairly good relationship with them [the OB Dept.] now...prior to that, the relationship was kind of rocky. We really intentionally worked on trying to turn that around...We interact with them quite a bit with our more complex OB cases and it's not antagonistic" (Eden & Peterson, 2018). Respondents often also noted that their good relationship with OBs was not typical in FM.

> *"We have a good collaboration that's been going a long time... We really tried to integrate ourselves in so family medicine has a strong role in the whole mother-baby part of it which is good. So I think that what most people would say is that we have clearly exceptional relationships between those departments that are unfortunately often battling in different places."*

Goldstein et al.'s (2018) findings agree that having a harmonious interprofessional relationship is not typical. Workshop attendees identified instances of conflictual or obstructive relationships between FPs and specialist physicians in MC who often do not fully understand FM training or skills (Goldstein et al., 2018). Similarly, Lu and colleagues (2008) identified that concerns with training may be part of the challenge with interprofessional relationships. One

issue was the condescending attitude of specialists toward FPs, as expressed by a participant: "The attitude of [the specialist] faculty toward family medicine is horrible" (Lu et al., 2008).

In Taylor et al.'s (2023) qualitative study with experienced FPs, the predominant theme was the significance of interprofessional relationships, particularly with OBGYNs. Recommendations emphasized the importance of either joining a collaborative practice with OBGYNs or actively cultivating a favourable rapport with OBGYNs within the practice or hospital system (Taylor et al., 2023). Participants highlighted the challenges within larger systems, where underlying hostility, although often subtle, can be draining (Taylor et al., 2023). They emphasized the benefits of aligning with a supportive department and cultivating allies among OB colleagues (Taylor et al., 2023).

In addition to fostering collaborative relationships within their practice, FPs find it important to build trust across the broader healthcare community (Taylor et al., 2023). This collaboration includes building connections with other clinicians involved in MC, such as OBs, labour and delivery nurses, midwives, and doulas (Taylor et al., 2023). Some FPs highlighted the supportive role of leadership and administration, particularly in obtaining admitting privileges, which are crucial for sustaining MC practice (Taylor et al., 2023). Support from hospital administration and other HCPs can mitigate the stress on FPs from providing intrapartum care, contributing to better patient outcomes and physician well-being.

Even in training, a supportive community is key to supporting FP practicing MC. Fredrickson et al. (2023) highlighted how supportive interprofessional relationships contributed to residents' program success. They observed that improved relationships between residents and OB faculty positively impacted the FP resident's attitudes about MC (Fredrickson et al., 2023). Participants in Fredrickson et al.'s (2023) study described the challenges faced in regions lacking

FPs offering MC. They emphasized their approach of collaborating with OB colleagues to provide education despite varying levels of interest from these physicians (Fredrickson et al., 2023).

> *"Our residency is in a geographic region where there are no family physicians who provide OB services. We work with our OB colleagues to provide this education, and they have quite variable degrees of interest in teaching residents. Our successes have come from fostering positive relationships with these physicians and creating a culture of learning."*

This highlights the issue of a scarcity of role models in MC. New FPs would greatly benefit from having mentors and supporters who are experienced FPs providing intrapartum care.

5.2.2.3 Role Models

Role models, mentors, and access to a support system were salient factors in FP and resident practice intentions (Kabir et al., 2022; Biringer et al., 2018; Kornelsen et al., 2012; Kornelsen & Grzybowski, 2008; Godwin et al., 2002). Kornelsen et al. (2012) identified mentors as the primary influencing factor in the training trajectory of participants in their study. However, FP residents commonly observed that mentors tended to be specialists, such as OBs (Kornelsen et al., 2012). The lack of visible role models in FP MC and surgery was a recurring concern among study participants (Kornelsen et al., 2012).

> *"Opportunities in family practice with procedural skills, particularly in rural medicine, are not prominently showcased in medical training. Trainees are often presented with career options focused on specialization, leaving primary care with procedural skills, especially in rural settings, relatively obscure. Increasing the visibility of this option requires accessible training programs."*

FP residents recognized specific traits shared by positive mentors, including demonstrating positive regard and encouragement, showing respect for specialized skills, and understanding the unique challenges of family practice in rural areas (Kornelsen et al., 2012).

Additionally, many respondents shared anecdotes about receiving positive feedback, emphasizing its significance in shaping their training path and maintaining their motivation to continue (Kornelsen et al., 2012).

> *"After experiencing a significant setback, I contemplated abandoning GP surgery. However, a conversation with the surgeon I trained under changed my perspective. He reassured me, emphasizing that the incident was a rare occurrence and encouraged me to persevere. His support was instrumental in my decision to continue."*

Influential mentors often had experience as FPs before specializing (Kornelsen et al., 2012). While uncommon, these mentors were recognized for their continued sensitivity to the needs of FPs (Kornelsen et al., 2012). Other respondents appreciated their mentors' openness in allowing residents to participate in procedures (Kornelsen et al., 2012). This transparency and confidence in the trainee benefited those who received it As one resident recounted:

> *"The primary preceptor, an experienced and patient obstetrician-gynecologist, provided invaluable guidance. He simply encouraged me to begin, handing me the tools for our first procedure together: delivering a set of twins in a double breech position. It was an unforgettable experience and one of the most thrilling moments in my medical career. His encouragement empowered me to take the lead."*

Furthermore, beyond imparting technical proficiency in specific surgical skills, good mentors taught trainees to "think like a surgeon" (Kornelsen et al., 2012). This involved the ability to decide if surgery was necessary, differentiate between necessary and unnecessary procedures, and recognize when a procedure required more skill and resources than they could provide (Kornelsen et al., 2012). Likewise, Biringer et al. (2018), in their study on what influences success in FM MC education, noted that credible FM role models proficient in full-scope MC empower residents to envision themselves delivering comprehensive care. Knowledgeable FP preceptors demonstrate to residents that low-risk MC falls within FM and is attainable:

> *"The more exposure there is to family doctors doing obstetrics, the fact that they do a good job, and they know what they're talking about, then the more likely they [the residents] are to accept or at least consider that this [is] something that would be valuable."*

One participant emphasized that residents benefit from learning in an environment where preceptors exemplify a passion for their work: "Residents absorb enthusiasm when preceptors genuinely love what they do" (Biringer et al., 2018). Furthermore, participants stressed the importance of preceptors explicitly articulating to residents how FM MC enhances professional satisfaction (Biringer et al., 2018). This includes fostering fulfilling patient relationships, maintaining a diverse patient population, engaging in various clinical scenarios, utilizing technical skills, and reaping financial rewards (Biringer et al., 2018).

Positive role models influence FP residents to manage the challenges of providing MC. Biringer et al., (2018) found that FP residents were reluctant to commit to round-the-clock coverage due to its impact on lifestyle. However, role models offered residents diverse options for integrating MC into FM in a sustainable manner, including participation in call groups for labour and delivery (Biringer et al., 2018).

> *"One of the strengths of our program is that our residents are exposed to a really huge variety of ways that you can manage practising obstetrics as part of being a family doctor, including hard call, soft call, community-based practice, academic practice, hospital-based practice …. They just have a really wide variety of different role models. It isn't just one way of doing things."*

Additionally, Biringer et al. (2018) highlighted the importance of a supportive community of FP MC providers alongside role models. While some participants mentioned formal mentorship programs that financially support FPs attending new graduates' initial deliveries, informal mentorship with clinical backup and broader professional support was more prevalent (Biringer et al., 2018). Participants expressed their commitment to creating a "soft landing" for the next generation: "Here's my pager number. Here's how you reach me. I will

help you. I will support you" (Biringer et al., 2018). They described the importance of being there for each other at all stages of their careers, with a particular emphasis on young colleagues (Biringer et al., 2018). Concerns about recruitment and the need for acceptable care models for young physicians, such as a "hard call" system, led some FPs to adjust call models (Biringer et al., 2018).

In a study examining MC providers in rural areas, Kornelsen & Grzybowski (2008) discovered that although 88% of participants recognized the significance of role models in MC training, only 23%-36% were content with the available role models. This highlights the potential benefits of increased exposure to positive role models during MC training for students. Godwin et al. (2002) reported similar findings, suggesting that residency program directors should foster a positive environment with exemplary role models. However, experiences such as delivering babies with FP preceptors and following a minimum of 6 women through pregnancy to term, as stipulated by the CFPC, had minimal impact on intentions to practice MC (Godwin et al., 2002). Only the number of deliveries appeared to influence intentions; if residents delivered over 40 babies during their two-year residency, they were more likely to practice MC (Godwin et al., 2002). Focusing on role models and continuity of care for residents entering training with strong intentions to practice MC may enhance the likelihood of them completing their training with this intention intact.

5.2.3 Organizational Factors

The organizational level focuses on the structures and dynamics of organizations and institutions, such as schools and workplaces. These settings' policies, rules, and resources can shape attitudes, behaviours and opportunities. Organizational factors comprised the most

extensive section throughout the literature, with four key themes: Training and Professional Development, Work Environment and Practice Characteristics, Resources, Accreditation, Credentialing, and Regulation.

5.2.3.1 Training and Professional Development

Sufficient MC training in FM residency was a central theme throughout the studies examined (Taylor et al., 2023; Fredrickson et al., 2023; Kornelsen et al., 2023; Marshall et al., 2022; Kabir et al., 2022; Baretto et al., 2019; Eden & Peterson, 2018; Kornelsen et al., 2012; Lu et al., 2008; Stretch et al., 2007; Godwin et al., 2002). In Marshall et al. (2022) findings, FPs and residents felt that adequate exposure to obstetrics during their training influenced their decision to provide MC. Conversely, insufficient exposure during training, coupled with limited opportunities to develop necessary skills and confidence, deterred many residents from providing CMC (Marshall et al., 2022).

> *"Time in residency is a big factor… I was thinking of doing obstetrics but I'm not sure if I feel comfortable. Like based on my two months I had … I don't know if I got enough deliveries. So, I have to look at some elective time. And I'd have to go away for that most likely. Which would normally be fine but like with a family, it's a bit more challenging."*

Adverse experiences during training were also discouraging (Marshall et al., 2022). Some FPs described the importance of consistent exposure to MC during early-career practice to maintain their skills (Marshall et al., 2022). In particular, residents in rural residency had more experience with MC (Marshall et al., 2022).

> *"… we had lots of opportunities to do obstetrics during our residency. So that was wonderful. Because I know that not all residents feel ready to practice obstetrics, especially in a place like here where it's rural, where you have to like figure things out at night… it's not like a great place for a brand-new person just because you have to be really independent and kind of confident in your skills… I was lucky in my residency training, we did do a lot of obstetrics. And that was sort of an expected skill set to have even if you didn't plan on doing obstetrics."*

FPs highlighted the difficulty of resuming MC after time off, fearing they would lose their clinical skills (Marshall et al., 2022). One FP noted the challenge of transitioning from acute to less acute care, expressing concern that prolonged absence from pediatrics and obstetrics makes reentry increasingly difficult (Marshall et al., 2022).

In addition, several FPs and residents considered the additional time and costs needed to get sufficient training as influencing factors in their decision not to provide MC (Kornelsen et al., 2023; Marshall et al., 2022; Eden et al., 2017). While they expressed a desire to provide such care, they had a preference for pursuing employment opportunities or accomplishing personal goals instead of dedicating the additional time required for training (Marshall et al., 2022).

> *"So, the reason I don't deliver babies … is I didn't get enough experience, I feel. I had 20 shifts on obstetrics, and only delivered 6 or 7 babies. So, you know, that shaped me in the opposite direction. I really had wanted to provide that as a service, but I just don't have the experience. And I didn't want to take an extra… 6 months or a year, to do more training."*

In rural BC, Kornelsen et al. (2023) found that training costs for MC are a significant barrier. Local FPs face challenges accessing clinical training opportunities due to high expenses associated with hiring educators, registration fees, and travel costs (Kornelsen et al., 2023). Participants cited a lack of funding to support staff enrollment in maternity training courses (Kornelsen et al., 2023). Additionally, providers must take time off to travel to urban centers for MC training, which can become burdensome (Kornelsen et al., 2023). Consequently, some providers opt to discontinue their obstetrical skills certification due to these challenges (Kornelsen et al., 2023).

Lu et al. (2008) documented the experiences of two graduates from the rural stream who needed more preparation for independent practice. One participant said, "I have [done] only 15 deliveries during my residency, which is not enough to work independently" (Lu et al., 2008).

Another expressed a similar concern: “I didn’t get as much female care as I would have liked … I am more comfortable with male care” (Lu et al., 2008). Reluctance to practice MC reflected concerns about MC training and perceived lack of competence: “If I decide to do obstetrics… I need extra training… If you want to do obstetrics, you would need an extra two months to feel really comfortable” (Lu et al., 2008). The experiences documented by Lu et al. (2008) show the necessity for improved preparation in rural medical training, particularly concerning MC, to address concerns about competence and readiness for independent practice.

In a survey conducted by Stretch et al. (2007) among rural FPs practicing MC in Southwestern Ontario, similar findings emerged, with FPs highlighting insufficient training as a barrier. Many of the educational shortcomings identified were consistent with those mentioned in Godwin et al.’s 2002 study., suggesting that recently graduated FPs are less likely to include MC in their practice. Inadequate exposure and skill-building in MC, as revealed by The Ontario Family Medicine Residents Cohort Study on factors affecting residents’ decisions to practice MC, led to residents feeling ill-prepared for independent practice in rural areas (Godwin et al., 2002).

In their qualitative study, Kabir and colleagues (2022) examined the experiences of resident and early-career FPs with focused practices in Canada. Participants felt pressured during their training to conform to comprehensive practice and what they saw as an “antiquated” FP role (Kabir et al., 2022). For example, instructors emphasized a traditional paradigm of comprehensive FM practice that involves working around the clock to serve patients, asserting that it was the best approach (Kabir et al., 2022). However, early-career FPs held perceptions that reinforced the belief that their mentors were exhausted in such comprehensive FM practice environments (Kabir et al., 2022). An FP explained:

> *"There's such a huge generational gap in medicine. And you know, the generation that by and large is training us just doesn't see another way to be … But they truly think … that people doing focused practices are providing inferior care … This generation of doctors, we're not lazy and we don't not care about patients. We're just not willing to ruin the rest of our lives for the career. And it's self-preservation. We care about people too. We [are] also not willing to lay down our lives for the system."*

The challenges faced by FPs providing CMC were investigated by Eden & Peterson (2018) in a qualitative study in rural America. They found that the variability in training was a large factor, which led to a lack of preparedness for independent practice (Eden & Peterson, 2018). Residents reported diverse experiences and training opportunities (Eden & Peterson, 2018). One FP mentioned that they "only had like five C-sections, but we've had others that have had 40" (Eden & Peterson, 2018). Another said, "[In residency,] I didn't get all the training I wanted to be able to do full scope OB... I could do a C-section and I could get through it, but it wasn't enough to make me feel comfortable...in the middle of nowhere with no backup" (Eden & Peterson, 2018). Further, Kornelsen et al.'s 2012 study found that training implications were significant for rural FPs and mentioned it in the context of hospital support.

> *"For me to commit to getting more skills and training, I have to know that the hospital is committed to obstetrics as well. And in the three years that I've been here they haven't come through. So it kind of leaves me thinking, 'How much more should I put in if, you know, they're not going to come up with the nursing staff to really make this happen?'"*

The findings from both studies highlight the critical need for standardized and comprehensive training protocols for FPs providing CMC, particularly in rural areas, where access to resources and support systems may be limited (Eden & Peterson, 2018; Kornelsen et al., 2012).

In addition, Biringer et al.'s (2018) study found that adequate clinical exposure for FP residents was very significant, highlighting the necessity for both quantity and quality of learning experiences. While there was consensus on the importance of volume in fostering competence

and confidence, no agreement was reached regarding specific numerical requirements for births or training duration (Biringer et al., 2018). Nevertheless, participants suggested that residents typically require deliveries of 40 to 50, or even up to 100, to attain competence, which varies depending on the practice setting (Biringer et al., 2018). They emphasized that proficiency in FP MC encompasses continuity across antenatal, intrapartum, and postpartum care (Biringer et al., 2018). Moreover, the quality of learning experiences was critical, influenced by factors such as resident involvement, types of births and complications encountered, and preceptor teaching, highlighting the significant role of FPs as educators (Biringer et al., 2018).

5.2.3.2 Work Environment and Practice Characteristics

FPs' and residents' work environment and practice characteristics were a significant challenge, including call schedule, maintaining clinical competency and volume, workload, and a supportive hospital environment (Taylor et al., 2023; Fredrickson et al., 2023; Kornelsen et al., 2023; Marshall et al., 2022; Barreto et al., 2020; Biringer et al., 2018; Goldstein et al., 2018; Preston et al., 2015; Lu et al., 2008; Dresden et al., 2008; Pathman & Tropman, 1995).

Call coverage and backup were very frequent themes. In their 2020 study, Barreto et al. identified an MC call schedule and retaining adequate coverage as contributors to FP and resident burnout (Barreto et al., 2020). In a small rural community, there are likely few FPs who provide intrapartum care; thus, the ability to share call is compromised. Some interviewees said that MC contributed to feelings of burnout, but it could be improved under a better call schedule or call coverage environment (Barreto et al., 2020).

> *"I did definitely feel burned out those first 2 years. I think OB was definitely a factor. I don't think it was 100% because of OB that I was burned out. We also have a huge physician shortage in rural America. We have a lot of patients to see and not enough doctors. It would be busy in the clinic and then if I got pulled away to do a delivery, and then be stuck there all night not get home to see my kiddos or husband or even take a*

> *shower before going to the clinic the next day… It [OB] was a part of it. I don't think it would be the only thing that would be causing burnout."*

They also discussed additional call schedules, such as clinic or hospital inpatient calls, contributing to burnout (Barreto et al., 2020). One participant highlighted the significant impact of hospital call on burnout, expressing the challenges of frequent overnight admissions despite their interest in being a full-scope FP (Barreto et al., 2020).

Marshall et al. (2022) discovered that among FPs and residents, distributing MC duties within a call group or team facilitated the provision of MC. One FP explained that in rural communities, maintaining involvement in obstetrics and preventing burnout necessitated the support of a call group or team (Marshall et al., 2022). Similarly, a resident emphasized that a reliable call group model significantly influenced their choice of practice location (Marshall et al., 2022). They articulated:

> *"I have a really awesome call group… if I want to take the weekend off and have a weekend with my family, and not have to worry about being pulled away… I can sign out to them… I have a group of physicians that will care for my patients. … I trust that my patients are in really good hands… my patients know that I'm part of a call group… they all know that there are going to be times that I can't show up for their delivery… they all kind of seem … to be understanding of that reality."*

Unfortunately, organizing sustainable call groups is especially challenging in rural communities (Marshall et al., 2022). This leads to burnout when FPs are on-call too long or have no one else to whom they can refer patients (Kornelsen et al., 2023; Marshall et al., 2022).

Lu et al. (2008), in a study of the factors affecting career choices of FM graduates at the University of Calgary, found that they relied heavily on backup providers, particularly in rural environments. For instance, one participant noted: "I think backup is really important, for example, if I am doing a locum [in] obstetrics" (Lu et al., 2008). Several expressed discomfort with working independently: "It's nice to know that if I need [assistance] people will be there …

having backup is a big thing for me … and available resources from an investigation point of view" (Lu et al., 2008). Kornelsen et al. (2023) found a similar theme for FP MC in their rural BC study. MC providers find preterm and emergency births extremely stressful, particularly when there is no surgical backup available (Kornelsen et al., 2023). Many individuals encounter difficulties due to the absence of immediate access to surgeons for emergency C-sections and other critical obstetrical procedures (Kornelsen et al., 2023). Certain hospitals have minimal capacity to manage deliveries without C-section backup, raising concerns about ensuring sufficient MC (Kornelsen et al., 2023).

Experienced FPs in Taylor et al.'s (2023) qualitative study proposed measures to establish a structured call system and ensure sufficient backup support. FPs recommended creating clear boundaries with the practice and patients regarding call responsibilities and availability (Taylor et al., 2023; Miller et al., 2012). One participant illustrated the decision between managing one's patients, which is fulfilling but demanding in terms of lifestyle, versus adhering to a predetermined call schedule for deliveries (Taylor et al., 2023). Moreover, suggestions for additional call coverage included sharing night and weekend duties with partners to promote a balanced work-life dynamic and preserve sleep patterns (Taylor et al., 2023). Trusting one's backup and call partners was essential for effective call coverage (Taylor et al., 2023).

Developing and maintaining clinical volume and competency was also identified as essential in FP and residents' decision to practice rural MC (Taylor et al., 2023; Fredrickson et al., 2023; Kornelsen et al., 2023; Biringer et al., 2018; Goldstein et al., 2018). Goldstein and colleagues (2018) found that for FP MC providers, achieving delivery volume is a concern that starts in residency and continues throughout their careers. Additionally, in Pearson et al.'s (2021)

study on FP MC in rural Minnesota, they found that there must be a high enough birth volume to justify costs. One participant expressed concern over the lack of volume to support a C-section-trained physician (Pearson et al., 2021).

Likewise, in a qualitative study exploring feasibility issues impacting rural MC, Kornelsen et al. (2023) found that in communities where expected MC levels do not match reality, FPs struggle to maintain MC skills due to low birth rates. Some participants explained that while they "love obstetrics, … it takes a lot of exposure to maintain competency, and [we] are not going to get that in [my community]" (Kornelsen et al., 2023). This leads to discomfort in performing surgical procedures like C-sections and poses risks to the mother and baby (Kornelsen et al., 2023). Despite community demand, limited parturition and staff shortages make offering full MC impractical in some hospitals.

> *"[It is not] feasible to offer caesareans for six people a year. In the future, I agree that [lack of caesarean section] is certainly something that detracts from people coming here, but at this current point in time we're not there yet."*

Some physicians with advanced surgical skills may have the necessary maternity training to support local services, but without opportunities to practice, their skills are underutilized (Kornelsen et al., 2023). Participants expressed that having procedural skills without practical experience is of limited value (Kornelsen et al., 2023). This lack of opportunity to refine MC skills has left some FPs feeling less confident in their abilities.

> *"Just don't get enough [deliveries] to feel comfortable … . I just spent six months at the Women's and Children's Hospital and I am barely feeling comfortable after 100 deliveries in 6 months. When we are having 2 deliveries a year in [community], we're never going to develop that confidence."*

Considerations of disruption and workload for rural FPs were factors in their decision to practice MC (Marshall et al., 2022; Preston et al., 2015; Dresden et al., 2008). In a study on the influences of MC practice on FPs, Dresden et al. (2008) discovered that rural FPs and OBGYNs

engaged in obstetrics carried heavier workloads than their non-obstetric counterparts. On average, they logged more professional hours, were more inclined to offer inpatient care, and frequently took on-call duties (Dresden et al., 2008). Additionally, Marshall et al. (2022) found that FPs and residents viewed the potential disruption to their practice caused by the workload and unpredictable time commitment of deliveries as a significant deterrent to practice.

> *"…if there was a patient that was in labour, I was kind of following them. So, I was working quite a bit. And I know it's a bit different as a resident. But the physicians here, like they do follow their patients. And you don't know when your patient is going to deliver. So, you're pretty much on call all the time. It can be disruptive to your office."*

The studies by Marshall et al. (2022) and Dresden et al. (2008) reveal that workload and disruption significantly influence rural FPs' decisions regarding maternal care practice. Rural FPs, faced with heavier workloads and unpredictable time commitments associated with MC, often weigh these factors when considering engaging in such care.

Practice characteristics, including a supportive FP environment, contributed to MC practice (Taylor et al., 2023; Marshall et al., 2022; Biringer et al., 2018; Pathman & Tropman, 1995). Marshall et al. (2022) identified "gendered expectations" that deterred men from practicing MC. They highlighted the presence of a culture in educational settings that is perceived as being biased against males, along with assumptions about their lack of interest, patient preferences, or concerns about cultural safety (Marshall et al., 2022). Additionally, they noted perceived challenges in empathizing with pregnant patients (Marshall et al., 2022). Male participants expressed frustrations, noting instances where they were overlooked due to their gender.

> *"… you wouldn't get called for things [because of identifying as a man]. People would assume that I wasn't interested. I worked with one… family doctor who did her own deliveries. And she didn't call me for the first few deliveries because she thought I wasn't truly interested in it because I was a guy. And only believed me when I showed up sick as*

a dog and said yes, please call me, I would like to do it, this is why I'm here. I've had a lot of trouble with that."

Biringer et al. (2018) found the importance of a hospital culture conducive to FM in the success of residency programs. They emphasized the significance of a strong presence of FPs within hospitals, which promotes acceptance by labour-and-delivery teams and benefits for FP residents (Biringer et al., 2018). Programs aim to sustain MC volumes through colleague referrals and addressing limitations in the number of births (Biringer et al., 2018). Residents require a professional environment where their preceptors are actively engaged and their contributions are valued (Biringer et al., 2018). As stated by one study participant, "The team, the whole team, needs to be supportive of the program and respectful of the relationships and understand the purpose of why the resident is there" (Biringer et al., 2018). Residents require a professional environment where their preceptors are actively engaged and their contributions are valued, ensuring a supportive and respectful atmosphere conducive to learning.

5.2.3.3 Resources: Personnel, Financial, Administrative Support

Adequate resources are imperative for successful rural MC (Fredrickson et al., 2023; Pearson et al., 2021; Biringer et al., 2018; Preston et al., 2015). As a participant from Fredrickson and colleagues (2023) study mentioned, they "[Needed] commitment from local hospital to continue to provide that – have nurses, anesthesia, OR on staff. Need commitment from all players in system." In addition to support personnel, there is a shortage of interested and qualified faculty providing CMC (Fredrickson et al., 2023).

"Number one need: family physicians who do OB and continue to do it. [Residents] have benefitted from faculty who have been in practice and doing OB for 20 years or more."

Moreover, Pearson et al. (2021) had similar findings, noting that adequate staffing for local labour and delivery are significant factors in providing CMC in rural areas. Access to

specialty and higher levels of care is vital for managing newborn complications (Pearson et al., 2021). One participant remarked:

> *"Obstetrics is a surgical discipline. If you can't get the baby out, you're in trouble. When the problem comes this is a surgical discipline. I want to see plenty of good training for that. Then we can have a good practice of family docs doing OB in rural settings."*

Furthermore, other support staff available on call, such as respiratory therapists and nurses certified in neonatal resuscitation programs, were identified as valuable factors in alleviating the workload on FPs (Pearson et al., 2021). Another participant expressed:

> *"We feel the strain sometimes here in a small community of just availability of help and services and we have people to help, it's just we have less numbers of them, and you know, everyone needs a life and we can't always be on call."*

Financial and administrative resources play a significant role in ensuring quality MC in rural areas (Miller et al., 2012). Biringer et al. (2018) identified support for education programs from various sources as crucial. Participants mentioned the importance of factors that enhance the daily experiences of both educators and residents (Biringer et al., 2018). Financial resources, teaching stipends and subsidized professional development were highlighted as crucial on multiple fronts, impacting provider satisfaction and shaping internal and external perceptions of the program (Biringer et al., 2018). According to participants, administrative, strategic, financial, and clinical support at all leadership levels is indispensable (Biringer et al., 2018). As one participant noted:

> *"Money is the lever that the chairs and the chiefs have to make things happen... by ensuring adequate financial allocation, it sends a signal about the program's priority to everybody. It also enables infrastructure support for effective program management."*

In addition, financial resources may be necessary for intrapartum transport to tertiary centres when needed (Kornelsen et al., 2023). Administrative support and sufficient resources are vital for successful rural MC.

5.2.3.4 Accreditation, Credentialing, and Privileging

Navigating accreditation, credentialing, and privileging were key themes in several studies (Taylor et al., 2023; Fredrickson et al., 2023; Kornelsen et al., 2023; Eden & Peterson, 2018; Eden et al., 2017; Goldstein et al., 2018; MacMillan Rodney et al., 2010). In their 2023 study, Fredrickson and colleagues found accreditation to be a significant barrier to providing MC in rural American environments. Participants mentioned that "[Accreditation requirements] don't assist or impair but help make an argument for administration and who to hire" (Fredrickson et al., 2023). Another participant mentioned the importance of accreditation in rural communities and "[wished] that ACGME (Accreditation Council for Graduate Medical Education) requirements allowed to tailor to community needs and residents' needs" (Fredrickson et al., 2023).

Moreover, Eden & Peterson (2018) highlighted the challenges of obtaining hospital credentialing, mainly due to requirement variability and workplace location. Securing privileges for performing C-sections was described as unpredictable and varied based on institution and geographic area (Eden & Peterson, 2018).

> *"..privileging in hospitals is individual... In one hospital, you can get a privilege to do this. In another hospital, it doesn't matter if you've done a million, they won't give it. I mean it has nothing to do with the competence. It has everything to do with politics, unfortunately."*

Due to this variability in credentialing criteria, respondents discussed the necessity of seeking positions in hospitals that support FPs offering advanced MC services (Eden & Peterson, 2018). Finding such positions was comparatively more accessible for those working in rural environments (Eden & Peterson, 2018).

The issue of granting privileges is a recurring theme in the literature (Goldstein et al., 2018; Eden et al., 2017; MacMillan Rodney et al., 2010). However, this theme was most

prevalent in an American context. In MacMillan Rodney et al.'s (2010) study on OB fellowship outcomes, they found FPs frequently encounter obstacles in obtaining hospital privileges approved by credentialing committees (MacMillan Rodney et al., 2010). This challenge arises due to the need for a consistent national standard for FP MC privileges (MacMillan Rodney et al., 2010). Instead, the criteria for obtaining privileges at individual hospitals typically reflect local or regional needs rather than the provider's experience (Goldstein et al., 2018). Institutional requirements vary significantly; while some institutions require completion of an FM residency with specific MC training and sufficient clinical exposure without specifying thresholds, others mandate high procedural volumes and fellowship training for basic maternity privileges (Goldstein et al., 2018). According to MacMillan Rodney et al. (2010), the primary reason for discontinuing intrapartum care is the failure to obtain written commitments of hospital support and privileges.

5.2.4 Community Factors

The community level considers the broader social and physical environments in which individuals live, including neighbourhoods, towns, and cities. It examines community norms, values, resources, and social networks that impact health and behaviour. Practice Setting and Location, Job Availability, and Community Context were emergent themes.

5.2.4.1 Practice Setting and Location

Practice Setting and Location influence the demand for FPs to practice intrapartum MC. Taylor et al. (2023) found that FPs reported that specific geographic areas or rural locations may have a higher need for obstetric providers, thus allowing for continued FP MC.

> *"Women need good care in all areas. I practice in a rural area. We have hospitals in our area that are closing their OB units. Try to bring someone with you if you go to a place without OB care. It's easier to do with some help."*

Others suggested joining an academic practice or residency program with higher community support and MC opportunities (Taylor et al., 2023).

Campbell et al. (2014) found that isolation was a challenge for rural MC. The theme of isolation included the subthemes of distance from specialist services, access to assistance, and access to professional development (Campbell et al., 2014). The challenge of isolation came with the awareness that having the confidence and competence to handle difficult situations was critical and that access to assistance and advice was necessary (Campbell et al., 2014). When experienced FPs talked about the impact of isolation, their comments focused on managing a situation, often in the context of access to assistance from a local team (Campbell et al., 2014).

> *"Neonatal Emergency Transfer Service (NETS) can come down, [but due to] the weather, it may be several hours before they can ... the GPs rally around and can keep working on the babies, intubate them, and keep breathing for them. It is not ideal, but it works well most times."*

Thus, rural FPs need access to a strong perinatal transfer system and confidence in their ability to manage emergencies as they arise.

5.2.4.2 Job Availability

The availability of jobs emerged as a key concern for rural FP practicing MC, as highlighted by recent studies (Taylor et al., 2023; Baretto et al., 2019). Taylor et al. (2023) noted that FPs stressed the importance of immediately engaging in MC practice after completing residency to sustain their scope of practice. Experienced FPs suggested that they seek out practices with a supportive atmosphere among MC providers, preferably in rural regions where there is a demand for such services (Taylor et al., 2023). Moreover, they advised joining practices where FPs are already involved in MC and where formal contracts ensure professional privileges (Taylor et al., 2023). Additionally, Baretto et al. (2019) found that the primary reason FPs should incorporate CMC into their practice was to enhance employability, as many rural

settings require FPs with intrapartum MC experience. However, the likelihood of providing intrapartum MC varies depending on the region, indicating that job opportunities in MC are influenced by location and rural context (Baretto et al., 2019).

5.2.4.3 Community Context

The community context is especially important for FP rural MC practice. Community context encompasses factors such as community awareness and support, patient population needs, and the ramifications of adverse outcomes (Fredrickson et al., 2023; Marshall et al., 2022; Pearson et al., 2021; Preston et al., 2015; Kornelsen & Grzybowski, 2008). In Fredrickson et al.'s (2023) qualitative study, a theme emerged about the lack of community awareness of FP's scope of practice. One practitioner highlighted this issue: "The community isn't aware that family physicians handle deliveries" (Fredrickson et al., 2023). This lack of awareness impacts patient decision-making, as another FP noted, "If they aren't aware of our presence, they won't choose us" (Fredrickson et al., 2023). Furthermore, Fredrickson et al. (2023) highlighted that community and hospital support are imperative for the success of MC training programs.

> *"In order to make this part of our program successful, there will need to be greater community and hospital support for family physicians and residents to provide full OB care."*

> *"Some of our community OB/gyns are very supportive of the residents getting OB training including C section training. They understand the areas that our residents will be going and therefore are willing to provide that oversight and teaching. Dedicated community practitioners who provide great instruction and a significant tradition and history."*

FP MC is essential to women and families in rural communities (Pearson et al., 2021). Pearson et al. (2021) found that an influencing factor in FP provision of rural MC is the ability to provide an unmet need in their community.

> *"People here in [location] love delivering local and they really appreciate that service and I just hope that we can continue to do it. For me, it really enriches my practice, my*

> *practice would be completely different if I wasn't delivering babies and seeing pregnant ladies, and for the worse, I would say, I wouldn't enjoy it as much. So, I really do hope, for the sake of our community, [...] that small communities can continue to offer birthing services."*

Rural MC offers a vital service and reduces time and risk for patients who would otherwise have to travel for care (Pearson et al., 2021). One participant pointed out, "The most dangerous thing I do for my patients is put them on the road" (Pearson et al., 2021). Additionally, providing local rural MC alleviates stress and financial burdens for patients (Pearson et al., 2021). According to Pearson et al. (2021), this approach fosters familiar care with trusted local providers. It helps mitigate the stress and cost of travel, as shared by a FP who stated, "...Not having a local option somehow stresses people out a lot" (Pearson et al., 2021). Similarly, Preston et al. (2015) found that local CMC in rural communities promotes continuity of care for patients and their families, thereby reducing the stress and costs associated with travel.

Marshall et al. (2022) found that community needs are a primary factor influencing FPs' services. If a community had other pressing needs or primarily consisted of elderly patients, FPs who might have otherwise provided MC often chose not to (Marshall et al., 2022). FPs also considered the availability of MC services from other healthcare providers within the community; if there were already sufficient providers offering MC, FPs were less inclined to provide it themselves (Marshall et al., 2022). Participants emphasized that the needs of their communities dictated whether they provided MC (Marshall et al., 2022).

> *"I worked with … a husband and wife family physician couple in a small town in [Canadian province]. And they both had comprehensive family practices but just due to the nature of like it was a town of 5,000 people so they had to take on other roles. So, one of them also did anesthesia, and another one had a pretty extensive OB practice."*

FPs fulfill various roles in rural areas, including emergency room coverage, surgical assistance, and anesthesia, with MC constituting an additional duty requiring on-call availability and specialized training and certification. For instance, participants described more significant opportunities to offer MC in rural communities than in urban communities (Marshall et al., 2022).

> *"… I think that's based a lot on the community and also the size of the community, and what's already set up. Because … my friends who have all graduated in different sized communities, in a smaller place, a lot of them will do obstetrics. And in the big urban centres, they just don't."*

In Kornelsen and Grzybowski's 2008 study, the community impact of adverse perinatal outcomes strongly influenced rural MC practices among FPs. The study highlighted that adverse outcomes impact care providers and have psycho-social effects on the community, thus adding pressure on the provider's role in safeguarding community well-being (Kornelsen & Grzybowski, 2008). Study participants were split on whether such outcomes would make them stop providing MC or quit altogether (Kornelsen & Grzybowski, 2008). One participant observed that the risk of adverse outcomes is inherent in medicine (Kornelsen & Grzybowski, 2008).

> *"Would it stop me from doing obstetrics? I guess not ... but if I had a bad outcome, would it affect me ... yes. The degree to which would depend on how responsible [I would feel] for the bad outcome. It's a risk, I guess, but you take that when you work in a field where there's life and death decisions happening."*

In a study by Kornelsen and Grzybowski (2008), most participants noted the significant impact on community health when a HCP ceased practice or when the community lost trust in their abilities. This often resulted in the departure of a key healthcare provider. This concern prompted some FPs to stop MC provision before such situations arose (Kornelsen & Grzybowski, 2008). Additionally, all participants acknowledged that the connections formed in

healthcare settings extended into social contexts, which is a common feature of rural communities (Kornelsen & Grzybowski, 2008).

> *"I find, as I get to know more people in the community [and] almost everybody is somebody that I know personally, I'm more affected by adverse outcomes. And so maybe that adds to the stress."*

Physicians stressed the social importance of negative outcomes, emphasizing that their constant connection with patients reminds them of critical incidents (Kornelsen & Grzybowski, 2008). As one participant articulated, "Probably the reason that I say it's a huge impact here is just because of the size of our community and you know, we know all the family, we know...we see them in the grocery, we see as constant reminders" (Kornelsen & Grzybowski, 2008).

Kornelsen & Grzybowski (2008) noted that the sense of responsibility FPs assumed for bad outcomes and the accompanying social cost paralleled their awareness of their role in providing MC in rural communities. As one participant said:

> *"In a small community, you may be related to these people, you may be friends with them socially, you may see the end result of your ... of the delivery, regardless of if it's your fault or not. I think there's always going to be a feeling of ownership even if you're not completely responsible for it. There's the cost to the physician, professionally I think, confidence-wise, professionally wise."*

Transportation reliability poses an additional obstacle to enhancing MC services in certain communities, hindering timely emergency transfers, particularly for critical cases like C-sections (Kornelsen et al., 2023). Participants emphasized the strain on HCPs and expressed frustration with the lack of dependable transfer options, notably the BC ambulance service (Kornelsen et al., 2023).

> *"It depends on the weather and on the patient. I certainly don't think that a low acuity ambulance driving a patient in labour to [referral community] is ideal. For a helicopter or plane evacuation, we are dependent on the patient transfer network for these kinds of cases, but then [the service] is still dependent on the weather. So even if we had reliable air transportation, if it is in the middle of winter with snow then they can't fly."*

Community needs and existing healthcare services influence FPs' decision to provide MC, with rural communities often presenting more significant opportunities for FP involvement. Adverse outcomes in intrapartum care impact both care providers and communities, influencing FP practice decisions and highlighting the social significance of such events in small communities.

5.2.5 Systematic Factors

The systematic level encompasses broader cultural, economic, and political contexts that influence health and behaviour over time. It may include economic disparities and policies at the national and global levels. Three notable themes were identified: the Healthcare System Structure, Public Policy, and Legal and Regulatory Framework. Results will be discussed in the context of the Canadian healthcare system for clarity unless otherwise noted.

5.2.5.1 Healthcare System Structure

The structure of the healthcare system was a salient factor in FP and resident MC practice (Fredrickson et al., 2023; Kornelsen et al., 2023; Kabir et al., 2022; Pearson et al., 2021). Kabir et al. (2022) identified self-preservation within the current structure of the Canadian healthcare system as a key challenge. Resident and early-career FPs indicated that remuneration and workload were issues (Kabir et al., 2022). Early-career FPs perceived traditional comprehensive FP roles as unachievable and detrimental to their family life and overall well-being (Kabir et al., 2022). Resident and early-career FPs expressed an unwillingness to sacrifice work-life balance, believing that policy reform was necessary for them to consider expanding their scope of practice (Kabir et al., 2022). Additionally, with the increased number of female FPs practicing, there is more concern with lifestyle issues and valuing family time (Marshall et al., 2022). Both participant groups in Kabir et al.'s (2022) study were dissatisfied with their respective provincial

government (British Columbia, Ontario and Nova Scotia) policies, considered their provincial and federal governments unresponsive to their needs, and undervalued FPs.

> *"It's a bit of a crisis. I feel like a lot of physicians are burnt out … And, you know, documentation also takes up time with forms and everything. And I feel like … that's not really being considered. And when it comes to the fee-for-service model, that's why I don't think it would work for me just because patients are a bit more complex than they used to be … Like I don't think you should be rushing through your patients or just having single issue appointments … So I think when they're [the government] making their policies and doing the compensation and payment plans, I'd like to see them sort of consider that…"*

Taylor et al. (2023) also mentioned compensation as a barrier to FP MC. Most comments about compensation focused on more significant systemic issues such as poor reimbursement rates, payment models that do not factor in time spent in labour and delivery, and inadequately reimbursed call structures that favour C-sections (Taylor et al., 2023). Participants recommended negotiating a fair compensation plan prior to accepting a position to address these concerns (Taylor et al., 2023).

Additionally, Kornelsen et al. (2023) found recruitment and retention challenges for rural FPs practicing MC were due to inadequate remuneration. To improve recruitment and retention, it is crucial to provide appropriate compensation to motivate FPs and nurses to participate in MC alongside their current roles (Kornelsen et al., 2023). Some participants noted that financial factors, such as liability insurance costs and the time-intensive nature of MC, make it financially unviable for FPs (Kornelsen et al., 2023). Many rural care providers operate on fee-for-service payment models, which can pose challenges for those attending only a few births annually (Kornelsen et al., 2023). One participant offered their perspective when questioned about the practicality of joining a maternity clinic under a fee-for-service model:

> *"Currently we are working fee for service, so taking a day of your practice to spend at a woman's clinic would not be profitable, even though I'd be willing to engage in it. I'm an older physician; I'm set in my finances, and I'm not as eager to get the financial reward*

> *of fee for service. But we have several physicians who are new in their practice that are fee for service that would not want to spend a day at a woman's clinic because it wouldn't be profitable for them. But we're hoping to change that, and I think within the next 6 months, we'll see contracted salaries for physicians, and we hope to attract more physicians here."*

Several participants agreed that the fee-for-service model remains one of the largest barriers to increasing FP engagement with local MC and that alternative payment options must be considered (Kornelsen et al., 2023). Additionally, they highlighted the potential of such alternatives to stabilize services in rural areas, enabling FPs to practice MC without concern about income fluctuations from low birth volumes (Kornelsen et al., 2023).

> *"If [the Alternative Payment Plan contract] goes through, optimally we'd like to have three full-time positions at each clinic. And if that's the case, I think we would be able to facilitate a better woman's clinic and hopefully we'll have ultrasound services here. At that point in time, we might be able to talk about planned deliveries… . But at this current time, the feelings of the physicians are [that] it would be too risky to have planned deliveries… . So, I think that's where the physicians stand at this point."*

Several participants agreed that transitioning away from fee-for-service models to Alternative Payment Plans (APP) could alleviate financial barriers preventing certain rural communities from offering MC services (Kornelsen et al., 2023).

5.2.5.2 Public Policy

Public policy challenges were mentioned in recent studies (Taylor et al., 2023; Fredrickson et al., 2022; Marshall et al., 2022). In Marshall et al.'s 2022 study, concerns about liability and risk emerged. As a participant explained, intrapartum cares' risk increases insurance costs for FPs who practice MC. As one participant shared:

> *"… obstetrics is higher risk. So, as family physicians … we pay liability insurance through [CMPA]. And for any family physician that practices obstetrics, you actually pay higher insurance fees because it's a higher risk practice of medicine than straightforward general family medicine … there are … things that can happen that are quite stressful,*

> *and outcomes aren't always favourable. And people may not want to take on that responsibility or risk."*

As some expressed, providing CMC was stressful, and exposure to high-risk situations discouraged them from continuing, despite previously enjoying it (Marshall et al., 2022).

> *"Yeah, at one point I did consider maybe doing some obstetrical work as well. But I then realized that actually I hate that. I hate obstetrics. It was stressful … if I had like pursued that further and then later realized actually I don't want to wake up at 3:00 in the morning and have someone potentially bleed out on me … That's like not exciting for me. That's terrifying."*

In rural communities with limited resources and direct specialist support, many FPs opt out of providing intrapartum care due to concerns about managing potential complications without immediate access to necessary expertise and facilities.

Another FP shared that higher insurance fees and the stress of adverse outcomes may deter FPs from providing MC (Marshall et al., 2022).

> *"… I've seen very critical situations. And I realized that I would not want to be put in that position. Because obstetrics is particularly high risk in my opinion for family doctors to be doing… by just seeing a couple of like very high-risk situations that almost ended very badly kind of just reinforced the fact that that's not an area of practice that I want to be involved in."*

FPs face concerns related to liability and risk, which discourage them from offering CMC due to increased insurance expenses (vary across provinces and territories), stress, and unfavourable MC outcomes. These challenges are particularly evident in rural regions where scarce resources and limited specialist assistance intensify the difficulties in handling high-risk MC scenarios.

5.2.5.3 Legal and Regulatory Framework

Legal and regulatory issues were seen as a challenge for FPs, particularly in the United States and New Zealand (Barreto et al., 2019; Preston et al., 2015; Dresden et al., 2008; Burns et al., 1999). Burns et al. (1999) surveyed American FPs' views on malpractice and how it affects

their willingness to discontinue rural MC. Their study revealed that FPs' choices are predominantly shaped by the perceived severity of the consequences of malpractice rather than the likelihood of facing malpractice incidents (Burns et al., 1999). The study highlights that a malpractice suit's professional and reputational implications, rather than the monetary value of any settlement or award, play a significant role in determining FPs' intentions to discontinue MC (Burns et al., 1999).

A New Zealand study by Preston et al. (2015) and an American study by Dresden et al. (2008) surveyed FPs on their perception of FP MC. Both studies reported that litigation was one of the reasons for FPs discontinuing MC (Dresden et al., 2008; Preston et al., 2015). Between 50% and 75% of the FPs who stopped practicing cited the litigation environment, including the cost of malpractice insurance, as a factor influencing their decision to quit (Dresden et al., 2008). The litigation environment was reported as a stronger deterrent for rural FPs and OBGYNs than for urban FPs (Dresden et al., 2008). While much less of an issue in Canada, fear of liability still overshadows CMC provision by FPs (Marshall et al., 2022).

Finally, Barreto et al. (2019) investigated barriers to FPs providing rural MC in the US. They found that malpractice was not identified as a top barrier, though 35% of FP ranked it in their top 3 reasons for not providing comprehensive MC (Barreto et al., 2019). This is consistent with previous research showing that the malpractice burden alone did not lead FPs to stop providing MC (Barreto et al., 2019). The decreased impact of malpractice on the incorporation of MC in this study could stem from increasing physician employment, where employers, rather than individual physicians, assume responsibility for malpractice coverage (Barreto et al., 2019).

FPs' decisions to discontinue rural MC are mainly influenced by the perceived severity of malpractice consequences rather than the likelihood of facing malpractice incidents, particularly

in an American context. Notably, the studies did not address the legal and regulatory environment in Canada, where malpractice insurance is covered by the government and litigation is far less common. However, without adequate compensation structures, those FPs practicing MC may just break even, which ultimately deters them from practicing.

CHAPTER 6 DISCUSSION

6.1 Review of Findings

This scoping review brought together findings from 26 studies spanning four countries to establish an understanding of the socio-ecological influences on FPs and residents that impact their commitment to practicing rural MC. Over the last three decades, the practice of intrapartum MC by FPs has steadily declined, compounded by the shortage of FPs in rural regions. This review explored the influencing factors on residents, early-career, and experienced FP's commitment to rural MC provision. Among the studies, there was a spectrum of interest in MC provision. While many FPs and residents were interested in providing MC, they only sometimes practiced. Challenges associated with rural MC and opportunities for enhancing recruitment and retention were highlighted. Personal preferences and external factors influenced decision-making among residents and FPs regarding MC provision, all framed within the socio-ecological model.

The examination of FP and resident experiences with MC at the individual, interpersonal, organizational, community, and systematic levels reveals complex influences. Some practitioners lack interest in MC due to perceptions of its importance and lifestyle factors, while burnout, exacerbated by intrapartum MC demands, poses a significant challenge potentially leading to FP attrition. Emotional and physiological risks, especially in rural areas, highlight unique pressures. Interpersonal factors, such as relationships with other HCPs and mentorship, greatly influence MC engagement and professional satisfaction. Organizational challenges like training costs, work environment stressors, and accreditation complexities hinder MC provision, especially in rural settings. Community characteristics, job availability, and systemic factors like healthcare policies and regulatory barriers further impact FPs' decisions regarding MC, particularly in resource-constrained areas.

Across all socio-ecological levels, the most salient factors influencing FP MC included the demanding call schedule, which led to lifestyle challenges and burnout, as well as insufficient preparation for independent practice due to residency training and role model deficiency. Additionally, challenges with low clinical volume and compensation for rural FP MC providers were critical in their commitment to continue practice. This discussion will focus on FM residency and role models, call schedule sustainability and interprofessional collaboration, as well as maintaining clinical skills and financial stability with low volume in rural communities. Although the review covered studies from Canada, the US, Australia, and New Zealand, this discussion will be framed in the Canadian healthcare context for clarity on training, practice, and policy implications.

6.1.1 Maternity Care Training & Importance of Role Models

A predominant focus across the reviewed studies was the importance of comprehensive MC training during FM residency (Taylor et al., 2023; Fredrickson et al., 2023; Kornelsen et al., 2023; Marshall et al., 2022; Kabir et al., 2022; Baretto et al., 2019; Eden & Peterson, 2018; Kornelsen et al., 2012; Lu et al., 2008; Stretch et al., 2007; Godwin et al., 2002). Most residents found they were unprepared for independent practice in MC after a two-year FM residency. The lack of adequate exposure to MC deterred many FPs from continuing practice. Interestingly, this trend has remained consistent across the literature over the past few decades. For those who were interested in practicing in rural settings, a comprehensive scope of practice, including MC, was emphasized. However, some residents still felt ill-prepared. For most, this was a result of a disparity in current FM MC practitioners. Skilled and accessible FP MC role models and mentors greatly shape resident practice intentions, and they are becoming increasingly rare. This trend is consistent with evidence from the broader literature that role models early in medical training

influence resident decisions to pursue MC (Lamb et al., 2022). With the importance of FM MC education and role models well established, it is important to understand how to increase MC exposure and role models in FM residency programs.

6.1.2 Rural Maternity Care Call Sustainability & Interprofessional Collaboration

The organization of call schedules for rural MC significantly impacts the lifestyle and well-being of FPs, contributing to burnout and other adverse outcomes. Across the literature reviewed, FPs found that the demanding call required for intrapartum MC negatively affected their lifestyle, including family life and personal responsibilities. This makes it difficult for FPs to balance professional obligations with personal commitments. Moreover, as work-life balance is negatively impacted, it often leads to FP burnout. FP MC burnout was a very common theme across the studies explored, particularly in rural environments. The theme of burnout is consistent across the extant literature as well (Hansen et al., 2021; Stoll & Gallagher, 2019; Grzybowski et al., 2007). In their 2007 study, Grzybowski and colleagues. found that rural care providers identified significant stressors related to the provision of MC services, including maintaining clinical competency with low birth volume, local MC safety without C-section and the desire to balance the realities of rural practice while prioritzing women's needs.

Moreover, in a small rural community, there are likely few FPs who provide intrapartum care and thus, the ability to share call is compromised (Kornelsen et al., 2023; Marshall et al., 2022). However, Barreto et al. (2020) found that a better call schedule or call coverage environment could mediate the burnout experienced. Therefore, a supportive MC team and call group could alleviate the negative lifestyle impacts and subsequent burnout associated with FP MC in rural communities.

6.1.3 Balancing Clinical Competency & Financial Stability with Low Volume

This review found that rural FPs often avoid practicing MC due to challenges with procedural volume. Maintaining clinical competency in MC requires ongoing training and exposure to a sufficient volume of cases, which may be challenging in rural areas with lower patient populations. Limited exposure can lead to concerns about delivering high-quality care and managing complications effectively. The challenges of maintaining adequate volume in rural communities have been discussed in the literature (Kozhimannil et al., 2023; Kozhimannil et al., 2014). Korenelsen et al. (2023) argue that "sustainability is no longer a concern of only low-volume rural sites, but instead afflicts services across the continuum of care with those 'up-stream' forced to contend with increased volume of maternity patients due to the outsourcing of smaller services in addition to the wide-spread recruitment, retention and compensation challenges." To prevent negative consequences, Kornelsen et al. (2023) advocate for comprehensive solutions by reevaluating compensation models.

In the Canadian fee-for-service model, FPs' income is directly tied to the number of procedures and services they perform (Kornelsen et al., 2023). This situation, combined with increased liability insurance costs, can result in situations where FPs offering MC barely break even (Kornelsen et al., 2023). Particularly in rural areas where the number of obstetric cases is lower, offering MC may not be financially viable compared to other medical services in higher demand (Kornelsen et al., 2023). This challenge is intensified in a fee-for-service model where compensation may not accurately reflect the time spent caring for patients, and in rural settings where the limited patient volume may not provide sufficient remuneration (Kornelsen et al., 2023). Sustainable rural MC depends on an adequate pay structure for providers.

6.2 Implications for Training, Practice & Policy

Given the established significance of FM MC education and role models, it is imperative to explore methods for increasing exposure to MC principles and fostering the presence of role models within FM residency programs. Several strategies can be implemented to enhance skills training in MC in Canada and improve the recruitment of better role models and teachers. Firstly, programs should prioritize maintaining the original intent of FM to be all-encompassing, ensuring residents receive sufficient clinical exposure (Fredrickson et al., 2023). This has become an issue for FM practice in general; research shows that many new FPs are less likely to provide comprehensive, continuous family practice medicine (Freeman et al., 2018). Training of rural MC providers must include the necessary clinical skills and competencies in collaborative practice. Moreover, expanding fellowship training opportunities in FM MC would increase the number of FM docs in MC (Fredrickson et al., 2023). Supporting pipeline and continuing education systems is crucial, particularly for rural physicians in FM, OBGYN, and surgery (Fredrickson et al., 2023).

Access to additional training in advanced skills, including C-section and obstetrical anesthesia is essential (Miller et al., 2012). Rural track maternity programs and fellowships in MC have been shown to increase the number of new physician graduates offering MC (Ratcliffe et al., 2002; Delzell & Ringdahl, 2003). Currently, physicians are provided training in performing C-sections at several residency sites in Canada (Miller et al., 2012). Miller and colleagues (2012) argue that enhanced skills training for FPs remains critical for rural MC.

In addition to increasing access to advanced education, emphasis should be placed on recruiting skilled clinical teachers and providing ongoing support for new graduates. In a 2014 qualitative study by Koppula et al. in Alberta, FP's perspectives on teaching primary care MC

were examined. Barriers to teaching included limited confidence in teaching abilities, challenges in explaining intuitive procedures, and residents interfering with patient-physician relationships (Koppula et al., 2014). Teaching interested residents was rewarding, fostering reciprocal learning (Koppula et al., 2014). However, lack of early exposure to MC and concerns about lifestyle interference discouraged residents from pursuing MC careers (Koppula et al., 2014). Addressing these barriers through FP training could increase the availability of role models in FM MC.

To address rural MC practice implications, interprofessional collaboration will be necessary to navigate unsustainable call schedules for FPs. In Canada, there is a trend towards interprofessional collaboration in MC for rural and remote communities, led by initiatives like the Multidisciplinary Collaborative Primary Maternity Care Project (MCP2) (Kornelsen et al., 2023; Rogers & Warwick, 2022; Barclay & Kornelsen, 2016; Harris et al., 2012; Munro et al., 2013; Van Wagner et al., 2007; Nesbitt, 1996). MCP2 promotes collaboration between care providers (including nurses and nurse practitioners (NP), midwives, FPs, OBs, and gynecologists), emphasizing mutual respect and flexible role definitions (Peterson & Mannion, 2005). MCP2 argues for an expanded scope of practice for midwives and NPs to allow full integration into the MC system, facilitating interprofessional collaboration and reducing the burden on FPs (Peterson & Mannion, 2005).

Sharing on-call responsibilities is a crucial component of interprofessional collaboration, exemplified by the Maternity Centre of Hamilton (MCH), which provides comprehensive and accessible MC through a collaborative interdisciplinary model and shared call (Price et al., 2005). The program has helped FPs, and even recruited some, to practice CMC and has provided high-quality, accessible services to pregnant women (Price et al., 2005). Physicians experienced increased job and personal satisfaction, and patients were very satisfied with their care (Price et

al., 2005). In addition, the Sunshine Coast Maternity Care Group in BC is an exemplar model of interdisciplinary MC. FPs and midwives work together in a shared call environment, evenly splitting compensation (SCMCG, 2020). This model has changed the MC landscape in a rural BC municipality.

In another instance, the BC Guide to Enhancing Interprofessional Collaboration in Maternity Care provides a practical on-call system (Momtazian & Yeates, 2019). One example in a rural community employs three family doctors in a 1:3 maternity call rotation alongside their regular clinical duties, with one doctor possessing surgical skills and another anesthesia skills for C-sections (Momtazian & Yeates, 2019). Complementing this setup, two midwives offer 1:2 call coverage and NRP support during C-sections, with all prenatal and postpartum care provided within their clinics (Momtazian & Yeates, 2019). Allowing midwives hospital privileges to first assist in C-sections, among other procedures, is crucial (BC Healthwise, 2022). This collaborative framework ensures continuous patient care as providers cover for each other during leave or emergencies, maintaining the 1:3 and 1:2 schedules (Momtazian & Yeates, 2019). Importantly, billing for services is conducted individually without additional compensation for covering each other's patients, illustrating the collective commitment to patient welfare and efficient resource utilization (Momtazian & Yeates, 2019). Although there is an increased commitment to interprofessional MC, it must be prioritized if rural MC practice will be sustainable.

The policy implications concerning remuneration models for HCPs in rural settings necessitate acknowledgment of their unique challenges, heightened professional responsibilities, and the facilitation of interprofessional collaboration (Miller et al., 2012). APPs in healthcare, particularly pertinent in low-volume settings, are essential for addressing provider challenges.

These plans, offering fixed salaries tailored to meet population care needs, offer a promising strategy to alleviate the financial strain on FPs with low patient volume (Kornelsen et al., 2023). However, it is important to understand that compensation is not just monetary; it also shows how much the work is valued, including the broader recognition of healthcare services like rural MC (Kornelsen et al., 2023).

Likewise, a significant issue Silverthorn et al. (2003) highlighted is the lack of financial recognition for on-call duties, notably affecting MC providers in low-volume settings. This disparity in compensation shows the broader challenge of inadequate remuneration confronting FPs, impeding their capacity to deliver sustainable, high-quality care (Silverthorn et al., 2003). Furthermore, remuneration plays a significant role in shaping healthcare system dynamics and fostering interprofessional collaboration. Research exemplified by Wranik et al. (2003) emphasizes the importance of aligning provider compensation with team-based funding models to incentivize collaborative care delivery. Nonetheless, achieving such alignment is difficult, including navigating multiple funding streams and addressing financial hierarchies that impact effective collaboration among HCPs (Wranik et al., 2003).

Insights from qualitative research in rural Alberta found additional barriers to effective practice, such as heavy workloads, on-call obligations, limited access to specialists, outdated equipment, and unfavourable changes to billing structures (Ogundeji et al., 2021). In this context, APPs emerge as a potential solution to attract and retain HCPs in underserved areas. However, the efficacy of APPs hinges on developing clear, collaborative contracts that ensure adequate compensation and cultivate a supportive practice environment conducive to delivering quality care (Kornelsen et al., 2023).

In response to the growing concern of burnout among FPs in Canada, the CFPC is actively advocating for enhanced remuneration and long-term sustainability within the profession (CFPC, 2021). Operating their practices in a fee-for-service model, FPs face substantial overhead costs, with around 28% of their gross income directed towards overhead expenses (CFPC, 2021; CMA, 2017). Despite their important role in the healthcare system, FPs remain the lowest-paid medical specialty in Canada (CIHI, 2020). The CFPC proposes alternative remuneration strategies for FPs, such as blended capitation, which combines per-patient fees with limited fee-for-service components (CFPC, 2021). This approach aims to enhance patient care by incentivizing comprehensive management over the high-volume care often prioritized by pure fee-for-service models. Another alternative to the fee-for-service model that was recently introduced in BC is called the Longitudinal Family Physician (LFP) Payment Model (Government of BC, 2024). The LFP payment model is a blended model to support FPs in practice who provide comprehensive and longitudinal care (Government of BC, 2024). It compensates them for their time, patient interactions, and the volume and complexity of their patient load (Government of BC, 2024). Various compensation models offer both advantages and disadvantages. While fee-for-service rewards FPs for workload, it does not adequately renumerate FPs with low volume practices in rural areas (Doctors of BC, 2018). Conversely, service or salaried contracts provide a stable and predictable income in low volume contexts where fee-for-service may be less suitable; however, contracts may not adequately adjust for increases in physician workload (Doctors of BC, 2018). Moreover, capitation reward preventive care and resource reduction but may lead to lower income for FPs with smaller patient rosters, such as those in rural communities (Doctors of BC, 2018).

Blended remuneration fosters team-based, patient-centered care and necessitates collaborative efforts among the federal government, provinces, and territories to facilitate its implementation (CFPC, 2021). While there is no perfect model, a blend of models is often the best option. It is essential to cater to the needs of FPs, especially in rural settings, where compensation strategies demand careful attention. By promoting the integration of primary care teams, these models alleviate administrative burdens and mitigate practice-related stressors for FPs and their teams.

While the CFPC has been advocating for improved compensation models, there is a need for increased advocacy for rural maternity care. A Joint Position Paper on Rural Maternity Care was prepared by the Joint Position Paper Working Group and approved by the Councils Executives of the Canadian Association of Midwives, the Canadian Association of Perinatal and Women's Health Nurses, the College of Family Physicians of Canada, the Society of Obstetricians and Gynaecologists of Canada and the Society of Rural Physicians of Canada in 2012 (Miller et al., 2012). The paper recommended fair compensation reflecting the distinct challenges of rural practice (Miller et al., 2012). However, since then, the CFPC has not been actively involved in improving rural MC. There is a call for increased efforts to bring about meaningful improvements for rural mothers and babies in Canada.

6.3 Recommendations for Future Research

There has been a notable shift in the scope of practice among new FPs, with disinterest in the traditional comprehensive practice. Future research could explore those factors to adjust residency training to meet residents' current attitudes and interests and maintain a certain level of competency through Continuing Medical Education. Further, a prominent theme was the lack of FM MC role models; future research should examine why this is the case and what attracts and

retains faculty. Additionally, there is a pressing need for research to evaluate the effectiveness of alternative payment models for FPs practicing CMC in rural settings. Examining how different fee structures impact call schedule demands and foster interprofessional collaboration would be valuable for informing policy and practice in this context. Finally, the existing literature lacks comprehensive exploration of how COVID-19 has impacted rural maternity care practices, leaving a gap in understanding the challenges and adaptations required. Future research in this area should prioritize investigating the efficacy of telehealth interventions and other innovative strategies to enhance access and quality of maternity care services in rural settings.

6.4 Strengths and Limitations

The study has key strengths. First, although the influences on FP and residents' intentions and commitment to practice rural MC have been documented, this study synthesizes the existing research, filling a gap in the literature. The results of this review provide a comprehensive understanding of existing factors and emphasize the key influencers shaping rural MC practice over time, including historical trends. Secondly, this scoping review's contextualization within the socio-ecological model provides a framework for understanding the multifaceted influences on FP and resident commitment to rural MC. This approach deepens our understanding of the topic but also offers practical implications for improving maternal and infant health outcomes in rural, underserved communities.

This study has a few limitations. While scoping reviews are valuable for mapping out the existing literature and identifying gaps in knowledge, they do not involve primary data collection or analysis. As a result, this review relies solely on the interpretations and conclusions drawn from existing literature, limiting the depth of insight into the specific factors influencing FPs' and residents' commitment and practice intentions for rural MC provision. Secondly, a limitation

of this scoping review is its focus on analyzing data within the context of the Canadian healthcare system, despite including data from multiple countries, including the US, New Zealand, and Australia. While this approach offers insights into healthcare practices and policies within Canada, it limits the generalizability and applicability of findings to other healthcare systems. Future research should address this limitation by conducting comparative analyses across multiple countries or by conducting separate studies within each healthcare system. Further, this scoping review does not explore the gender differences in rural MC practice. Although gender has been identified as an influencing factor in past literature, with women more likely to practice MC but have more difficulty with lifestyle challenges, it was not a current prevalent challenge. Further research should explore gender's current role in shaping attitudes and practice intentions surrounding rural MC provision.

CHAPTER 7 CONCLUSION

In conclusion, this scoping review has synthesized findings from 26 studies across four countries to explore the socio-ecological influences on FPs' and residents' commitment to practicing rural CMC. Rural MC in Canada is in crisis, with many communities losing local services. This forces rural women and families to travel for care, leading to heightened stress, expenses, and adverse outcomes. FPs, often the primary providers of all rural healthcare, including MC, are decreasing, exacerbating the problem. Without enough providers, rural communities struggle to offer safe and accessible maternity services, risking the health of expectant mothers and families. The decline in intrapartum MC provision by FPs over the past three decades, coupled with a shortage of FPs in rural areas, highlights the need to understand the challenges FPs face in practicing rural MC, as well as the factors that impact their intentions to practice in rural jurisdictions.

The influences identified span individual, interpersonal, organizational, community, and systemic levels. Individual factors included FP interests, attitudes, motivation, burnout, and inherent risks. Interpersonal factors such as lifestyle, interprofessional relationships, and role models/mentors had a significant impact on rural MC practice. At the organizational level, there were many influencing factors including training and professional development, work environment and practice characteristics, resources, regulation and privileging. Additionally, at the community level, practice setting and location, job availability and community context were important. Finally, systematic factors such as the healthcare system structure, public policy, and legal and regulatory frameworks were influencing factors.

The most salient influencing factors were challenges with FM residency training and role models, call schedule sustainability and interprofessional collaboration, as well as preserving

clinical skills and financial stability amidst low volume in rural communities. Therefore, there is a need to implement evidence-based interventions targeting training curriculum, recruiting positive role models, interprofessional collaboration to improve call-group sustainability, and adequate remuneration for rural FPs practicing MC. Women who reside in rural communities in Canada should receive high-quality CMC as close to home as possible, to ensure the health of mothers, babies, and community sustainability.

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APPENDICES

Appendix A

Search Strategy (Used in Ovid Medline)

Population Search

1. Physicians, Family/
2. Family Practice/
3. Primary Health Care/
4. family medicine*.mp.
5. family physician*.mp.
6. family practice*.mp.
7. primary care*.mp.
8. primary practice*.mp.
9. residen*.mp.

Intervention Search

10. Health Service Availability/
11. Rural Health Services/
12. Rural Population/
13. rural*.mp.

14. Delivery, Obstetric/
15. Maternal Health/
16. Maternal Health Services/

17. Pregnancy/
18. Obstetrics/
19. Cesarean Section/
20. maternity care*.mp.
21. obstetric*.mp.
22. matern*.mp.

Outcome Search

23. Education, Medical, Graduate/
24. "Internship and Residency"/
25. Curriculum/
26. Practice Patterns, Physicians/
27. "Attitude of Health Personnel"/
28. intention*.mp.
29. experience*.mp.
30. influence*.mp.
31. attitude*.mp.
32. education*.mp.
33. curriculum*.mp.
34. practice pattern*.mp.
35. policy*.mp

Boolean Operators

36. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9

37. 10 or 11 or 12 or 13

38. 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22

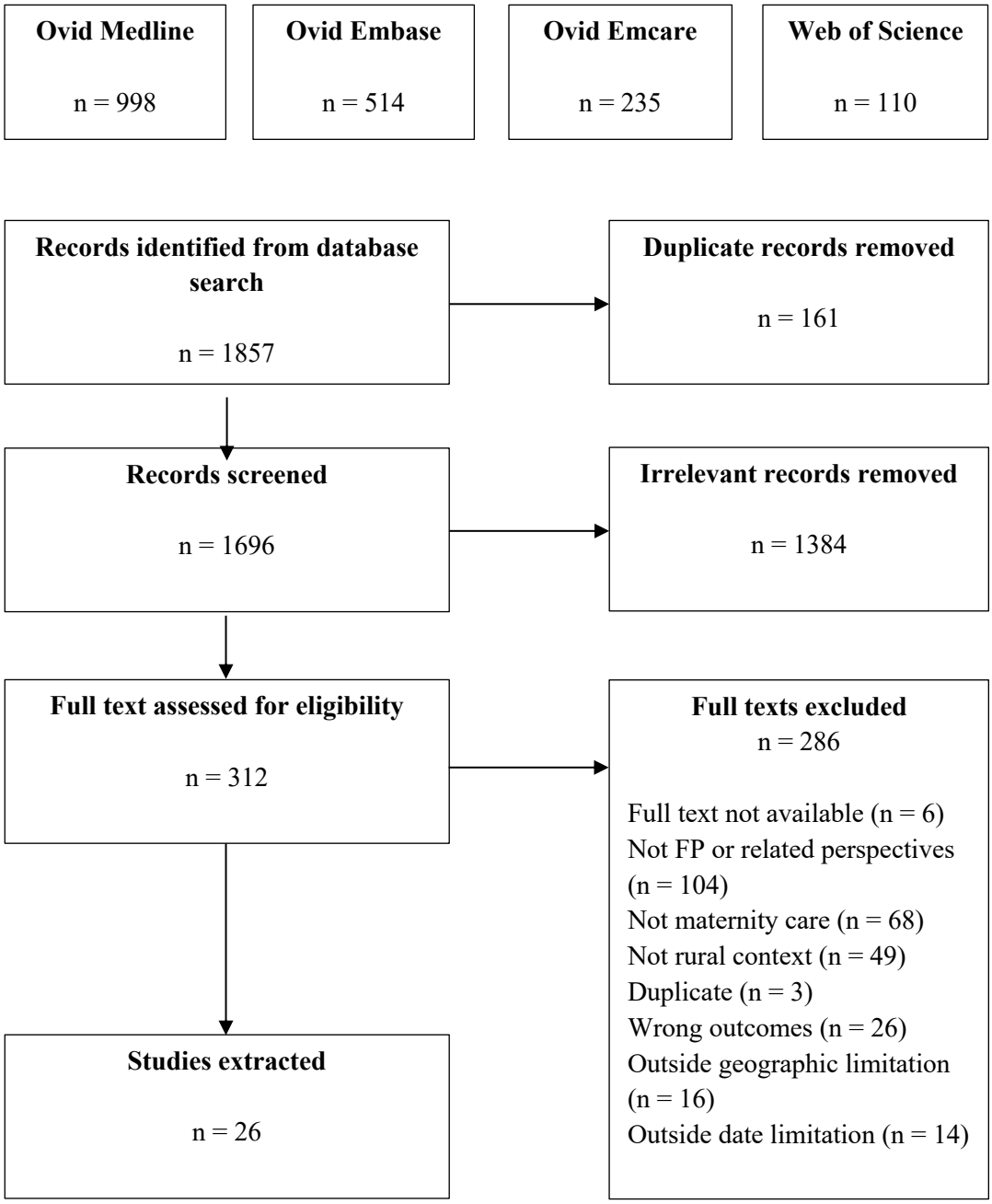
39. 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35

40. 36 and 37 and 38 and 39

Appendix B

Figure 1

PRISMA Diagram



Appendix C

Table 2

Methodological Characteristics

Author, Year	Methodology, Approach	Data Collection Method	Number & Type of Participant
Taylor et al., 2023	Qualitative, Thematic analysis	Survey	992 mid- to late-career family physicians
Fredrickson et al., 2023	Mixed-Methods, Thematic analysis; statistical analysis	Semi-structured interviews; survey	115 rural family medicine residency programs
Kornelsen et al., 2023	Qualitative, Thematic analysis	Semi-structured interviews; Focus group	14 rural health service administrators and maternity service practitioners (physicians, obstetricians, nurses, and midwives)
Marshall et al., 2022	Qualitative, Thematic analysis	Semi-structured interviews	18 family practice residents; 39 early-career family physicians
Kabir et al., 2022	Qualitative, Thematic analysis	Interviews	22 resident family physicians and 38 early-career family physicians
Pearson et al., 2021	Mixed-Methods, Qualitative and quantitative analyses	Survey	25 communities; family physicians
Baretto et al., 2020	Qualitative, Immersion-crystallization analysis	Semi-structured interviews	56 early-career family physicians
Barreto et al., 2019	Quantitative, Descriptive and bivariate statistics	Survey	1016 early career family physicians
Biringer et al., 2018	Qualitative, Thematic analysis	Semi-structured interviews	6 family medicine programs
Eden & Peterson, 2018	Qualitative, Thematic analysis	Semi-structured interviews	51 stakeholders in family medicine

Goldstein et al., 2018	Qualitative, Thematic analysis	Focus-group discussions	40 family medicine educators
Eden et al., 2017	Qualitative, Thematic analysis	Semi-structured interviews	51 key stakeholders in family medicine
Preston et al., 2015	Quantitative, Statistical analysis	Online questionnaire	165 general practitioners
Campbell et al., 2014	Qualitative, Thematic analysis	Semi-structured interviews	22 rural general practitioners
Kornelson et al., 2012	Qualitative, Process analysis	Interviews	70 GP surgeons
Miller et al., 2012	Qualitative, Thematic analysis	Focus group; Semi-structured interview	10 GPOs and 13 former GPOs
MacMillan Rodney et al., 2010	Quantitative, Statistical analysis	Survey	80 physicians in 1-year fellowships in FM obstetrics over 18 years
Lu et al., 2008	Mixed-Methods, Thematic analysis; statistical analysis	Focus group discussions, Survey	17 second-year family medicine residents
Dresden et al., 2008	Mixed-Methods, Thematic analysis; statistical analysis	Survey	1,197 physicians
Kornelsen & Grzybowski, 2008	Qualitative, Thematic analysis	In-depth interviews	15 nurses and 11 physicians
Stretch et al., 2007	Mixed-Methods, Thematic analysis; statistical analysis	Survey and interviews	56 family physicians (who do or have practiced obstetrics)
Godwin et al., 2002	Quantitative, Statistical analysis	Survey	411 family physician residents
Ruderman et al., 1999	Quantitative, Statistical analysis	Paired questionnaires	256 family medicine residents
Burns et al., 1999	Quantitative, Statistical analysis	Survey	315 family physicians
Roberts et al., 1998	Quantitative, Statistical analysis	Survey	565 family physicians

Pathman & Tropman, 1995	Quantitative, Statistical analysis	Questionnaire	151 rural family physicians

Appendix D

Table 3

Study Characteristics

Characteristic of Study	Number of Studies (%)
Country	
Canada	10 (38%)
United States	13 (50%)
New Zealand	2 (8%)
Australia	1 (4%)
Participants Position	
Resident	5 (19%)
Early-Career Family Physician	4 (15%)
Experienced Family Physician	16 (62%)
Family Medicine Stakeholders	5 (19%)

Appendix E

Table 4

Findings Summary Table

Socio-ecological Level	Theme	Findings	Reference(s)
Individual	Interests, Attitudes & Motivations	Lack of resident interest in MC	Fredrickson et al., 2023
		Defining comprehensive care as everything except intrapartum MC	Marshall et al., 2022
		Residents form their opinions and intentions about MC provision prior to residency and are unlikely to change them	Ruderman et al., 1999
		Motivation for seeking advanced MC skills training often was self-motivated and demand-driven	Kornelsen et al., 2012
	Burnout	Stress, fear, and the time commitment associated with MC led to burnout among FP	Baretto et al., 2020
		Time spent away from personal lives can lead to burnout among FP	Baretto et al., 2020
		FPs practicing MC can experience joy, which acts as a protective factor from burnout	Baretto et al., 2020
		The burnout associated with FPs practicing MC is described as a high risk for leaving MC practice	Goldstein et al., 2018

		MC is high risk, leading to burnout and decreased patient and FP safety	Campbell et al., 2014
	Emotional & Physiological Risk	FPs feel personally responsible for the risks and bad outcomes associated with rural MC	Kornelsen & Grzybowski, 2008
		FPs experience internal tension from the awareness of a resource-limited environment and the imperative to provide a gold standard of care to their patients regardless of rurality	Kornelsen & Grzybowski, 2008
		FPs acknowledge that accepting the emotional risks in providing rural MC extends to all members of the care team	Kornelsen & Grzybowski, 2008
		FPs perceive the risks associated with MC compared to other medical specialties to be heightened because the adverse outcomes are unacceptable for otherwise young and healthy patients	Kornelsen & Grzybowski, 2008
Interpersonal	Lifestyle	Lifestyle issues are the most important factor in FP and resident intentions to practice MC	Ruderman et al., 1999; Roberts et al., 1998
		Impact on personal and family life are a major barrier for FPs providing MC	Taylor et al., 2023; Marshall et al., 2022; Baretto et al., 2019; Preston et al., 2015, Campbell et al., 2014, Lu et al., 2008

		Being on call for MC interrupts the rest of life	Kornelsen et al., 2023; Marshall et al., 2022; Preston et al., 2015, Campbell et al., 2014 24
		The demands of emergency situations interrupt lifestyle while practicing MC	Campbell et al., 2014
		Practicing MC interrupts patient flow in the clinic	Campbell et al., 2014
	Interprofessional relationships	Negative interactions with other MC providers, particularly OBs	Taylor et al., 2023; Fredrickson et al., 2023; Marshall et al., 2022; Eden & Peterson, 2018; Goldstein et al., 2018; Lu et al., 2008; Roberts et al.,, 1998
		Supportive relationships with MC providers contributed to success	Taylor et al., 2023; Fredrickson et al., 2023
	Role Models & Mentors	Presence of strong FM role models contributed to success	Biringer et al., 2018
		Importance of role models and mentors (FPs in particular)	Kabir et al., 2022; Kornelsen et al., 2012; Kornelsen & Grzybowski, 2008; Godwin et al., 2002
		Role models emphasizing continuity of care contributed to greater number of FPs practicing MC	Godwin et al., 2002
		Disparity in good role models for FP MC	Kornelsen & Grzybowski, 2008

		Role models were exhausted in comprehensive practice that included intrapartum MC, as a result residents were not interested	Kabir et al., 2022
Organizational	Training & Professional Development	Insufficient training and exposure to MC during residency deterred FPs from practicing	Taylor et al., 2023; Fredrickson et al., 2023; Marshall et al., 2022, Kabir et al., 2022; Baretto et al., 2019; Eden & Peterson, 2018; Kornelsen et al., 2012; Lu et al., 2008; Stretch et al., 2007; Godwin et al., 2002
		Financial and opportunity costs of being sufficiently trained	Fredrickson et al., 2023; Kornelsen et al., 2023; Eden et al., 2017; Kornelsen et al., 2012; Lu et al., 2008
		Advanced MC training was variable in the number of deliveries performed	Eden & Peterson, 2018
		Residents were not prepared to practice independently, particularly in rural environments where there are less resources for adverse outcomes	Eden & Peterson, 2018; Lu et al., 2008
		Residents did not perform enough deliveries	Marshall et al., 2022; Lu et al., 2008; Godwin et al., 2002
		Residents practicing in rural environments wanted	Eden & Peterson, 2018; Stretch et

		more experience in complex environments, including C-sections	al., 2007
		Advanced training and continuing education important in retaining MC skills	Taylor et al., 2023; Kornelsen et al., 2023; Eden & Peterson, 2018
	Work Environment & Practice Characteristics	MC call schedule is too demanding and not sustainable for FPs	Taylor et al., 2023; Kornelsen et al., 2023; Marshall et al., 2022; Baretto et al., 2020; Lu et al., 2008; Dresden et al., 2008
		MC call schedule leads to burnout	Baretto et al., 2020
		MC disrupts regular practice	Marshall et al., 2022; Goldstein et al., 2018; Pathman & Tropman, 1995
		MC workload is too demanding	Marshall et al., 2022; Dresden et al., 2008
		Adequate clinical explore, both in quality and volume influence FPs MC practice	Taylor et al., 2023; Kornelsen et al., 2023; Fredrickson et al., 2023; Pearson et al., 2021; Biringer et al., 2018; Goldstein et al., 2018
		Maintaining clinical volume important in remaining competent in MC practice	Kornelsen et al., 2023; Goldstein et al., 2018
		Practice characteristics important factors in decision to practice MC;	Pathman & Tropman, 1995

		rural areas increased likelihood	
		FPs were enabled by working in effective call groups or teams	Taylor et al., 2023; Marshall et al., 2022; Baretto et al., 2020; Miller et al., 2012
		Gendered expectations discouraged men FPs from practicing MC	Marshall et al., 2022
		Family medicine-friendly hospital environment supportive of MC important	Taylor et al., 2023; Kornelsen et al., 2023; Biringer et al., 2018
	Resources	Lack of HCP personnel and support is a challenge for MC	Fredrickson et al., 2023; Pearson et al., 2021
		Support to provide backup from colleagues a challenge	Pearson et al., 2021; Biringer et al., 2018; Preston et al., 2015
		Hospital resources and support from administration a challenge	Fredrickson et al., 2023; Pearson et al., 2021; Biringer et al., 2018; Preston et al., 2015, Miller et al., 2012
		Availability and maintenance of proper equipment to support MC	Pearson et al., 2021
		Interested and skilled faculty available	Fredrickson et al., 2023
		Financial support	Biringer et al., 2018; Preston et al., 2015, Miller et al., 2012

Community		Patient transportation resources a barrier for MC provision in rural communities	Kornelsen et al., 2023
	Accreditation, Credentialing & Privileging	Ability to get hospital credentialing a challenge due to variability and location	Eden & Peterson, 2018, Eden et al., 2017
		Accreditation requirements are barriers	Fredrickson et al., 2023
		Navigating hospital privileging is difficult	Kornelsen et al., 2023; Goldstein et al., 2018; Eden et al., 2017; MacMillan Rodney et al., 2010
	Practice Setting & Location	Rural settings more likely to have FPs practicing intrapartum MC	Taylor et al., 2023; Marshall et al., 2022; Campbell et al., 2014
		Isolation when practicing in a rural setting can deter FPs because of risk	Campbell et al., 2014; Kornelsen & Grzybowski, 2008
	Jobs	Difficulty finding and keeping jobs with MC role	Taylor et al., 2023; Baretto et al., 2019
	Community Context	Lack of communities' awareness of FPs scope of practice a barrier	Fredrickson et al., 2023
		Patients migrate to larger or more urban centres for MC	Fredrickson et al., 2023
		Community and hospital support necessary for FP MC practice success	Fredrickson et al., 2023
		Community needs a driver of what services FPs offer	Marshall et al., 2022

		Ability to provide local care helps the community by providing continuity of care, FPs more likely to provide MC	Pearson et al., 2021; Preston et al., 2015
		Effects of a bad MC outcome can have social and emotional costs for FPs	Kornelsen & Grzybowski, 2008
		FPs struggle with lack of anonymity with MC practice in rural communities	Kornelsen & Grzybowski, 2008
Systematic	Healthcare System Structure	FPs would like desirable compensation structure if providing MC	Taylor et al., 2023
		Inefficiency of broader medical system in supporting FP MC practice	Fredrickson et al., 2023; Kabir et al., 2022; Pearson et al., 2021
		Remuneration and workload for FPs practicing MC leading to burnout	Kornelsen et al., 2023; Kabir et al., 2022; Pearson et al., 2021
		Appropriate fee schedule and monetary compensation for MC necessary	Kornelsen et al., 2023
	Public Policy	Concerns about liability and risk	Taylor et al., 2023; Fredrickson et al., 2023; Marshall et al., 2022
		Liability insurance expensive	Kornelsen et al., 2023
	Legal & Regulatory	Malpractice concerns	Baretto et al., 2019; Preston et al., 2015; Dresden et al., 2008; Burns

			et al., 1999
		Litigation can arise from MC, FP concerns	Preston et al., 2015
		Avoiding malpractice suits	Dresden et al., 2008; Burns et al., 1999