



**An Early Feasibility Study of Midwifery Services
in a Vulnerable Population**

Collaboration between

Health Systems Evaluation & Evidence (formerly Workforce Research and Evaluation), Alberta Health Services

Aspen Family and Community Network

University of Calgary, Faculty of Social Work

Clinical Workforce Planning, Alberta Health Services

Mount Royal University, School of Nursing and Midwifery

Alberta Association of Midwives

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- Calgary registered midwives who participated in interviews

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EXECUTIVE SUMMARY

Key Issues

Canadian women and newborns are usually healthy due to the availability of essential elements of maternal health, including prenatal care, birth attendance by skilled providers, and postpartum care. However, social determinants of health such as income, employment, education, and social supports can have a significant impact on women's ability to obtain high quality, comprehensive care. This may be particularly true during pregnancy, which can impact women's birth outcomes.

The primary purpose of our study was to explore the feasibility of implementing midwifery services to improve social and health outcomes for vulnerable women experiencing low risk pregnancies. Midwives offer care that is woman- and family-centred and they are trained to manage low-risk pregnancies independently. Midwives take a holistic approach to care by considering clients' emotional, psychological, and social needs in addition to pregnancy-related health needs. We aimed to understand whether a midwifery model of care might be supported by the community as an alternative to physician-led maternity care.

We partnered with the Aspen Family and Community Network Society ("Aspen"), which helps vulnerable individuals and families to overcome adversity with the goal to build sustainable change. Aspen community members experience high levels of stress because of their socioeconomic situation, with high rates of smoking and poor dietary habits. There are high rates of teenage pregnancy and women are more likely to be single mothers.

We used a mixed methods approach to answer our study questions. This involved using both quantitative and qualitative methods in the forms of healthcare utilization administrative data, a survey of Aspen's female clients, interviews with female Aspen clients and Calgary registered midwives, and focus groups with Aspen staff.

Key Findings

The findings from our study support midwifery as an acceptable and perhaps more appropriate maternity care model than traditional care for vulnerable women with low-risk pregnancies.

Population Needs:

Our administrative data results showed that 16% of women residing in the Aspen catchment areas receive social assistance; those that do tended to be younger and have more pregnancies than those who do not receive assistance. Women receiving assistance also tended to have fewer birth interventions while also having higher antenatal risk scores (influenced by cigarette, alcohol, and drug use). These women accessed emergency care more often during pregnancy than did women not receiving assistance and had higher rates of inpatient care, although primary care visits were within prenatal guidelines for both groups.

Our results from 76 surveys showed that most respondents had used a physician for previous maternity care; most reported being satisfied with that care and 77% said they would use a physician again. All respondents who had previously used a midwife were satisfied and 90% would use a midwife again.

Benefits of Midwifery:

Holistic Approach to Health and Social Needs. Midwives are holistic health care providers that consider needs well beyond standard maternity care. During a standard course of care, they focus on the social and emotional needs as well as the pregnancy-related health needs. The biggest potential benefit of midwifery care noted by study participants was the ability to address social and emotional needs that can significantly affect the health of vulnerable women.

Continuity and Access to Care. The continuity of care provided by midwives was seen as integral to building trusting relationships between women and their midwife. Clients in this population may hold a deep mistrust of the health care system and be reluctant to seek care due to past negative experiences. The strong, positive relationship that could be developed with a midwife was thought to help create better communication and make vulnerable women more comfortable disclosing issues they are struggling with. Furthermore, the accessibility of midwives, especially their ability to do home visits, was seen as a major advantage to reducing access barriers for vulnerable women.

Acceptability:

Given the benefits discussed above, our results suggest that midwives would be an acceptable birth provider for vulnerable women. However, we caution that women should have a choice of birth provider, which could be a midwife, physician, or other care provider. Interviewees noted that the acceptability of midwifery typically depends on a

number of factors such as culture, previous pregnancy experience, and ultimately, what women wanted from their birth experience. A few clients stated that they would not choose a midwife because they were very satisfied with the care they received for their past pregnancy and also because they were unsure of the safety of midwifery; knowledge about midwives' scope of practice seemed to affect this decision.

Barriers and Facilitators:

A major challenge to implementing midwifery services for vulnerable women was the lack of awareness and knowledge about midwives. Some client interviewees were unaware that midwives existed in Alberta and that there was no fee for their service. These sentiments were echoed by midwives, who stated that the public continues to hold misconceptions about what midwives were trained to do, the safety of midwifery, and where midwives could assist in births. This lack of knowledge needs to be addressed in order for midwives to be viewed as acceptable birth providers for vulnerable women. Additionally, given the complex issues that some vulnerable women experience they may require referrals to various types of programs. Many health services require a physician referral and will not accept a referral from a midwife. Finally, midwives saw funding as a potential challenge. They were mindful that working with vulnerable populations required more work and time, particularly if more home visits were expected, and noted that additional funding should be allocated to courses of care for vulnerable women to compensate.

Participants identified two crucial factors for implementing a successful midwifery model of care in a vulnerable population: 1) Access to an interprofessional team to ensure that midwives can meet all the needs of women and improve social and health outcomes; 2) Delivery of midwifery services in a “one stop shop” that houses other services like social work, public health, or physician access to increase the likelihood that women would use midwifery services and attend appointments. Overall, it is important to remove as many access barriers as possible.

Implications

Our findings suggest that midwifery would indeed be an acceptable and perhaps more appropriate maternity care model for socially disadvantaged women than traditional maternity care led by a physician. Midwifery care extends beyond pregnancy-related needs and moves into the realm of individualized, holistic, family-centered care that meets the physical, social, and emotional needs of women and their families. This is particularly important for women that live in socially disadvantaged circumstances and

require attention in many facets of their lives. The literature suggests that the individual and intimate care and support that midwives provide has the potential to improve social and health outcomes of vulnerable women and their children. Our results suggest that women served by Aspen could stand to benefit from the type of care provided by midwives. The study has also highlighted some of the key aspects that need to be considered to successfully implement midwifery services for socially vulnerable women. Empowerment of women during such a vulnerable time in their lives can be crucial to enhancing confidence in themselves and in their parenting ability, which can directly impact child attachment and the early childhood development of their children.

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CONTEXT

Canadian women and newborns are usually healthy due to the availability of essential elements of maternal health, including prenatal care, birth attendance by skilled providers, and postpartum care¹. However, not all Canadian women have equal access to maternity services. Lack of access is a problem among socially vulnerable populations, rural or remote populations, and on Aboriginal reserves²⁻⁷. Lower socio-economic status, lower education level, place of residence, lower health literacy, and low social support are elements that can contribute to pregnant women's inability to obtain quality and comprehensive care which can impact their birth outcomes⁸⁻¹¹. A recent study suggests that different healthcare-seeking behaviours (e.g., late engagement with healthcare services and poor communication with healthcare providers) may explain suboptimal birth outcomes among these women¹² (e.g., preterm birth, low birth weight, and neonatal mortality^{9, 13-17}).

An extensive body of literature documents that improving access to maternity care for vulnerable women is associated with positive birth outcomes,¹⁸⁻²¹ positive parenting practices,²²⁻²⁹ and healthy early childhood development³⁰. Therefore, it may be beneficial to explore alternative models of maternity care, such as midwifery care^{31, 32}, that address not only maternity health, but also the social needs of this population.

Midwives offer maternity care that is woman and family-centered and based on three main principles: continuity of care, informed choice, and choice of birthplace. Midwives' scope of practice extends beyond medical care to include emotional, psychological, and social needs³³ which could be beneficial to vulnerable populations.

According to the *Canadian Midwifery Model of Care*³⁴, midwives are trained to manage low-risk pregnancies independently as well as manage high-risk pregnancies within an interdisciplinary model of care, e.g., in collaboration with obstetricians. Evidence shows that midwifery services improve access to quality maternity care as well as maternal and infant outcomes especially for vulnerable women^{14, 18, 35}. Midwifery services also show comparable birth outcomes compared to physician care and may be a cost-effective alternative to physician care³⁶⁻⁴¹.

In comparison to other developed countries, midwives play a relatively small role in the provision of low-risk maternity care in Canada, especially in Alberta where only about 4.1% of babies are delivered by midwives⁴². In Alberta, publicly funded midwifery services were introduced in 2009 as a means to improve access to low-risk maternity care⁴³. The majority of midwifery practices are in higher income neighborhoods in Calgary and Edmonton, and less than ten percent of midwifery clients reside in the most deprived neighborhoods⁴⁴. As a result, challenges remain for vulnerable women in terms of the distribution of midwives and equitable access to their services across Alberta.

To examine the feasibility and acceptability of embedding a midwife in a socially and economically vulnerable community, we developed a new research partnership between Alberta Health Services (AHS), Aspen Family and Community Network (Aspen)⁴⁵, Mount Royal University, and University of Calgary. Aspen is a charitable social service organization working in Calgary since 1984 which helps vulnerable individuals and families to overcome adversity by partnering with them to find a sense of hope and build lasting and sustainable change for their future. Anecdotal information from Aspen's leadership and front-line staff suggested that Aspen clients who are

pregnant access multiple, sporadic, and often uncoordinated maternity care services across several sites, including family physicians, walk-in clinics, community health clinics, or emergency departments. There are high rates of teenage pregnancy and women are more likely to be single mothers. They experience high levels of stress because of their socioeconomic circumstances, with poor health behaviours such as high rate of tobacco use and poorer dietary habits. Exploring options to provide innovative new maternity care support for vulnerable women like Aspen female clients has the potential to build strong connections with them and their families into the future, and positively influence early childhood development.

Research Questions

The primary purpose of this study was to explore the feasibility of implementing midwifery services to improve health and social outcomes for vulnerable women served by Aspen. We also aimed to understand whether the midwifery model of care might be supported by the community as an alternative to physician-led maternity care and accepted and utilized by Aspen's female clients. We aim to answer the following questions:

1. What social and maternity health issues do Aspen's female clients currently face?
 - a. What social and health outcomes could midwifery services impact for women receiving services from Aspen?
2. What are the perceptions of midwifery services among Aspen leaders, Aspen front-line staff, Aspen female clients, and Calgary midwives?

- a. How could a midwifery service model benefit Aspen’s female clients and their families?
 - b. Would midwives be accepted and utilized by Aspen’s female clients as a maternity care provider?
3. What are the potential barriers and facilitators to implementing midwifery services for Aspen female clients and vulnerable populations?

IMPLICATIONS

Social determinants of health such as income, employment, education, and social supports can have a significant impact on women’s ability to live to their full potential and to address her physical and emotional needs as well as those of her family. This is especially true during pregnancy.

The findings from our study are relevant to all health and social service agencies that work with vulnerable women. Examples may include women living in poverty, at risk for homelessness, or who experience mental health and addictions issues. Our findings suggest that midwifery would indeed be an acceptable and perhaps more appropriate maternity care model for vulnerable women living in these circumstances than traditional maternity care led by a physician. The benefits of midwifery as stated by our study participants extend well beyond addressing pregnancy-related care and move into the realm of individualized, holistic, family-centered care that addresses physical, social, and emotional needs of women and their families.

Our study participants believed the strong relationship that typically develops between midwives and their clients was one of the benefits of midwifery services. This

relationship is nurtured by the continuity of care provided by midwives. Having a consistent maternity care provider throughout the pregnancy is thought to help women develop trusting relationships. This relationship is vital because we heard from study participants that vulnerable women typically hold a deep mistrust for healthcare providers because of previous experiences of judgement and mistreatment. This trusting relationship can promote open communication between midwives and their clients and provide women a safe environment to share issues that may significantly impact on her pregnancy such as food insecurity; domestic violence; poverty; and lack of access due to transportation, mobility, or child care. Another perceived benefit of midwifery is the accessibility of midwives which includes longer appointments (thirty minutes), home visits, and 24/7 access via pager or mobile phone. This accessibility strengthens the confidence and trust women place in their midwife because they know that they will be taken care of at all times during their pregnancy.

Access to an interprofessional team was a key theme that emerged from our interviews with midwives. The majority of midwives acknowledged that the complexity of serving vulnerable women experiencing issues related to mental health and social issues may surpass the knowledge and skills midwives have. Therefore, access to other professionals and community resources, such as social workers and physicians, was perceived as imperative to meet all the needs of women and have a direct impact on their health and social outcomes.

Our study is also relevant to service planners as it revealed a number of challenges that need to be considered to successfully implement midwifery services for vulnerable populations. Firstly, the lack of knowledge of midwifery services that

currently exists among the public and healthcare providers need to be improved.

Misconceptions about the care midwives are trained to provide, the safety of midwifery services, and associated costs were perceived to be common among the public and thought to hinder the successful uptake of midwifery. Another potential challenge mainly spoken of by the participant midwives included funding. Midwives were cognizant that working with vulnerable populations required more time and resources, particularly if home visits were expected. They were hopeful that additional funding would be available to allocate to courses of care for vulnerable women to compensate for the additional workload.

Ultimately, we believe that the individual, intimate care and comprehensive support that midwives provide can improve the well-being of women and children living in vulnerable circumstances. Addressing all of the mother's needs in a safe and secure environment provides the mother with the opportunity to prioritize and focus on her pregnancy. Midwives can empower women by involving them in decisions around their pregnancy. Empowerment of vulnerable women during such a vital time in their lives can be crucial to enhancing confidence in themselves and in their parenting ability which can directly impact child attachment and the early childhood development of their children.

APPROACH

We used a mixed-method approach that included quantitative and qualitative methods to explore the feasibility of implementing midwifery services to improve health and social outcomes for vulnerable women currently served by Aspen. This project was

approved by the Conjoint Health Research Ethics Board (CHREB) at the University of Calgary.

Population Profile & Survey

Population Profile

To better understand the health and social vulnerability of Aspen's female clients and how they currently access maternity care services, we collected data from a number of sources including Aspen's information system and AHS administrative databases. AHS databases included the Alberta Perinatal Health Program (APHP), Alberta Health Practitioner Claims Database, AHS Admission Discharge Transfer Database, Discharge Abstracts Database, National Ambulatory Care Reporting, Provincial Registry Database and Statistics Canada. These databases were accessed to obtain maternal and birth outcomes data related to all physician and midwifery assisted births, primary care visit data to determine access to prenatal care and utilization of prenatal care services, as well as population health measures and socioeconomic characteristics. Since Aspen does not collect data that uniquely identifies women using their services we were unable to directly link their data to health outcome data. In place of this, we used postal code data for women receiving services at Aspen as a proxy for a unique identifier. Firstly, we provided Aspen postal code data to APHP. APHP then pulled data related to all females in those postal codes who had a birth from January 2013 to 2015. The data pull included maternal and birth outcome data along with the Provincial Health Care number (PHN) of each mother. We used this PHN to link to all other AHS databases. Using postal codes instead of personal healthcare numbers in our initial step may have resulted in including

data from women that did not use Aspen services. However, we felt this error was acceptable as these women likely shared a similar socioeconomic profile of Aspen service users.

Inferential and descriptive analyses were completed on the administrative data using SAS software, version 9.3.

Survey

To assess Aspen's female clients' maternity care experience and satisfaction with their care, we designed a short survey containing four Likert scale items and one open-ended question (Appendix A). We administered the survey with the assistance of Aspen staff. We offered both paper and online surveys. The paper surveys were distributed and collected by research team members at community events held by Aspen such as Christmas parties or the programs held by Aspen in Parents Link Centres in Northeast Calgary. We placed the survey online for participants who preferred to complete the survey online. The links to the online surveys were outlined in the survey handout which was distributed to Aspen clients by Aspen front-line staff. We used REDCap, a survey tool securely administered by the University of Calgary. We administered the survey in six different languages: English, Arabic, Punjabi, Urdu, Hindi, and Tagalog. We used descriptive statistics to analyse survey data using SPSS IBM software, version 9.

Interviews & Focus Groups

Aspen Female Client Interviews

Using a semi-structured interview guide we interviewed women currently using Aspen services that gave birth at least once in Calgary after midwifery services were

publicly funded by the government of Alberta in March 2009. The interview guide included questions on potential barriers to accessing maternity services, utilization of midwives if services were available to them, and reasons behind their choice of birth providers (Appendix B). Participants were recruited with the assistance of Aspen front-line staff. Those clients who were interested in being interviewed were contacted by a member of the research team to schedule their interview. Interviews were conducted face-to-face or on the telephone depending on the preference of study participants. Informed consent was secured at the outset of interviews. Prior to beginning the interview clients were asked if they had an understanding about midwifery in Alberta. A brief 15-minute overview on midwives and their scope of practice was provided to those participants that said they did not know about midwifery in Alberta (Appendix B). At the end of the interview, all participants received a \$25 grocery store gift card to thank them for their participation.

Calgary Registered Midwives Interviews

To obtain midwives' perceptions on how midwifery care may benefit vulnerable women we conducted semi-structured interviews with Calgary midwives. The interview questions are outlined in Appendix C. We recruited registered midwives with the assistance of the Alberta Association of Midwives. Informed consent was secured at the outset of telephone interviews. Through these interviews, we identified some potential barriers and facilitators in implementing midwifery services for a vulnerable population and their possible interest in offering midwifery services to a community like Aspen should such an opportunity arise.

Aspen Leadership Team and Front-line Staff Focus Groups

To gain the Aspen team's perceptions on the current gaps and needs in maternity care services and the potential impact of midwifery services on health and social outcomes of their clients, we held group interviews with the Aspen leadership team and front-line staff. Participants signed an informed consent prior to the focus group. We began the focus groups with a 30-minute presentation on midwifery services, midwives' scope of practice, the benefits and outcomes of midwifery based on the literature, and current gaps in Calgary. The goal of the presentation was to provide an understanding of midwifery in general and familiarize them with the services midwives can provide so that they could readily discuss midwifery and its possible benefits during the focus group. The focus group guide is outlined in Appendix D. Focus groups provided information on whether the holistic approach of midwifery could benefit socially disadvantaged women and the potential facilitators and barriers to implementing such services.

All individual interviews and focus groups were transcribed verbatim and imported into qualitative analysis software (NVivo 10). Common themes were identified using a template style of qualitative analysis⁴⁶. This style of analysis uses the interview guide as classification scheme to identify units of interest for analysis and interpretation. Analysis was iterative such that new themes that fell outside of the classification scheme were added to the analysis as they emerged.

RESULTS

Population Profile

Linking Aspen postal code data to AHS administrative databases resulted in a total sample size of 7493 women. This sample included females residing in Aspen's catchment area (defined by postal code) who had accessed maternity care services in the years 2013, 2014, and 2015.

Using this data, we developed a profile of women residing in Aspen catchment areas, including socioeconomic characteristics, health service utilization, and maternal health problems faced by this population. This profile served to identify gaps that midwifery services could address. Approximately 15.5% of women in the sample received social assistance. We used social assistance as a proxy for social vulnerability because none of the databases contains indicators that specifically measure social vulnerability. Examples of social assistance included First Nations programs, Assured Income for Severely Handicapped (AISH), welfare, and other government sponsored programs. Further administrative data analysis revealed that females residing in Aspen's catchment area who are receiving social assistance were younger [(Mean age=28.11; SD=5.99) vs. (Mean age=30.10; SD=5.06); $p < .0001$] and had statistically significantly more pregnancies than those not receiving assistance [(3.44; SD=2.16) vs. (2.42; SD=1.43); $p < .0001$]. Women receiving social assistance also differed significantly in birth delivery method ($p < .0001$). They tended to have more vaginal births, less caesarean sections and less assisted births (forceps/vacuum).

Further statistically significant differences were found in antenatal risk scores. Women receiving social assistance tended to have higher antenatal risk score (influenced by smoking, alcohol and drug use) than those not receiving assistance [(3.28; SD=3.12) vs. (2.49; SD=2.54); $p < .0001$]. The Antenatal Risk score calculation is based on mothers' health and social related factors (smoking, alcohol drinking, and drug use) on initial booking and at 36 weeks pregnancy in Alberta. A score between 0-2 indicates a low risk assessment, between 3-6 moderate risk, and ≥ 7 indicated a high risk assessment⁴⁷. The mean antenatal score for our study sample was 3.28, placing our sample in the moderate risk category. This means they had a higher than average risk of experiencing complications during and after pregnancy.

We also examined maternity care service utilization among our study sample during pregnancy and for six weeks in the postpartum period. This included visits to diagnostic imaging, primary care, emergency care, ambulatory care, urgent care, acute care. Inferential statistics were not run on this data because of data accuracy constraints.

Preliminary descriptive analysis showed that women receiving social assistance accessed emergency care more often during their pregnancy [(7.12; SD=5.16) vs (5.26; SD=3.94) and accumulated more inpatients visits than those not receiving assistance; (6.11; SD=6.22) vs. (3.45; SD=6.22)]. There were no differences between women receiving assistance and those not receiving assistance in their access to a primary care during their pregnancy. Primary care visits during pregnancy averaged around 12 for both groups which is well aligned with Alberta prenatal care guidelines⁴⁸ [(11.58; SD=4.50) vs. (12.93; SD=4.70)].

Descriptive analysis of data during six weeks postpartum, for our study sample, did not show any differences in what health services women receiving assistance utilized versus those not receiving assistance. For example, mean visits for both groups appeared to be similar in emergency, acute care and primary care.

Finally, analysis also showed that there is a statistically significant difference in birth provider chosen among women living in Aspen catchment area. Women who received social assistance utilized a midwife significantly less than those not receiving assistance (0.61% vs. 2.15%; $p < .0001$).

More detailed statistical results are presented in Appendix E.

Survey Results

In total, 105 women completed the survey (100 paper copy and 5 online). Since our study focused on low-risk pregnancies we excluded surveys that were completed by women who experienced a high risk pregnancy and we also excluded surveys that were incomplete. A total of 29 surveys were excluded from our analysis. This resulted in a final survey sample of 76 surveys. Of these, 93% (n=71) reported receiving regular care during the pregnancy. Figure 1 shows that the majority of participants (79%) had seen a doctor versus a midwife (13%) during their pregnancy. All the participants who had seen a midwife reported having had ten or more visits with their midwife. Among participants who had seen a doctor, over 73% (n=44) reported having ten or more visits, 22% (n=13) had between 5-10 visits, and 5% (n=3) did not respond.

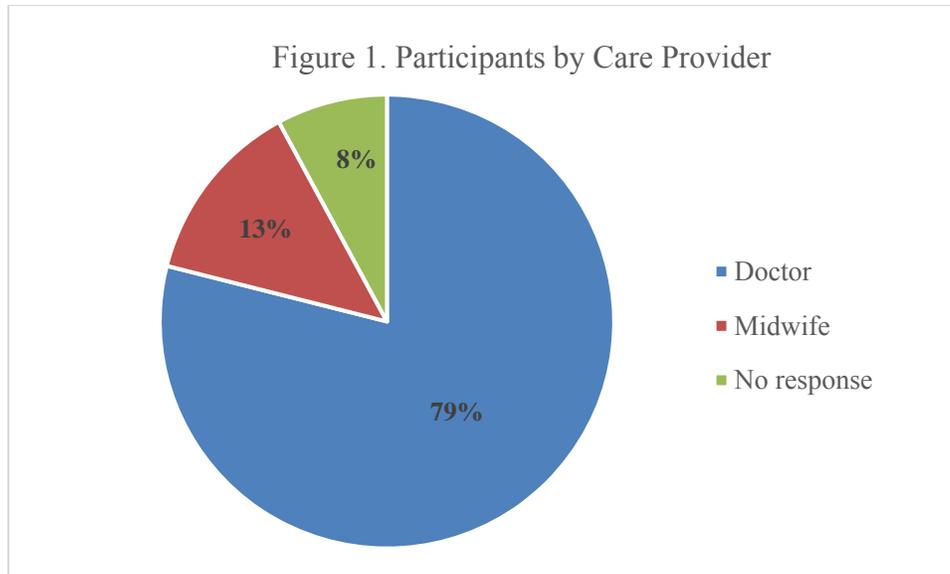


Figure 2 shows participants' satisfaction with the care received during their pregnancy. Briefly, of those who had seen a doctor, few (17%, n=10) reported being dissatisfied, whereas the rest reported being satisfied or very satisfied. Patients who had seen a midwife were all either satisfied or very satisfied with their care.

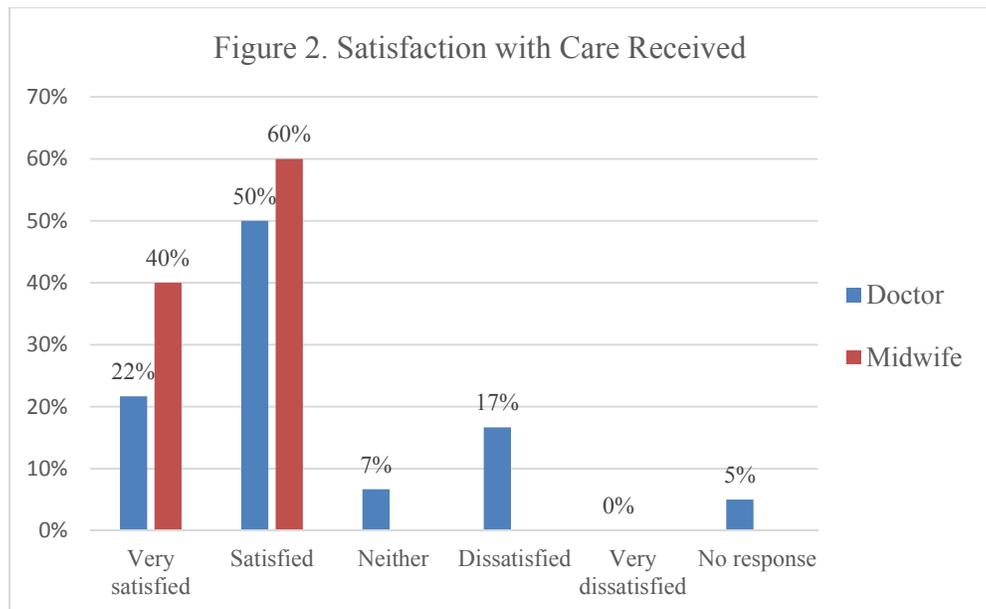
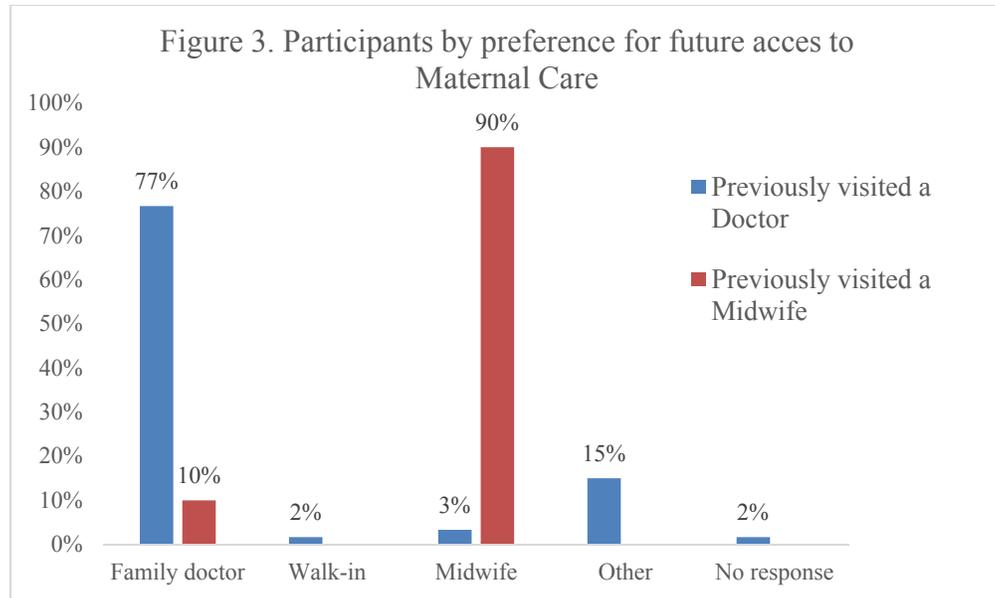


Figure 3 shows where participants stated they would seek future maternal care. Approximately 77% (n=46) of participants who had accessed a doctor indicated that in the event of a future pregnancy, they would visit a doctor again. Among participants who had seen a midwife, only one expressed an interest in seeing a family doctor for future pregnancies.



Interviews & Focus Groups Results

We conducted 17 interviews with Aspen female clients and eight interviews with registered midwives practicing in Calgary. We also held four focus groups with Aspen staff: two with Aspen front-line staff, one with program leads, and one with Aspen’s leadership team, with a total of 18 participants.

Socioeconomic Characteristics of Aspen Female Clients: We asked Aspen female clients to share their prenatal and postnatal experiences during their past pregnancies. The majority of clients interviewed were renting a house and had difficulties with affording

monthly rent payments especially when the monthly utilities bills were high. They also had difficulties providing food and clothes for their families especially in the months with high utility bills; they generally prioritized food over clothes and used available community resources when needed. For these clients, Aspen was the first community network that they approached and got financial assistance and referrals for a variety of resources like food banks and other supplies. Other community resources used by the participants included Calgary Learning Village Centre, Christmas Hamper, School Backpack program, Best Beginnings program, and Alberta Works. Client participants stated that they usually purchase their clothes and other necessities from thrift stores. Few (5/ 17) of the interviewed clients were home owners who were able to pay their monthly mortgage payments without difficulty. These few participants were also able to provide food and clothes for their families without any difficulties.

Most interviewed clients described themselves and their families as physically and mentally healthy; two indicated that they suffer from anxiety and depression.

Aspen Clients' Access to Prenatal Care for Past Pregnancies: All of the client participants had accessed prenatal and postnatal care throughout pregnancy and after birth. They had received routine examinations and tests to monitor the health, growth, and development of themselves and their babies including blood tests, ultrasounds, and pap tests. A family physician was the primary care provider for all of the client participants except one who was under a nurse practitioner's care. The client participants with low-risk pregnancy visited their care providers once a month until 30 weeks of gestation, once every two weeks until 36 weeks of gestation, and once a week until delivery. They were usually referred to a maternity care clinic around 28 weeks of

pregnancy. Four client participants had high-risk pregnancies due to identifiable medical and health risks and were referred to an obstetrician by their family physicians. No client participants missed any of the regular prenatal appointments.

The majority of client participants did not report problems with getting to see a care provider during their pregnancies. Most of them used public transportation (e.g., C-train and bus) to get to the clinics. Distance and child care especially in winter time were two major challenges that some of the client participants faced accessing care.

“I was living in the northeast and the maternity clinic was in the southwest of Calgary. It take[s] about one hour and a half to two hours.” (Aspen Client)

“Any time that I went to see doctor during my pregnancy I had to take the other children with me because my oldest kids are in school. The cold weather also made it more difficult to travel such a distance.” (Aspen Client)

Knowledge about Midwives: The majority of the client participants (13/17) had never heard about midwives and their practices in Calgary. Those who had heard about midwives did not know what kind of service midwives can provide, cost associated with these services or where in Calgary midwives are practicing. They had heard about midwives through friends, home countries, or on the news. Only one client participant received any information about midwives from their primary care provider. However, she did not receive complete information.

“... my care provider gave me the options about midwives and doctors but I didn’t know that midwives were covered. She didn’t inform me on that so I thought that’s going to be \$5000. I just stick with the doctor and I had a birth

doula. I thought if birth doula were that much then midwives would be like a lot more expensive.” (Aspen Client)

Aspen staff focus group participants also acknowledged that lack of awareness about available maternity services is an issue for their clients as well as lack of knowledge about what a normal pregnancy should look like.

Social and Health Disparities: According to Aspen staff, their female clients struggle with poverty, addictions, and trauma. As such, a pregnancy is often not their top priority. Participants stated that these women may also be hesitant to seek medical attention due to past experiences (i.e., poor treatment) and/or fear of stigma and bias.

“The clients that we support, whether they’re engaged in a high-risk lifestyle ... there’s a hesitancy to access appropriate healthcare based on how they are living too right? The judgment that will come with... this is their lifestyle whether that be you know, drinking, drugs or whatnot.” (Aspen staff)

Aspen staff believed that the biggest social disparity among their clients is the lack of a healthy social support network. They noted that many of these women did not have strong, reliable connections to their family, community, or health team. Access to transportation and poverty were other commonly identified social disparities.

Unemployment and homelessness also contributed to poverty.

“So we have a mom who has three children trying to get them out the door to her appointment and she’s late and doesn’t get there. And because she has to get on the bus, the bus is stuck in traffic, she finally gets to her appointment at Children’s Hospital she’s half an hour late and the appointment is cancelled because she’s late.” (Aspen staff)

According to Aspen staff, some of their clients additionally suffered abuse. Many women were “*fleeing domestic abuse*” or were more at risk of it while pregnant.

Addiction and trauma history are other social disparities among this population.

Aspen staff identified mental health issues including depression as the main health disparity facing their clients. They also stressed that their clients suffered from diabetes and high blood pressure.

Benefits of Midwifery Services: Midwifery care was perceived to be a beneficial service for vulnerable women by Aspen staff, Aspen clients, and midwives.

Accessibility: The high accessibility of midwives (through pagers or cell phones, longer appointments, home visits, and home births) compared to other care providers was seen as a benefit for this population.

“I think midwives would be able to provide that more holistic environment where you can build trust and have a relationship instead of feeling like you’re on a cattle call at a doctor’s office going in for 5 minutes. Not feeling like the person who is treating you even knows you or cares about you and what you’ve been through.” (Aspen staff)

Aspen client participants also highlighted the level of comfort and convenience that home visits would bring to them and their family.

“...it sounds like a very great way of having to go with the medicals, if one day I am not feeling well, it would have been nice for them to come in home. It seems like a lot more supportive.” (Aspen client)

Some Aspen clients also commented that delivering at home and surrounded with familiar people would be enjoyable for them.

“Having a midwife and home delivery makes mothers in the labour more relaxed if she had been in a home setting and not having all of these strangers all around her.” (Aspen client)

Continuity of care: Another noted benefit to accessing midwifery services was the continuity of care and midwives’ presence throughout pregnancy, at birth, and following birth.

“For me it’s the continuity from prior to birth all the way through to afterbirth where you’ve got a relationship with someone who can be a guide and a mentor and a coach to assist you to build skills and be able to advocate for yourself as the expert because you’re the mom.” (Aspen staff)

“So that continuity I find just builds trust and knowing each other. So I feel like by the time we get to the third trimester with our moms, we know them pretty well and we know their family situation and work situation and challenges, so the continuity of care is a real benefit.” (Midwife)

Continuity of care was seen by Aspen clients as a means to build a meaningful relationship with their midwives which leads to connections throughout pregnancy and after birth. They also believed that the continuity of care can give them an opportunity to see a familiar face during the labour.

“[Midwives] are more close, they’re going to visit you after delivery. I think maybe a closer connection because [they] would be almost like friends. More than just seeing someone and then leaving.” (Aspen client)

“Just to get along with them..., if I feel I have that emotional connection, I feel I can trust them with what I need to tell them and what’s going on with me,

then I'm going to feel comfortable with that person delivering my child". (Aspen client)

".... if you see the same person during the pregnancy then the same person deliver the baby, it's better. I like that one and then you see the doctor at the end of the day if he or she is not on duty, somebody else doesn't have your information, from deliver the baby, just go to the file, read the notes, that's what they do I think." (Aspen client)

Holistic care: The holistic approach of midwifery care was seen as desirable by some of the Aspen client participants.

"Yeah so when you go to see [a] doctor it's like the support he[/she] gives you is about your body and physical health related. But a midwife is like a friend you get the psychological help, the emotional help. There's more of a friendship,of course during the whole pregnancy but also of course especially during the birth." (Aspen client)

"I've heard of people getting depressed but I had no idea that it could be so bad. Until I got some medication and really learned that it actually is a condition. [Midwifery care] just seems a really, really plausible option for me.

That I could have someone to talk to." (Aspen client)

Trusting relationship: Finally, a trusting relationship was seen as an important benefit for vulnerable women. Aspen staff believed that women would feel supported and cared for by midwives and that midwifery care would facilitate trust and openness between clients and their care provider. This trusting relationship would help women feel safe and share more openly the stressors that are impacting her and her family.

“I think because we have really good continuity with the women that we take care of we really get to know them and they get to know us. So sometimes the women who are reluctant to disclose trouble in their relationship or histories of abuse or social issues like that, begin to feel more comfortable as they get to know us.” (Midwife)

Acceptability of Midwives as Care Providers: Midwives and Aspen staff believed that midwives are able to address all necessary medical needs of women during their low risk pregnancy as well as including physical examinations, ordering required laboratory and diagnostic imaging tests, and prescribing pregnancy-related medications. They are also trained to provide counselling for mild emotional issues. For more serious medical or mental health issues, midwives can consult with obstetricians and psychologists, and were said to be adept at tapping into community resources to address other social and economic needs of women and their families, such as low income supports for food and housing.

Midwives noted that whether they are perceived as acceptable birth providers to socially disadvantaged women could depend on women’s culture as some cultures are more open to midwifery than others. Also, the want for a female birth provider may drive some women to use midwifery because physician-led models cannot guarantee the gender of the provider that will assist in birth.

“It depends on the population and the history there because in some cultures it’s not acceptable. So it just depends culture to culture. I have clients that are indigenous and that’s widely accepted there. The clients that I have that are Iranian are successful there, but I know that’s not true of all of the Middle

East. In some cultures it would be more acceptable to have an obstetrician.”

(Midwife)

This was also stressed by some of the Aspen clients:

“Many women they don’t like to be treated by men. Like physician men you know. So that’s another thing they want to see only lady doctors or maybe lady midwife so probably that’s another advantage.” (Aspen client)

Furthermore, midwives noted that their style of maternity care is not for everyone and that some women may prefer a more medical approach to pregnancy and birth.

Ultimately, midwives were strong advocates for women to have a choice in birth provider.

We also asked Aspen clients to comment on their expectations of midwives as a potential future care provider. All of the participants expected that midwives in the role of primary care providers would take full responsibility of the medical care during the pregnancy as well as of the clinical care during the labour and after birth. Managing emergency situations during the labour also was one of the participants’ expectations of a midwife.

“So the most important thing is that they follow up with the mother and the baby, making sure that the baby is ok and normal that’s the most important thing.” (Aspen client)

“Probably one of the expectations will be to get to deal with any problem right away. So that she’s well prepared and has the knowledge enough to deal with anything that happen to me. That’s one of the biggest expectation.” (Aspen client)

Another expectation held by the majority of Aspen client participants was that midwives would provide proactive support (emotional, psychological, social) for themselves and their family to prepare them for and deal with changes during pregnancy and labour.

“I would be expecting a lot of a social care from them. I understand that they are educated to help you with your pregnancy but more like emotional support. I think it’s extremely important especially in this country where we are so socially isolated. Even, I was living with my in-laws,...but still I did not get the care that if I had gotten the help it would have not probably gone so bad.” (Aspen client)

They also expected to spend quality time with a midwife during prenatal visits so that their questions could be answered fully. They spoke of the importance of education throughout the prenatal period, birth, and postpartum. Participants believed that counseling is an important component of midwifery care to build knowledge about the whole childbearing experience.

“I guess answer any questions I would have in a way I can understand.”
(Aspen client)

“My expectation would be just to help me move on through my pregnancy and coach me. If I was not familiar with what was going on, just to educate me, and help me as far as to maybe make things more comfortable, the best experience that it would be able to be for me.” (Aspen client)

When asked to comment if midwives would be able to help them with problems outside of their pregnancy, most Aspen client participants believed that midwives can

direct them to reliable resources. They mentioned that they would be comfortable sharing their problems with midwives because of trust developed between them throughout the care.

“I would hope that [midwife] could direct me in the right direction to somebody that could [help me], so I would expect that they could at least [get] that information if they don’t have it themselves.”

“They can certainly tell you about the resources. I think that really matters right. Because resources are available here I never knew about this but they can tell you about the resources.”

Openness to beliefs and culture, honesty, and no judgment were other expectations that our participants mentioned.

Few client participants were not keen to use a midwife for their next pregnancy or were reluctant to recommend a midwife to family and friends. Their reasons for not accepting a midwife were safety concerns, trust and satisfaction with their past care providers, and fear of the unknown.

Safety concern: Some client participants experienced complicated pregnancy and labour in the past, so they did not want to take any risks for the health of themselves and their babies.

“.....if everything had gone really smoothly for my first pregnancy or the labour it might have been something that I might have definitely considered. But after that it was never really an option.” (Aspen client)

Satisfaction with past maternity care: Some client participants were satisfied with their care during their past pregnancies, and were more comfortable having a doctor for the next one.

“I don’t know probably I just [trust] more a doctor than a midwife even they specialize in an area. Doctors have more experience and more years of study. So probably I would trust more in a doctor than a midwife even if they specialize in that area.” (Aspen client)

Fear of unknown: Fear of the unknown due to lack of awareness and knowledge about midwives and their services make it difficult for some client participants to imagine utilizing a midwife in future. They had not used a midwife as a caregiver in the past, so for them, having a midwife is a cultural change and would not be easy for them.

“Nobody introduce midwifery before so [I] do not know, so [I] just go where the doctor refers [me].” (Aspen client)

“I don’t know how to reach them,I don’t find that they were as readily available like where I knew a lot of places to go for a midwife. I’m not really too sure how to go about it ...” (Aspen client)

Facilitators of Implementing Midwifery Services: According to the client interviews, midwives’ interviews, and staff focus groups, making midwifery services more acceptable to Aspen’s female clients requires increased awareness and visibility, a “one-stop shop,” and persistence and flexibility.

Increased awareness and visibility: It was seen as important that all the workers and agencies who might be in contact with pregnant women be aware and knowledgeable about midwifery services and functions. Currently, Aspen clients do not believe there is

enough advertisement about midwifery services in their communities. Staff felt that, rather than providing patients with “*a piece of paper*,” they needed to explore all aspects of midwifery services with them and have conversations with their clients to ensure that they would be comfortable and able to access the services. Aspen staff did note that once women start accessing the services, they would talk and share their experiences with others. Consequently, connections would be established through word of mouth.

Other methods proposed to increase awareness were through advertising at the shelter, using commercial clips, through Alberta Works, at maternity clinics, or at physicians’ offices. Other services and programs (e.g., Best Beginnings) could also serve as a platform to introduce such services.

One-stop shop: Having a “*wrap-around service*” emerged as another important facilitator as it would ease accessibility and transportation challenges.

[The service should be set up so that] “Mothers, they don’t have to travel from one place to another. They’ve got you know a knowledgeable front line person who can say “Ok, here’s what you need” or “Do you need this” and then start plugging in the services.” (Aspen staff)

Midwives noted that working in inter-professional teams would also provide them and their clients timely access to important resources and services.

Persistence and flexibility: Finally, persistence and understanding from midwives was seen as a key facilitator. Midwives must be cognizant that some of their clients will face certain barriers like transportation problems, have mental health issues, different priorities, and/or different cultural norms. This requires midwives to be flexible which could involve making home visits, re-scheduling appointments, and using simple

paperwork. Midwives' flexibility and customized care (e.g., option to choose between home or birth-centre, home visits, holistic care) may contribute to client's willingness to use and/or recommend their services.

Challenges to Implementing Midwifery Services: One of the major challenges mentioned by midwives and Aspen team was the perceived lack of public awareness of midwifery services.

“Most of our parents and families are not even more aware that they have some services like these. All they know is that they have to go to the hospital.”

(Aspen staff)

Midwives considered their lack of ability to refer women to other programs as a major challenge. Women have to get physicians to access, for example, mental and health programs, which creates another hurdle for women. This is one of the reasons why having access to an interprofessional team would be integral to meet all the needs of women. Access to an interprofessional team would also mitigate the challenge related to staying up to date on community resources.

Midwife participants thought that some midwives would likely agree to dedicate a small portion of their caseload to working with vulnerable women. They argued that working with vulnerable high needs populations would require a significant change in how midwives work potentially affect their work life balance and even increase stress.

“It's almost a niche interest for some. Socially I think many would be interested in having a small component in their caseload, but if it was predominant it would be quite a lifestyle change.” (Midwife)

Furthermore, most midwives interviewed stated that working with a vulnerable population requires more intense work emotionally and physically, particularly if more home visits are needed. To compensate, midwives stated they would like to see additional funding provided to allocate to courses of care for vulnerable women to compensate for the additional time and workload.

Summary and Conclusions

In summary, the findings from our study suggest that more than 15% (n=1164) of women residing in the Aspen catchment area received social assistance and would thus be considered socially vulnerable. These women were younger, had more pregnancies, and experienced a higher rate of unhealthy behaviours (e.g. smoking, drinking) which put these women at higher antenatal risk during and after their pregnancies. Women receiving social assistance also accessed emergency care more often during their pregnancy and had more inpatient visits than those not receiving assistance, which might be a reflection of the higher antenatal risk.

Interviews with Aspen female clients and Aspen staff confirmed that many of these women struggle to meet their basic needs (renting fee, utility bills, and food) and access regularly to community resources to meet their needs. The qualitative findings of our study suggest that maternity care led by midwives could have the potential to provide more support for vulnerable women during pregnancy and would be an acceptable and appropriate source of care for these women. Midwives offer accessible, continuous and holistic care, and are able to build trusting relationships with their clients. This model of

care would be well suited to meet the complex social and health needs of socially vulnerable women and their families.

We identified some potential challenges and facilitators that need to be addressed to successfully implement midwifery services for vulnerable populations. As for challenges, lack of knowledge about midwives and their services need to be addressed in order for midwives to be deemed acceptable birth providers for vulnerable women. Lack of knowledge about or access to midwives was confirmed by our quantitative data (administrative data and survey) that showed midwives were utilized less compared to physicians. Another identified challenge was allocating additional funding for midwifery care for vulnerable women since their maternity care would require more time. The main facilitators mentioned for successfully implementing midwifery services for vulnerable women were access to an interprofessional team, and providing midwifery services in a flexible, personalized manner.

FURTHER RESEARCH

Our feasibility study demonstrates that midwifery services may be an acceptable alternative to physician-assisted births for pregnant women living in socially disadvantaged circumstances. Further research needs to address how midwifery services can be designed, implemented, and evaluated to meet the complex health and social needs of vulnerable women. This study has two potential limitations that should be addressed in future research. First, we interviewed seventeen Aspen female clients but this sample may not have been representative of typical Aspen clients. Specifically, there is a difference between the client health and social issues described by Aspen staff and

those reported by Aspen client participants. Second, we did not interview any other primary care providers (e.g. general physicians, obstetricians, nurse practitioners). We suggest that any future research needs to include the voice of more women living in vulnerable circumstances and other health care providers in the design of the midwifery services to ensure they are indeed acceptable and include elements that promote their successful utilization.

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APPENDICES

Appendix A: Survey

Please answer the following questions.

- 1) Have you experienced a low-risk pregnancy (i.e. few or no problems) and given birth in Calgary?

Yes No (go to question 5)



- 2) If yes, did you receive medical care regularly (e.g. monthly visits first/second trimester, then more frequent towards the end of pregnancy) during your pregnancy and after childbirth?

Yes No
If not, why not?

From:

Doctor → Where? : _____

Midwife → Where? : _____

- 3) Approximately, how many visits to the doctor/midwife during the whole pregnancy?

- 4) How satisfied were you with care you received?

Very dissatisfied Dissatisfied Neither Satisfied Very Satisfied

- 5) If you found out you were pregnant today where would you go to access medical care?

- My family doctor
- Walk-in clinic
- Midwife
- I would not go to the doctor
- Other _____

Appendix B: Individual Interview Guide – Aspen Female Clients

Questions

1. Are you and your family having problems with housing, having enough money to buy things like groceries or rent? If yes, please describe.
 - a. Are you and/or your family having any problems with your health?
2. Did you see a doctor during your last pregnancy? If yes, how many times did you see a doctor? If not, why not?
3. Did you have any problems with getting to see a doctor for your last pregnancy? If yes, please describe?
4. ***Do you know about Calgary Midwives and what they do? If yes, proceed to Q5. If no, provide brief overview.
5. If a midwife was available to you and your pregnancy was normal (with no problems) would you use a midwife instead of a doctor? If yes, why? If not, why not?
6. Do you think a midwife might be able to help you with problems you have outside of your pregnancy (i.e. housing problems, depression)? If yes, how? If not, why not?
7. What would your expectations be of a midwife if you were to use them for your pregnancy?
8. Would there be anything stopping you from using a midwife if you wanted to? If yes, please describe.

Brief overview of midwives

- Midwives are trained to care for women during a low risk pregnancy (no problems or very minor problems during pregnancy), childbirth and in the first six weeks of their babies' lives
- Midwives can deliver babies at your home, birth center or hospital – you choose
- Midwives in Alberta are trained and educated. They have a university education (bachelors degree) and are regulated by the College of Midwives of Alberta.
- Midwifery services are funded by the Alberta government, meaning you do not have to pay to see a midwife
- Midwives offer holistic care – they address social, emotional, cultural, spiritual, psychological and physical aspects of a woman's pregnancy

Source: Alberta Association of Midwives (2015)

Appendix C: Individual Interview Guide – Calgary Registered Midwives

Questions

1. What health needs can midwives address during a course of care?
2. What social needs can midwives address during a course of care?
3. How do you think socially vulnerable women might benefit from accessing a midwife for low-risk maternity care?
4. What can a midwife offer to socially vulnerable women experiencing a low-risk pregnancy that a physician cannot?
5. Do you feel a midwife would be an acceptable birth provider for socially vulnerable women? If yes, why? If not, why not?
6. Are there potential facilitators that might make midwifery services more acceptable with socially vulnerable women?
7. What potential challenges might be faced by a midwife when working with a socially vulnerable population?
8. What would you need to have in place for a midwife to be successful in working with a socially vulnerable population?
9. What is your perception of Calgary midwives and their openness to work with a socially vulnerable population?

Appendix D: Focus Group Interview Guide – Aspen Team

Questions

1. What issues are currently faced by Aspen’s female clients with accessing maternity care services?
2. What social disparities do Aspen’s female clients and their families face?
3. What health disparities do Aspen’s female clients and their families face?
4. Do you think midwives can address social and health disparities faced by your female clients? If yes, how? If not, why not?
5. How might Aspen’s female clients benefit from accessing a midwife for low-risk maternity care?
6. Do you perceive there to be any disadvantages in Aspen’s female clients accessing a midwife for low-risk maternity care?
7. Would a midwife be an acceptable birth provider for Aspen’s female clients? If yes, why? If not, why not?
8. Are there potential facilitators that might make midwifery services more acceptable with your female clients?
9. What potential challenges might be faced when implementing midwifery services for Aspen’s female clients?
10. How likely would Aspen’s female clients utilize midwifery services if it was available to them?

Appendix E: Population Profile Administrative Data Tables

Table 1: Demographic characteristics of women who gave birth in 2013-2015 in the Aspen catchment area

Demographics	All N = 7493 (incl. missing)		Receiving assistance N = 1164		Not Receiving Assistance N = 6206		p-value
	n	%	n	%	n	%	
Age mean \pm SD (range)	29.78 \pm 5.27 (14-56)		28.11 \pm 5.99 (14-46)		30.10 \pm 5.06 (15-56)		<.0001
Age category (missing =123)	n	%	n	%	n	%	
< 16	3	0.04	2	0.17	1	0.02	
16-19	189	2.52	90	7.73	98	1.58	
20-24	1019	13.6	248	21.31	751	12.1	
25-29	2347	31.32	336	28.87	1967	31.7	
30-34	2532	33.79	305	26.20	2188	35.26	
35-39	1167	15.57	153	13.14	997	16.07	
40+	236	3.15	30	2.58	204	3.29	

Table 2: Clinical characteristics of women who gave birth in 2013-2015 in the Aspen catchment area

Clinical Characteristics	All		Receiving Assistance		Not Receiving Assistance		p-value
	N	%	N	%	N	%	
Gravida (number of pregnancies) mean \pm SD (range)	2.58 \pm 1.61 (1-17)		3.44 \pm 2.16 (1-17)		2.42 \pm 1.43 (1-14)		<.0001
Antenatal risk score mean \pm SD	2.61 \pm 2.65 (0-25)		3.28 \pm 3.12 (0-19)		2.49 \pm 2.54 (0-25)		<.0001
<i>Birth Delivery Method</i>	N	%	N	%	N	%	<.0001
Assisted birth (forceps/vacuum)	1378	18.39	139	11.9 4	1223	19.7 2	
Vaginal	3921	52.33	742	63.7 5	3106	50.0 8	
Caesarean section	2189	29.21	283	24.3 1	1873	30.2 0	
Missing	5	0.07					
<i>Antenatal Risk Categories</i>	N	%	N	%	N	%	
Antenatal Low risk (0-2)	4310	57.52	576	49.4 8	3657	58.9 3	
Antenatal Moderate risk (3-6)	2519	33.62	426	36.6	2054	33.1	

Table 2: Clinical characteristics of women who gave birth in 2013-2015 in the Aspen catchment area (continued)

Clinical Characteristics	All		Receiving Assistance		Not Receiving Assistance		p-value
	N	%	N	%	N	%	
Antenatal High risk (>7)	642	8.57	156	13.4	479	7.72	
Unknown	22	0.29	6	0.52	16	0.26	
<i>Alcohol use</i>	N	%	N	%	N	%	<.0001
Yes	104	1.39	59	5.09	42	0.68	
No	7367	98.32	1109 9	94.91	6148	99.32	
Unknown	22	0.29					
<i>Drug use</i>	N	%	N	%	N	%	<.0001
Yes	63	0.84	32	2.76	28	0.45	
No	7408	98.87	1126	97.24	6162	99.55	
Unknown	22	0.29					
<i>Smoker</i>	N	%	N	%	N	%	<.0001
Yes	821	10.96	292	25.22	519	8.38	
No	6650	88.7	866	74.78	5671	91.62	
Unknown	22	0.29					

Table 3: Health Service Utilization during Prenatal period

Visits during prenatal period Mean ± SD (range)	All Mean ± SD (range)	Receiving Assistance Mean ± SD (range)	Not Receiving Assistance Mean ± SD (range)
Diagnostic / Ultrasound	5.08 ± 2.61 (1-20)	4.56 ± 2.12 (1-13)	5.17 ± 2.67 (1-20)
Emergency / Ambulatory care	5.67 ± 4.32 (1-25)	7.12 ± 5.16 (1-25)	5.26 ± 3.94 (1-19)
ICU ⁶	1.36 ± 0.66 (1-4)	1.64 ± 0.96 (1-4)	1.31 ± 0.57 (1-3)
Inpatient	4.14 ± 4.46 (1-28)	6.11 ± 6.22 (1-28)	3.45 ± 3.36 (1-15)
Primary care	12.75 ± 4.69 (1-43)	11.58 ± 4.50 (1-26)	12.93 ± 4.70 (1-43)
Urgent care centre	1.48 ± 0.61 (1-3)	1.74 ± 0.73 (1-3)	1.33 ± 0.48 (1-2)

Table 4: Health Service Utilization during 6 weeks Postpartum

Visits during postpartum period Mean ± SD (range)	All Mean ± SD (range)	Receiving Assistance Mean ± SD (range)	Not Receiving Assistance Mean ± SD (range)
Emergency / Ambulatory care	1.42 ± 0.76 (1-5)	1.54 ± 0.77 (1-3)	1.39 ± 0.75 (1-5)
ICU	1.17 ± 0.60 (1-5)	1.30 ± 0.59 (1-3)	1.14 ± 0.61 (1-5)
Inpatient	2.10 ± 2.76 (1-19)	1.99 ± 1.81 (1-9)	2.14 ± 2.93 (1-19)
Primary care	2.37 ± 1.52 (1-10)	2.01 ± 1.15 (1-6)	2.42 ± 1.56 (1-10)
Urgent care centre	1 ± 0 (1-1)	1 ± 0 (1-1)	1 ± 0 (1-1)