

RESEARCH REPORTS

ACCEPTANCE AND PERCEPTIONS OF MOTHERS AND PROVIDERS ON PARAMEDIC-LED MIDWIFERY SERVICES IN MATERNAL CARE DESERTS

Elizabeth Haydu Travis, DHSc, NRP*¹; Kathleen Mathieson, PhD, CIP¹

Author Affiliations: 1. College of Graduate Health Studies, A.T. Still University, Kirksville, MO, USA.

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***Corresponding Author:**
sa209038@atsu.edu

ABSTRACT

Background: Maternal care deserts, characterized by limited or no access to essential maternity services, contribute to high maternal and infant morbidity and mortality rates. While emergency medical service and community paramedicine have expanded preventive and perinatal services in other countries, U.S.-based research on integrating paramedics into maternal health delivery remains limited, particularly in underserved areas.

Purpose: The purpose of this study was to explore the level of acceptance, perceived benefits, and challenges of paramedics providing midwifery-type services in maternal care deserts in the Commonwealth of Virginia. Specifically, we investigated the perspectives of expecting mothers and paramedics regarding the perceived acceptability of expanding paramedics' roles to address the growing maternal care crisis in underserved areas.

Methods: We used a qualitative phenomenological design and recruited participants through digital outreach and complete semi-structured interviews that lasted 30-60 minutes via Zoom. Interviews were recorded with consent and transcribed. The primary investigator analyzed data using thematic analysis with manual coding and codebook development.

Results: The study included 23 participants (12 paramedics, 11 mothers) from maternal care deserts in Virginia. Five themes emerged: acceptance, perceptions of paramedic-led midwifery (PLM), barriers, benefits, and implementation needs.

Conclusion: Paramedic-led midwifery is a community-supported approach to improving care in maternal care deserts. Findings underscore the need for enhanced training, policy change, and collaboration. With intentional implementation, paramedic-led midwifery holds promise as a model to advance maternal health equity in underserved U.S. regions.

INTRODUCTION

Maternal care deserts (MCDs), regions where maternity care services such as obstetricians, midwives, and birthing centers are scarce or nonexistent, pose a substantial challenge to maternal and infant health in the United States. MCD areas disproportionately affect low-income, rural, and racially marginalized populations. According to the March of Dimes (n.d.), 6.9 million women of childbearing age live in counties with limited or no

maternity care, and 2.2 million reside in complete care deserts in the United States. These shortages correlate with significantly elevated rates of maternal and infant morbidity and mortality (Wallace et al., 2021).

Historically, midwives have served as the cornerstone of maternal health care, especially in communities lacking formal medical infrastructure. Yet their role was systematically undermined in the 20th century through restrictive legislation and racialized campaigns that marginalized Black and immigrant midwives (Goode, 2015; Vedam et al., 2018). Although there has been a resurgence of midwifery-led care due to its demonstrated benefits, including reduced cesarean rates, lower intervention use, and increased maternal satisfaction, there remains a severe shortage of providers to meet growing demands (Combellick et al., 2023; Homer et al., 2014).

Paramedics, in contrast, represent a more widely available workforce, with over 289,000 credentialed providers nationwide, compared to approximately 14,000 midwives (Cash et al., 2022; American College of Nurse-Midwives, n.d.). Paramedic integration into maternal care is supported by evidence demonstrating their ability to manage high-risk deliveries, provide life-saving care during out-of-hospital births, and support home-based interventions (McLelland et al., 2016; Strózik et al., 2023). In global contexts, particularly low- and middle-income countries, community-based care delivered by paramedical professionals has led to measurable improvements in maternal and neonatal outcomes (Gupta et al., 2023). Specific evidence on expanded scope in the United States is lacking, but similar programs in other high-income countries such as the United Kingdom, Australia, and Canada have shown promise in improving overall system performance and patient outcomes (Brigham et al., 2013).

Emerging health policy acknowledges the need for innovative care models to address maternal health disparities. The Biden-Harris Administration's 2022 blueprint for maternal health highlights the importance of expanding and diversifying the perinatal workforce, explicitly encouraging non-traditional solutions for underserved regions (The United States Government, 2024). Concurrently, community paramedicine programs have proven effective in addressing chronic and acute health conditions in disadvantaged populations when adequate training, oversight, and governance are in place (Lunn et al., 2024; Shannon et al., 2022). The Virginia Department of Health (2025) has acknowledged the potential need for expanded care through community paramedicine roles and developed guidelines for any agency wishing to adopt such programs. Signaling an understanding for expanded roles for EMS services in the Commonwealth. Despite policies supporting change and a current paramedic model that provides community-focused care, research on paramedics' role and ability to fill the gaps in maternal health care remains limited, particularly regarding long-term, non-emergent support aligned with a midwifery model.

Understanding the social, emotional, and clinical acceptability of this model requires examining the lived experiences of potential patients and providers. Studies emphasize the importance of cultural competency, trust, and continuity of care when implementing new health care roles in communities with existing disparities (Hansen et al., 2023; Jomeen et al., 2020). Without stakeholder buy-in, particularly from mothers and frontline paramedics, even well-intentioned care expansions can falter. Therefore, this research sought to fill a critical gap in understanding the acceptability of paramedic-led mid-

wifery (PLM), defined as paramedics acting in a scope more aligned with midwifery for out-of-hospital births in MCDs.

The purpose of this qualitative, phenomenological study was to describe the perceptions, experiences, and acceptance levels of mothers and paramedics regarding expanded roles in maternal care. The purpose was accomplished by addressing two research questions. First, what is the level of acceptance among expecting mothers regarding paramedics providing midwifery services in maternal care deserts (MCDs)? Second, what are the perceived benefits and challenges of paramedics providing midwifery services in areas lacking maternal care?

The research used semi-structured interviews conducted with paramedics and mothers living or working in maternal care deserts. The objectives of this research were to: (a) assess maternal acceptance of receiving perinatal care from paramedics; (b) evaluate perceptions of paramedic readiness to provide such care; (c) identify anticipated benefits and concerns from both provider and patient perspectives; and (d) offer actionable insights to support policy development, training, and implementation.

With maternal mortality rates in the United States reaching 32.9 deaths per 100,000 live births and nearly 80% of these deaths deemed preventable, innovative care models and enhanced training are imperative (CDC, 2022; CDC, 2022b). Paramedics already possess foundational training in many of the emergency scenarios that contribute to maternal deaths, such as hemorrhage and hypertensive crises. Expanding paramedics' scope through targeted maternal health education and coordinated care efforts could transform outcomes in underserved areas. This study aimed to guide future research and inform policy on bridging maternal health disparities by harnessing an existing yet underutilized workforce.

METHODS

This study employed a qualitative phenomenological design to explore the acceptance, perceived benefits, and challenges associated with paramedics providing midwifery-type services in MCDs in the United States. The aim was to gather in-depth insights into the lived experiences and perceptions of paramedics and mothers residing in underserved areas with limited access to maternity care. A purposive sampling strategy was used to recruit 23 total participants with 20 participants meeting eligibility criteria and fully completing the study. The 23 participants included two key groups: certified, actively practicing paramedics in MCDs and mothers who were currently pregnant or had given birth within the past six months while residing in designated MCDs. The study employed a pragmatic approach to sample size, which was determined by the time constraints of the data collection period. Data collection was bounded by a ten-week recruitment window. Participants were accepted only if they met all inclusion criteria. The inclusion of two stakeholder groups also made it possible to achieve data source triangulation which allowed comparison and integration of perceptions across paramedic and maternal participants. Additionally, multiple analyst triangulation was conducted between the researchers to strengthen trustworthiness of the results.

Inclusion criteria for paramedics required that participants be at least 18 years of age, certified at the state or national level, and actively working or volunteering in MCDs. Mothers were eligible if they were 18 years or older, pregnant or postpartum within six

months, and had lived and delivered in one of the identified MCDs. Participants were recruited through digital flyers, social media posts, and emails to EMS agencies, birth centers, and doula service providers. This method provided broad reach but does invite some bias through recruitment as only those with access to the recruiting information would be able to participate, potentially leaving out participants without access to internet services or ability to obtain birth services from doulas or midwives who received the study information.

DATA COLLECTION AND ANALYSIS

Data were collected through individual semi-structured interviews conducted via Zoom or, if necessary, in person at approved locations. Interviews lasted between 30 and 60 minutes and were audio- and video-recorded with participant consent. Prior to the interview, participants were provided with digital consent forms outlining the study's purpose, procedures, and confidentiality measures. Verbal consent for participation and written consent for recording was obtained. All participants were required to verbally confirm their eligibility based on the inclusion criteria for their group before interviews began. An interview guide tailored separately for paramedics and mothers was used to explore perceptions of training, readiness, benefits, barriers, and community acceptance of paramedic-led midwifery services. Throughout the interviews, member checking was conducted to ensure the accuracy of the findings. A thematic analysis approach was used, with initial coding conducted manually by the principal investigator. After the first several interviews were coded, a preliminary codebook was developed that organized emerging codes into defined categories. The codebook included code identification, theme, subtheme, definition, and corresponding quotes from the interviews. As additional transcripts were analyzed by the primary researcher, new codes were added when novel concepts emerged, overlapping codes were refined, and previous codes were revisited to ensure consistent application of defined themes and sub themes. This was used as a basis for the final codebook allowing for systematic categorization of recurring ideas and concepts. To enhance analytic rigor, the secondary researcher independently reviewed the codebook and subset of coded transcripts to ensure alignment between coded data and thematic interpretations. Discrepancies were discussed and the codebook was refined accordingly. This process continued until thematic saturation was achieved and no new codes emerged. The study received approval from the necessary institutional review boards and is under the Exempt Protocol #2024-208 for A.T. Still University. All study activities were designed to minimize risk and ensure confidentiality and safety of participants.

Although themes included discussion of potential logistical and structural barriers, the study was designed to explore perceived acceptability as opposed to evaluating objective feasibility. No formal assessment of workforce capacity, reimbursement options, scope-of-practice constraints, or health system infrastructure was conducted. The following results and conclusions from this research are therefore limited to informed perceptions from participants.

REFLEXIVITY STATEMENT

The first author brings doctoral-level training in health sciences and professional work in paramedicine. This orientation informed the conceptualization of the study. Awareness

of potential predispositions towards workforce expansions as a solution to care deserts prompted deliberate reflexive practice through the study. This was achieved through reflexive reviews to examine how professional identity, advocacy, experience, and assumptions about access barriers could shape interview dynamics and thematic interpretation. The reviews were conducted by the second author, who is a research methodologist with broad background in health sciences research and no specific experience in paramedicine. To further ensure findings were reflective of participant perspectives rather than normative commitments, peer debriefing was conducted throughout the study design and analysis.

DEMOGRAPHICS

This qualitative study included a total of 23 participants (12 paramedics and 11 mothers) across MCDs in Virginia following exclusion of three participants due to eligibility or technical issues causing the interviews to be incomplete. Prior to data analysis, three participants were excluded due to persistent internet connectivity issues that prevented the completion of major portions of their interviews. While the remaining data yielded rich thematic insights, the exclusion of these participants represents a minor loss of data that could potentially impact the overall results or narrow the scope of the findings.

The paramedic group consisted of 12 participants ranging in age from 23 to 37 years, with a mean age of approximately 27.4 years. Two identified as female and 10 as male. All paramedics reported providing care in U.S. state counties classified as MCDs per the March of Dimes (n.d.), with Charles City, Virginia being the most represented location ($n = 2$). Paramedics reported sample-specific demographics, including years as a medic, additional maternal care training, care provided in other MCDs, and familiarity with a midwife. Paramedic participants had between 1 and 8 years of field experience, with an average of 2.75 years. Of the 12 paramedics, only three paramedics reported receiving additional maternal health training beyond standard certification requirements. All participants in the paramedic category reported familiarity with midwifery roles. Demographics for each paramedic can be found in Table 2 (in Appendix) and additional breakdown of study participant distribution can be found in Figure 1.

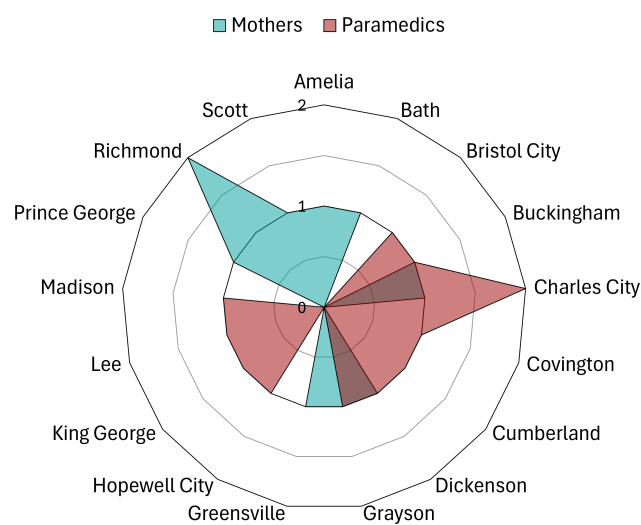


Figure 1. Distribution of study participants across counties in Virginia. Note: Mothers (teal) and paramedics (red) were recruited from multiple maternal care deserts with overlap in locations such as Buckingham and Charles City.

The maternal group included 11 participants, all of whom identified as female and were between the ages of 26 and 35, with a mean age of 28.7 years. All mothers resided in MCDs, with Richmond being the most represented location ($n = 2$). Specific demographics collected for the maternal group were pregnancy status; number of children; if they saw a provider regularly during pregnancy; what type of provider they saw; if they were

familiar with paramedics; if they had used 911 during their pregnancy; if they experienced birth complications; and their distance in miles or minutes from the nearest maternal care provider. Out of the 11 maternal participants, none were currently pregnant, but all had given birth within the previous six months. Seven mothers saw a provider on a regular basis while four did not. Five of those women saw midwives, one saw a doctor, and one sought care from multiple types of providers. Each participant from the maternal group noted they were familiar with paramedics, and nine used emergency medical services during their pregnancy. Four of the eleven mothers mentioned they had some sort of complication during their most recent birth. Maternal travel time to the nearest provider ranged from 10 to 110 minutes, with the average travel time estimated at 47 minutes. These metrics illustrate the reality of maternal care access challenges in MCDs. Demographics for each mother can be found in Table 3 (in Appendix) with additional breakdown of maternal study participant distribution can be found in Figure 1.

RESULTS

Five major themes were identified across participant groups: (1) Acceptance, (2) Perceptions of PLM, (3) Barriers, (4) Benefits, and (5) Perceived Needs for Implementation. Within several of the themes, various subthemes were identified, each supported with quotes and organized in thematic tables to provide direct insight into participant perspectives found in Tables 4 through 7 (in Appendix). Additional exemplar quotes can be found in Table 1.

THEME 1: ACCEPTANCE OF PARAMEDIC-LED MIDWIFERY

Three subthemes emerged: community acceptance, competence and training, and demographic/cultural factors. Participants valued PLM for addressing maternal care gaps, but acceptance depended on trust in clinical skills and sensitivity to cultural and language differences. Each stakeholder group showed a high level of perceived acceptance for programs to enhance maternal care in their region and both groups agreed that cultural awareness would be critical for acceptance.

"I believe the community will respond perfectly if they're being equipped with the right information... they'll be much appreciative." (Paramedic 3)

"It's like they're bridging a gap between me and where the health facility is." (Mother 4)

"Maybe something like I talked about cultural differences. Some don't have that cultural understanding, so they might not be able to understand the mother." (Mother 13)

"Yeah, I've had issues of stereotype, ethnic minority discrimination being talked down on or excused of duty because they feel you're not competent enough." (Paramedic 3)

THEME 2: PERCEPTIONS OF PARAMEDIC ROLES IN MATERNAL CARE

Two subthemes were identified: perceptions of paramedics providing PLM and perceptions of mothers receiving PLM. Paramedics described maternal care as a fulfilling extension of their role, while mothers noted value in expanded maternal care support. Almost all paramedics had positive perceptions towards their current or future ability to provide maternal care. In contrast, mothers were more wary in the ability of paramedics to provide enhanced maternal services and noted issues with trust. Additionally, moth-

ers noted that their perceptions would be shaped by the training and services provided from paramedic providers.

"We play a crucial role especially in places that weren't really prepared for delivery." (Paramedic 7)

"They respond very well... we have a lot of resources, and we are capable and well trained. So they trust us a lot." (Paramedic 12)

"Their quick response was lifesaving..." (Mother 7)

"I would be moderately comfortable because I don't really, really trust them." (Mother 6)

THEME 3: BARRIERS TO IMPLEMENTATION

Five subthemes emerged: financial/resource constraints, training gaps, logistical challenges, cultural/communication issues, and systemic/policy barriers. Both groups cited cost, limited training, logistical hurdles, and restrictive policies as major obstacles to PLM adoption. There was variation in what was considered a financial barrier with mothers noting affordability of services as a major barrier while paramedics indicated that their own compensation is a barrier to providing, and afford training for, enhanced services.

"One of the barriers are high cost of these trainings and also limited opportunities...I think some paramedic, I think some paramedic in some cases paramedic needs some certain kinds of license and training to be able to perform some certain aspect of midwife care." (Paramedic 12)

"Some patients cannot afford ambulance services, and these delay their cause for help." (Mother 5)

"We do not have many paramedics with in-depth maternal care knowledge, and that is a problem." (Paramedic 6)

"I would say the challenge or the limitation would be to the scope of practice. Like I said at first, they are not expertise in that period. They only have an elementary knowledge about it. So the scope of practice is a major constraints because they limit their ability to provide certain aspect of care to the pregnant mother." (Mother 9)

THEME 4: BENEFITS OF PARAMEDIC-LED MIDWIFERY

Two subthemes were prevalent: improved access and enhanced patient experience. PLM was seen as a potential way to bridge distances to care for and provide emotional reassurance during vulnerable times. Additionally, both groups noted emotional and educational benefits for mothers if PLM were to include proactive care models.

"Paramedics can deliver prenatal checkups in their remote areas." (Mother 6)

"Paramedics can be part of a maternal health education, fitting expectant models and being proactive" (Paramedic 8)

"They should go to different places in the desert and try advising and providing maternal care to people who are not around the hospital area." (Mother 5)

"They provide emotional support to mom, make sure that they don't feel scared... we try to tell them everything is going to be okay." (Paramedic 9)

"They really supported me emotionally and their transport was appropriate." (Mother 7)

THEME 5: PERCEIVED NEEDS FOR SUSTAINABLE IMPLEMENTATION

Participants emphasized training, collaboration, policy reform, and outreach. They stressed that adequate preparation, interprofessional partnerships, and public awareness are essential for lasting acceptance. Mothers also noted an increased need for collaboration across the maternal care continuum for enhanced acceptance of such models. Paramedics focused on the need for specialized training as it relates to maternal care.

“Specialized training will give patients more confidence.” (Paramedic 2)

“They need support from the community... without training and resources they won’t implement it effectively.” (Mother 1)

"I feel that there should be that collaboration between midwives and other, maybe even the nurses" (Mother 13)

	Key Codes	Exemplar Quotes
Acceptance	• Demographic / Cultural • Competence & Training	"If you create an environment where you accommodate everyone, it's going to be smooth... I need that rapport." (Mother 13)
		"We are trained to manage the delivery... ensuring that mothers and babies are safe and providing initial newborn care." (Paramedic 8)
Perceptions of PLM	• Paramedics Providing PLM • Mothers Receiving PLM	"It opens up more purpose for us in EMS... not just trauma and transport." (Paramedic 6)
		"Yeah, it could have helped me a lot because I actually have wound and trauma... I wish I called." (Mother 14)
Barriers to PLM	• Cultural • Logistical / Operational • Policy	"Paramedics sometimes have this attitude like they discriminate... because of my color that discriminates me." (Mother 6)
		"I've had issues of stereotype, ethnic minority discrimination and all of that..." (Paramedic 3)
		"Initiatives like community paramedicine or mobile integrated health... would help go a long way." (Paramedic 13)
Benefits of PLM	• Care Access • Patient Experience	"They could help in enhanced patient experience... provide a more personalized and supportive experience during pregnancy and postpartum." (Mother 10)
		"Paramedics are quite beneficial for mothers who might have to move quite some distance... they would help to stabilize everything that needs to be in place." (Paramedic 6)
Perceived Needs	• Needs for Implementing PLM	"I think a little more support from the community and government." (Paramedic 12)
		"There should be a community program... maybe a service sometimes free of charge, like a community service for people." (Mother 9)

Table 1. Additional exemplar quotes from various participants.

DISCUSSION

Maternal care deserts (MCDs) continue to pose a critical threat to maternal and infant health in the United States, disproportionately affecting rural and underserved communities. In these areas, the absence of obstetricians, midwives, and birthing centers contributes to preventable deaths and poor health outcomes. While midwifery and doula care have long been proposed as partial solutions, there remains a gap in emergency and longitudinal maternal services (The United States Government, 2024) that this study explored using PLM as an innovative response to fill that gap.

The themes revealed in this study suggest a strong community openness alongside systemic barriers to PLM adoption. While prior literature has emphasized the value of

midwifery, this study uniquely explores how EMS providers, who are already embedded in communities, perceive the potential implementation of enhanced training in maternal care. The findings suggest that with proper training, policy support, and interdisciplinary collaboration, providers and mothers are open to PLM models and feel they could become a viable, culturally responsive solution to one of the most pressing public health disparities in the United States. This study found that participants broadly supported expanding the paramedic role to include midwifery-aligned services, particularly in contexts where traditional maternal care is limited or nonexistent. Community acceptance appeared closely tied to perceptions of clinical competence and prior trust in EMS.

These findings align with Combellick et al. (2023), who emphasized the relational strengths of midwifery-led care, and Gupta et al. (2023), whose systematic review showed significant improvements in maternal outcomes when paramedical professionals delivered community-based perinatal care. The study also confirms previous research by McLelland et al. (2016) and Strózik et al. (2023), which showed the effectiveness of EMS in supporting out-of-hospital births. However, this study extends the literature by focusing specifically on U.S.-based MCDs in Virginia and incorporating perspectives from paramedics and mothers. Findings from Hansen et al. (2023) and Crear-Perry et al. (2021) are especially relevant, reinforcing the need for culturally responsive care and stakeholder inclusion in maternal health planning.

BARRIERS, OPPORTUNITIES, AND POLICY PATHWAYS FOR PLM IMPLEMENTATION

While PLM was perceived by both interview groups to hold significant promise, participants identified several barriers to its adoption, including financial constraints, inconsistent training, logistical challenges, cultural and communication gaps, and restrictive policies. Paramedics cited low pay and inadequate resources as critical obstacles, while mothers expressed skepticism about provider preparedness beyond emergency management. Both groups emphasized the need for culturally competent care, echoing systemic issues documented by Greenaway (2019) and Heys et al. (2022) regarding perceived EMS readiness and regulatory inconsistencies across states. Within the narratives provided for the study, perspectives diverged on professional and emotional drivers as they related to the perceived practicability of this potential service enhancement. Paramedics tended to emphasize competence-recognition loop where their perceived success of an implemented PLM program was contingent upon rigorous specialized training, professional appreciation, and the assurance of skills to patients. Paramedics also emphasized that regulatory entities would need to provide set guidelines and training requirements or certifications before a PLM style service could be offered. They also focused on the need for the government to ensure any such program was covered by future initiatives that would allow reimbursement for “treatment in place” (Castillo et al., 2026). In contrast, mothers prioritized a more relational-experiential, valuing convenience, comfort, and integrated care model with midwives to increase viability of implementing PLM models in Virginia. Significant tensions emerged around systemic barriers with both groups identifying cultural disconnects, language barriers, and racial discrimination as critical inhibitors to trust. Furthermore, while paramedics advocated professional incentives and international training to solidify their role, mothers expressed a more cautious view of paramedics’ scope of practice, suggesting that while their current emergency skills were invaluable for crisis situations, they must remain integrated with traditional midwifery and obstetrics to ensure comprehensive maternal care.

Despite these challenges, participants highlighted clear opportunities, particularly in remote and underserved communities where timely access, emotional support, and early intervention could improve maternal outcomes. These perspectives align with international evidence on the benefits of paramedic involvement in maternal care (Gupta et al., 2023; McLelland et al., 2016) and reinforce the role of paramedics as trusted, embedded community caregivers. Furthermore, while evidence on U.S. based programs is lacking, studies focused on Zanzibar indicated Mobile Integrated Health (MIH) models were highly successful for maternal care (Battle et al., 2015), a positive outlook for the feasibility of similar programs if adopted in the United States. In contrast, the implementation of a specialized PLM model faces systemic challenges that mirror the broader barriers identified in the adoption of other Mobile Integrated Health initiatives. Specifically, financial- and policy-based obstacles such as those highlighted by O’Conner et al. (2024) citing the lack of national licensure standards and dedicated reimbursement structures often causes insurers to view similar community-based interventions as “additional costs” as opposed to mitigation or “replacement costs.”

To translate the opportunities noted in the study into practice, standardized maternal health training should be integrated into EMS education. State agencies should review and expand EMS scope-of-practice regulations for maternal health in MCDs, while federal agencies such as HRSA could target MCDs for PLM pilot programs using geographic mapping tools. Funding models like the Teaching Health Center GME program (Bureau of Health Workforce, n.d.) and Maternity Care Target Area initiatives (Topmiller et al., 2023) could be adapted to support training and service delivery. Finally, public awareness campaigns developed in partnership with midwives and doulas can build trust and normalize paramedic-led maternal care in communities where traditional services are scarce.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

Limitations of this study include its geographic focus on Virginia, a small and gender-skewed sample, recruited primarily from digital platforms. This strategy had the potential to introduce selection bias, potentially underrepresenting individuals who lack reliable internet connection or internet available technology. While the findings indicated a conditional openness to the concept of PLM, this study captured perceived acceptability and conceptual promise rather than operational feasibility. The lack of data from additional stakeholder groups such as midwives, obstetric providers, and policy makers prevents a holistic understanding of whole system barriers to implementation. Additionally, limitations are noted in the availability of reference to similar programs either in Virginia or across the United States.

While PLM introduces an innovative service delivery model for bridging care gaps, it currently functions as a nascent clinical proposition that requires further formalization of its regulatory and governance parameters. Research into exploratory perceptions has the opportunity to transition into implementation science, utilizing multi-site or national designs to assess clinical safety, reimbursement pathways for sustained programs, and regulatory hurdles. Incorporating additional stakeholder voices and defining clinical standards will be essential. Simulation-based training models, legal analysis of scope expansions, and cost-effectiveness assessments would also strengthen the evidence base. This research underscores the potential of EMS providers to function as emergency

responders and longitudinal maternal care partners, particularly in areas facing severe healthcare shortages. By capturing the voices of mothers and paramedics, this study provides critical context for designing PLM studies and models that move beyond acceptability into feasibility and cultural responsiveness.

CONCLUSION

Paramedic-led midwifery (PLM) represents a bold but practical opportunity to address maternal care gaps in the United States. This study has shown a positive perception and potential acceptance of such a program from mothers and paramedics who supported expanded roles for EMS providers. This work opens the doors for future feasibility research on a broader scale as well as work informing policy and best practices. However, both groups identified the need for more contextualized medical training, community-informed initiatives and policies, and a deeper focus on culturally sensitive care. With policy alignment, interdisciplinary training, and infrastructure support, PLM could become a transformative solution to one of the nation's most urgent public health disparities. As the maternal health crisis deepens, innovative models like PLM represent not only a stopgap, but a sustainable path forward for equity, access, and survival.

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APPENDIX

ID	Age	Sex	Years as a Medic	Working Location	Maternal Training	Provided Care in Other MCD	Familiar with Midwives
P1	23	F	3	Buckingham	No	No	Yes
P2	25	M	1	Charles City	No	Yes	Yes
P3	37	M	5	Charles City	No	No	Yes
P4	26	M	2	Hopewell City	No	No	Yes
P5	27	M	1	Madison	Yes	Yes	Yes
P6	26	M	1	Bristol City	No	No	Yes
P7	29	M	4	Dickenson	No	No	Yes
P8	28	M	3	King George	No	No	Yes
P9	25	F	2	Grayson	Yes	No	Yes
P10	26	M	1	Lee	Yes	No	Yes
P11	32	M	8	Cumberland	No	No	Yes
P12	25	M	2	Covington	No	No	Yes

Note: F = Female. M=Male. Age reported in years. Years as a medic reported in years rounded to the nearest full year.

Table 2. Paramedic demographic data.

ID	Age	Sex	Residence Location	Pregnancy Status	Number of Children	Saw Provider Regularly	Type of Provider	Used 911	Birth Complications	Distance to Provider
M1	26	F	Prince George	PP	2	Yes	Doctor	Yes	Yes	76 Min.
M2	30	F	Scott	PP	3	No	None	Yes	Yes	20 Min.
M3	32	F	Greensville	PP	4	No	None	Yes	No	N/A
M4	28	F	Amelia	PP	1	No	None	Yes	Yes	60 Min.
M5	26	F	Charles City	PP	1	Yes	Midwife	Yes	No	110 Min.
M6	35	F	Grayson	PP	3	No	Midwife	Yes	No	20 Min.
M7	26	F	Richmond	PP	2	Yes	Midwife	Yes	No	60 Min.
M8	26	F	Richmond	PP	3	Yes	Midwife	Yes	No	45 Min.
M9	28	F	Buckingham	PP	1	Yes	Multiple	Yes	Yes	20 Min.
M10	28	F	Bath	PP	1	Yes	Midwife	Yes	No	45 Min.
M11	31	F	Dickenson	PP	2	Yes	Midwife	Yes	No	10 Min.

Note: P = Postpartum 6 months or less. Min. = minutes. Ages reported in years.

Table 3. Mother demographic data.

Sub Theme	Description	Direct Quotes
Community Acceptance	Refers to the extent to which the community is open to and supportive of new health-care roles or services, particularly those that address unmet needs.	"I believe that the community will respond perfectly if they're being equipped with the right information about the paramedics they'll be very happy and much appreciative." (P7)
		"They would be accepting of such enhanced care." (P6)
		"I believe the community are responding positively to us (P10)
		"Some might accept it very well and some might not. Some may not be open because they don't really believe in the medical profession [due to] past experiences." (P13)
		"They gave me this assurance everything is going to be okay. They made me have peace of mind. I really appreciate the fact that I had to use them." (M9)
		"I believe the fact that I can access them anywhere, even they can come to my home. It's like they're bridging a gap." (M13)
Competence and Training	Involves the perceived skill level, education, and preparedness of providers to deliver quality care as it relates to PLM, which can influence trust and acceptance.	"They respond very well. We have a lot of resources and we are capable and well trained." (P12)
		"The training I received has been of great help to me as a paramedic, and I believe that a well-trained paramedic will definitely make a good mark out there in the field." (P6)
		"We are trained to manage the delivery ensuring that mothers and babies are actually safe and providing initial newborn care." (P8)
		"With the knowledge I gathered, I've been able to actively and effectively [work] in maternal care." (P10)
		"I feel paramedics can be trained especially for those who have passion. They will have the skill." (P9)
		"I would say they are able to support because they've acquired the skills, they've been trained to take care of babies and mothers during and after childbirth." (M6)
		"They are trained to help in birth and understand complications... their training would've helped me a lot—I wish I called." (M14)
		"I've passed through those trainings. I think the trainings are effective and helpful to the medical profession." (P10)
Demographic/Cultural Factors Affecting Acceptance	Includes cultural beliefs, language, past experiences, and social identities that shape how individuals respond to care models or healthcare providers.	"I pay attention to my former education, kind of nursing and midwifery degree trying to advance prenatal care and emergency skills." (P8)
		"Maybe something like I talked about cultural differences. Some don't have that cultural understanding, so they might not be able to understand the mother." (M13)
		"Paramedics sometimes have this attitudes like they discriminate. They have this discriminating because of my color that discriminates me. So sometimes I don't feel really comfortable with them taking care of me." (M6)
		"I identify as an immigrant. We experience obscuring cases of language barrier it becomes a challenge trying to communicate and pass vital information." (P3)
		"Connecting a midwife that has the same cultural orientation would be helpful." (P6)
		"Even among paramedics, there are those that are more open to being trained as midwives. It boils down to individual preference." (P6)
		"Yeah, I've had issues of stereotype, ethnic minority discrimination being talked down on or excused of duty because they feel you're not competent enough." (P3)

Table 4. Themes of acceptance.

Sub Theme	Description	Direct Quotes
Paramedics Providing PLM	Reflects how providers perceive their own role, capabilities, and level of preparedness when offering expanded services in maternal or specialty care.	"I think as a maternal care provider, paramedic, I think we are much prepared" (P12)
		"We are trained to manage the delivery during ensuring that mothers and babies are actually safe" (P8)
		"We offer emotional support... guide them through before birth and after birth... give advice and sometimes resources that would help taking care of the baby." (P6)
		"Paramedics are quite beneficial for mothers who might have to move quite some distance." (P6)
		"I think paramedics are very vital organs of medical care because care begins with them, continues with them, and also continues after them." (P3)
		"I'm much familiar with prenatal care... especially complicated issues... I think I'm really good at that." (P12)
Mothers Receiving PLM	Captures patient experiences and impressions of receiving care from non-traditional providers, including levels of comfort, trust, and emotional support.	"We play a crucial role especially in places that weren't really prepared for delivery." (P8)
		"Their quick response was a bit lifesaving to me and I found it's so nice dealing with them." (M3)
		"I would be moderately comfortable because I don't really, really trust them." (M6)
		"I felt comfortable because they have been trained... to take care of babies and mothers during and after childbirth." (M6)
		"It was advantageous on my side because they really supported me emotionally and their transport was also appropriate." (M7)
		"People like me who are at high risk... paramedics with nurses can deliver prenatal checkups, BP monitoring, and educate those in remote areas." (M5)

Table 5. Participant perception of paramedic-led midwifery and preparedness to provide maternal care.

Sub Theme	Description	Direct Quotes
Financial and Resources	Encompasses economic limitations such as low funding, limited reimbursement, and high out-of-pocket costs that affect service delivery and accessibility.	"I talked about finance, not being able to get some paychecks enough to cater for yourself in your family could cause some mental reiteration trying to think and either affect service delivery." (P3)
		"Some patients cannot afford ambulance services and these delay their cause for help." (M5)
		"The finances left at disposals are mostly not enough for us to actually survive." (P10)
		"Financial instability is also a big issue... allowances or the primary pay should be increased greatly." (P5)
Training and Education	Refers to gaps in professional education, access to specialized training, or continuing education opportunities needed for expanded scopes of care.	"We do not have many paramedics who have this in-depth knowledge of maternal care, and that is actually a problem." (P6)
		"A barrier... some paramedics might not be accurately equipped with the necessary information." (P5)
		"With the proper support and training, I'd be proud to do this kind of work." (P8)
		"One of the barriers are high cost of these trainings and also limited opportunities...I think some paramedic, I think some paramedic in some cases paramedic needs some certain kinds of license and training to be able to perform some certain aspect of midwife care." (P12)
		"They should have special courses to handle these disasters." (M5)
		"I think that paramedics should have more training, they should acquire more skills on how to take care of pregnant women and the babies." (M10)
		"Paramedics sometimes do have limited training. They sometimes have limited training, so they do not really have that skill that midwives do have." (M7)
Logistics and Operational	Includes challenges related to scheduling, geographic distance, staffing, equipment, and infrastructure that hinder efficient service delivery.	"We don't have much accessibility to some certain facilities and the shifting that is being set does not really favor us." (P10)
		"Limited resources... not enough equipment... more hands are needed every day." (P6)
		"Being able to meet up with different patients at a time, should I call it time constraints, being able to balance it, it's a problem." (M9)
Cultural and Communication	Pertains to language differences, cultural misunderstandings, and interpersonal dynamics that affect communication and quality of care.	"Maybe at some point language barrier." (M3)
		"Well, if there was more training on language, it would help a lot of people." (M3)
		"Maybe something like I talked about cultural differences. Probably you find some don't have that cultural background or that cultural understanding, so they might be having that difference whereby they may not be able to understand by the mother." (M13)
		"...the cultural orientation of individual paramedics. That should be put into consideration because it constitutes a big barrier because paramedics come from different backgrounds, different ways of handling things." (P6)
		"Paramedics sometimes have this attitude like they discriminate. They have this discriminating because of my color that discriminates me. So sometimes I don't feel really comfortable with them taking care of me." (M6)
		"I've had issues of stereotype, ethnic minority discrimination and all of that especially, or when you have a paramedic who identifies as a person of color working in a predominantly white facility, sometimes there are cases of stereotype being talked down on and sometimes being excused of duty because the field, they're not competent enough." (P3)
		"We experience obscuring cases of language barrier. Trying to communicate and pass vital information." (P3)
		"Some patients have contradiction to routine medications and prefer halal medications. The community must recommend and provide." (P3)

Table 6. Barriers to paramedic-led midwifery.

Sub Theme	Description	Direct Quotes
Systemic and Policy	Involves institutional, regulatory, or structural barriers such as scope of practice limitations, policy restrictions, or lack of integration into existing systems.	"The scope of practice is a major constraints because they limit their ability to provide certain aspect of care to the pregnant model." (M9)
		"Yes. I feel that there should be that collaboration between midwives and other, maybe even the nurses and other mobile units... they can give the services here and be able to attach to everyone regardless of the condition that you have." (M13)
		"There are international policies that prevent other paramedics from other countries from coming in to work here." (P3)
		"There are regulatory bodies that should set up stuff [referring to enhanced policies and telemedicine] so it could be beneficial to all." (P10)
		"Initiatives like community paramedicine or mobile integrated health would help go a long way." (P13)
		"Maybe on other work overload, maybe they could increase the number of people doing that work." (M3)

Table 6 (continued). Barriers to paramedic-led midwifery.

Sub Theme	Description	Direct Quotes
Improved Access in Remote Areas	Describes how expanded services can help reach underserved or geographically isolated populations, improving timely access to care.	"Paramedics are quite beneficial for mothers who might have to move quite some distance... they would help to stabilize everything that needs to be in place." (P6)
		"I think that paramedics with nurses can deliver prenatal checkups... in their remote areas." (M5)
		"They should go to different places in the [maternal] desert and try advising and providing maternal care to people who are not around the hospital area." (M5)
		"They're offering rapid response being able to provide their immediate care in emergencies" (M9)
		"I think they're just like life savers probably if you have to take a drive of maybe 45 to an hour" (M14)
		"Paramedics bring maybe by the integration into the society...if they can be able to give door to door services...they also solve that problem overcrowding some hospitals" (M14)
		"I feel the paramedic can actually improve the outcomes of mothers and babies by providing early intervention and support" (M10)
		"It's like they're bridging a gap between me and where the health facility is" (M13)
Enhanced Patient Experienced	Refers to the positive emotional, educational, or relational aspects of care that contribute to patient satisfaction and well-being.	"I received postpartum care that has to do with the emotional support" (M10)
		"They gave me this form of assurance that I could give birth to my baby successfully" (M10)
		"They gave me a comfortable environment. They made me feel at home" (M9)
		"They offered some pre-hospital medical treatment... and they reduced some of my complications." (M3)
		"They are supporting. Their quick response was a bit lifesaving to me." (M3)
		"They provide emotional support to mom, make sure that they don't feel scared... we try to tell them everything is going to be okay." (P9)
		"...it helps to ensure that people in the community have healthy living...when paramedics take care of these things it becomes quite easier for the people to navigate through the whole experience." (P6)
		"The advice she gave to me and the help, it was really beneficial." (M6)
Perceived needs for sustained acceptance of PLM	Captures recommendations for long-term success, such as additional training, stakeholder collaboration, public awareness, and resource support.	"They should do collaborations with other healthcare professionals... and there should be awareness programs... not everybody in the community knows about it." (M9)
		"I feel specialized training one of the things that would allow people to accept this kind of service around in their communities. So it will give patients more confidence that they are dealing with the right person..." (P6)
		"I think a little bit more funding and more support from the community and the government." (P12)
		"Monthly webinar sessions or virtual sessions and incentives should be made available to entice the paramedic in order to be part of such meetings." (P10)
		"They need support from the community. If they don't have enough training, those skills or enough resources in that workforce they won't be able to implement it effectively." (M13)
		"I feel that there should be that collaboration between midwives and other, maybe even the nurses" (M13)
		"There should be a community program... maybe a service sometimes free of charge, like a community service for people." (M9)
		"I think paramedics should be part of maternal health education... promote early pre-care and reduce anxiety by teaching and reassuring pregnant women." (P8)
		"More improvement for paramedics to go for international conferences and trainings. Partnering with other healthcare professionals." (P3)
		"The scope of practice is a major constraint because they limit their ability to provide certain aspect of care" (M10)

Table 7. Benefits of and perceived needs for implementation of paramedic-led midwifery.