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ORIGINAL ARTICLE

BIRTH ISSUES IN PERINATAL CARE WILEY

A case study analysis of a successful birth center in northern Uganda

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Abstract

Background: Mothers and infants continue to die at alarming rates throughout the Global South. Evidence suggests that high-quality midwifery care significantly reduces preventable maternal and neonatal morbidity and mortality. This paper uses a case study approach to describe the social and institutional model at one birth center in Northern Uganda where, in over 20,000 births, there have been no maternal deaths and the neonatal mortality rate is 11/1000—a rate that is lower than many high-resource countries.

Methods: This case study combined institutional ethnographic and narrative methods to explore key maternal and neonatal outcomes. The sample included birthing people who intended to or had given birth at the center, as well as the midwives, staff, stakeholders, and community health workers affiliated with the center. Data were collected through individual and small group interviews, participant observation, field notes, data and document reviews. Iterative and systematic analytical steps were followed, and all data were organized and managed with Atlas.ti software.

Results: Findings describe the setting, an overview of the birth center's history, how it is situated within the community, its staffing, administration, clinical outcomes, and model of care. A synthesis of contextual variables and key outcomes as they relate to the components of the evidence-informed Quality Maternal and Newborn Care (QMNC) framework are presented. Three overarching themes were identified: (a) community knowledge and understanding, (b) community integrated care, and (c) quality care that is respectful, accessible, and available.

Conclusions: This birth center is an example of care that embodies the findings and anticipated outcomes described in the QMNC framework. Replication of this model in other childbearing settings may help alleviate unnecessary perinatal morbidity and mortality.

KEYWORDS

birth center, ethnographic case study, midwifery, QMNC, respectful maternity care, Uganda

1 | INTRODUCTION

Despite considerable research into the reduction of perinatal morbidity and mortality, mothers and newborns die at alarming rates throughout the Global South.[1-4] In Sub-Saharan Africa, delays in receiving care lead to unnecessary perinatal mortality.[5-10] Rural women often travel far to reach clinics that may be understaffed or undersupplied (Box 1). The three delays model asserts that addressing these delays would avert the majority of mortality.[5-10] There is also evidence that community-based birth centers staffed by midwives improve outcomes,[11-14] yet most clinics and midwifery education programs in the Global South do not follow the midwifery model.[15-17] The evidence-informed Quality Maternal and Newborn (QMNC) framework presented in the 2014 Lancet Series on Midwifery[18] identified key components that reflect what mothers and newborns need to assure the best outcomes (Figure 1). High-quality midwifery care described in the framework, when implemented at scale with family planning, has demonstrated power to avert over 80% of maternal and neonatal mortality.[19] The framework holds promise to address the challenges faced in the Global South, yet until now there has not been an example of it in action in LMICs.

In this paper, we present a case study of a birth center established in Northern Uganda in 2007. The maternal mortality rate in Uganda is 375/100,000[20] and is markedly higher in the north after 23 years of war. The national neonatal mortality rate in Uganda is 30/1000, over five to six times higher than high-income countries (HICs).[20] Remarkably, in over, 20,000 births at the center, there has been no maternal mortality and the neonatal mortality rate is 11/1000—substantially lower than the national rate and on par with outcomes in the Global North.[20,21]

We asked, "What cultural, clinical, and contextual factors influence the outcomes at this center?" Specifically, we aimed to identify: (1) clinical factors that address critical gaps in the care continuum and contribute to improved outcomes; (2) sociocultural factors that this center and its staff incorporate that may contribute to improved uptake of services and outcomes; and (3) to examine the findings alongside the QMNC framework.

BOX 1 Note on gendered language

A note on gender language

We recognize that not all people who are assigned female at birth and have reproductive experiences identify as women. In this case study, all participants and those accessing the birth center identified as women; therefore, our language will use that term generally throughout.

2 | METHODS

In this empirical study, we used a case-study approach informed by ethnographic and narrative methods for data collection and analysis focused on one specific birth center with better-than-expected outcomes for the region and population served.[22,23] Understanding a model of care requires robust research methods that explore the complexities of the setting, practitioners, and systems in which it is situated. We employed institutional ethnography to describe the social and institutional forces that organize and shape the environment of this birth center.[20-24] It is especially effective in examining organizational and institutional practices to learn how patient experiences and outcomes can be improved.[25] We added narrative analysis to learn from the discourses of those who provide and those who receive care.[26] Ethical approval was received from Yale University and the Uganda National Council for Science and Technology.

2.1 | Setting

The birth center is on an 11-acre compound in Atiak subcounty in Northern Uganda. It is 18 miles (29 km) from the border of South Sudan and 45 miles (72 km) from the referral hospital where emergency obstetric services are available. The region is recovering from 23 years of armed conflict that resulted in a breakdown of health systems. In Uganda, healthcare is delivered in health centers (HCs) that range in classification from 1 to 5.[27] HC1 uses community health workers (CHWs) who are deployed by the government to deliver education and preventative care. HC2 provides focused rural care with nurses. HC3 has both maternity and outpatient services and HC4 has a doctor and an operating theater.[28] HC5 is classified as hospitals.[27] HCs are designed to work in coordination with one another with each level referring to higher levels of care that exceeds the scope of practice. Serious breakdowns in this system are reported: long distances between facilities, lack of essential medicines, and understaffing that contribute to delays and poor outcomes.[29-31]

The birth center in this study is classified as a HC3 and serves eight villages with a population of 76,985.[32] The region is rural and the community relies on subsistence farming. The birth center is centrally located, with an average travel distance of 4 miles to villages. The roads that connect the villages to the main road are not paved. In the dry season, these are navigable but can be treacherous due

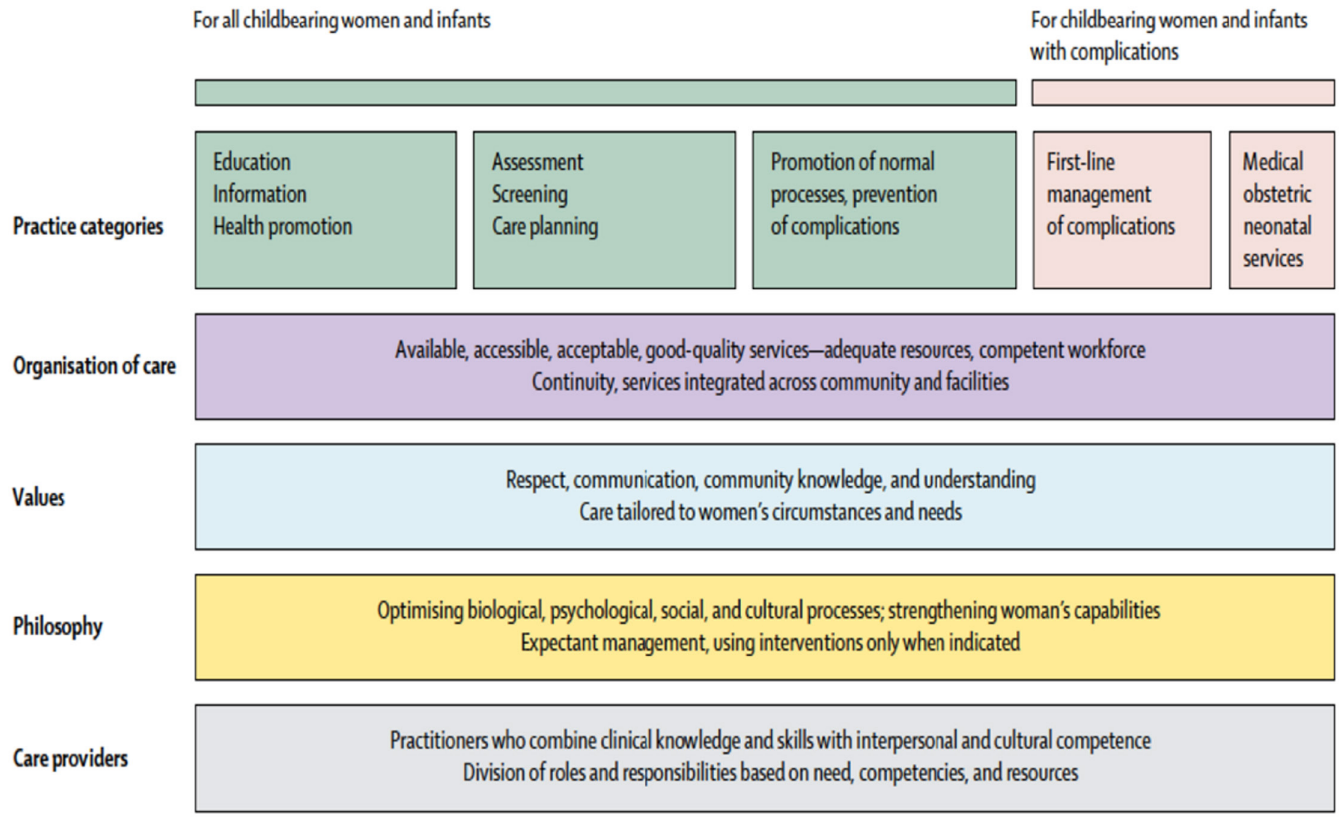

FIGURE 1 The framework for quality maternal and newborn care: maternal and newborn health components of a health system needed by childbearing women and newborn infants (Renfrew et al.[1]). [Colour figure can be viewed at wileyonlinelibrary.com]

to flooding during the rainy season. Most transportation is by motorcycle, bicycle, or on foot.

2.2 | Sample and data collection

Researchers developed the study methods alongside the birth center community in 2018. Interviews, participant observation, and record reviews were collected over 6 weeks in June and July of 2019, with ongoing communication throughout 2020 and 2021. The sample was drawn from staff, patients, and key stakeholders.

2.2.1 | Interviews

Interviews were conducted with patients of the birth center, traditional midwives (TM; also called community health workers), nurse–midwives (NM), the district health officer, and additional staff. We conducted individual and small-group interviews in English or Acholi (depending on preference), and recorded for transcription. Interviews followed a guide developed collaboratively with local NMs and TMs, to ensure cultural appropriateness and relevance (Table 1). A hired interpreter was used that had no relationship to the birth center but was culturally acceptable to participants as a local woman. Participants who were illiterate provided verbal assent after a script was read to them and questions were answered. Those who were literate signed a written consent form. Consents included permissions for the use of participant-approved photographs. Participants received sugar, which was evaluated as a culturally appropriate measure of compensation. Interviews continued until saturation was achieved and no new concepts were identified.[33]

Participant observation was conducted at the birth center, outreach clinics, the referral hospital, and community events. Detailed field notes were taken and verified with staff. We developed a timeline of the birth center and its context. Documents reviewed included annual reports from 2009 to 2021, care ledgers, and medical charts.

2.3 | Data analysis

All data (interview transcripts, field notes, photographs) were entered into Atlas.ti. which permits explorations of qualitative textual and image data and permits complex mapping through its networking capability.[34] Systematic data analytic steps were both iterative and interpretative, allowing for repeated questioning and examination of the question: What cultural, clinical, and contextual factors influence the outcomes documented at this center?[35]

TABLE 1 Semi-structured interview guides.

Template of interview questions
Midwives and the community
1. When did you become a midwife? What made you decide to become a midwife?
2. Can you tell me about the first birth you ever saw or attended? How did you feel?
3. Is there a birth that is particularly memorable you would like to share about?
4. What do you like about being a midwife?
5. What is hard about being a midwife?
6. What is it like working for the MHI birth center?
7. If you have worked in other facilities, what is the difference between those clinics or hospitals and MHI?
8. What do you think the role of the midwife should be throughout a woman's pregnancy and delivery?
9. What is it like working with Lucolo community health workers? What do you think their role should be with pregnant women?
10. What do you think this birth center has done for the community? Is there anything you would change?
11. What advice would you give to a new mother who has never given birth before?
12. Is there anything I have not asked you that you would like to tell me?
The birth center and the community (non-clinicians)
1. What is your role or relationship to the clinic?
2. Do you know anyone personally who has delivered there? What did they share with you about their experience?
3. If you have seen or worked in other maternity centers, what is the difference between those clinics or hospitals and MHI?
4. What do you think the role of the Birth Center should be throughout a woman's pregnancy and delivery?
5. How do you feel about Lucolo (traditional midwives)? What do you think their role should be with pregnant women?
6. What do you think this birth center has done for the community? Is there anything you would change?
7. What advice would you give to a new mother who has never given birth before?
8. Is there anything I have not asked you that you would like to tell me?
Mothers who have given birth at the birth center
1. Can you tell me about your birth history? How many babies have you had?
2. Did all of your babies survive delivery?
3. Did you have any fear about going into labor with your last baby?
4. Tell me about your last birth at Maraam (local word for birth center)? What happened?
a. Was the birth what you expected it would be?
b. What helped you get through labor?
c. Who helped you the most?
d. Is there anything you would change?
5. Did you come to the center for prenatal care or receive prenatal care from the outreach team? What was that like?
6. Have you also delivered babies in other health facilities? What was that experience like?
7. What do you think the midwife's job is in caring for you? How do you know if she is doing a good job?
8. Did you have a Lucolo (traditional midwife) working with you? What did she do for you?
9. What do you think this birth center has done for the community?
10. What advice would you give to a new mother who has never given birth before?
11. Is there anything I have not asked you that you would like to tell me?
Probes: Can you tell me more about that? Could you give me an example?

Researchers achieved consensus on code development and categorization through iterative coding and team meetings. A priori codes reflected the components of the QMNC framework. Emergent codes were developed throughout the analysis. Researchers independently identified three prevalent themes and reviewed them for alignment with the QMNC framework's five overarching components,[19,36] developing a gestalt of the findings that were examined across all codes and coding categories.

3 | RESULTS

Description of the sample: Patients interviewed represented all the villages ($N = 21$). Their average age was 22 with a range of 15–39 and parity from P0–P10. We interviewed most staff including 37 TMs (years in practice 1.5–60), 5 NMs (years in practice 5–20); the district health officer and additional support staff (lab technician, drivers, cook, engineer). We describe the birth center's history, community integration, and clinical outcomes and present a synthesis of central themes identified likely related to the birth center's outcomes using the components of the QMNC framework.[19] Photographs illustrate some findings. The timeline of the birth center establishment (Table 2) provides a historical overview and a summary of community engagement while mapping the development of outreach clinics and outcomes.

3.1 | Historical establishment

The center was established as a non-profit, Mother Health International (MHI), in 2007 by a midwife who worked in a government hospital during the war. Observing many preventable perinatal deaths, she made connections between the lack of coordinated care, trauma, war, and displacement.[37] Although 80% of the regions' mothers were giving birth at home with TMs, there was no collaborative care between TMs and hospitals.[38] This lack of collaboration led to dialogue with TMs called "lucolo" ("push helpers" in Acholi). TMs described the need to confront entrenched obstetric violence within hospitals, discrimination, discounting of traditional knowledge, poor understanding, and recognition of community barriers to facility birth. At the time, Atiak was home to Uganda's largest Internally Displaced Persons (IDP) camp, where TMs were attending most births with minimal supplies and support. The nearest doctor was 72 km away with no paved roads or ambulances. The midwife and TMs formed a collective and opened a temporary birth center in the camp. They had 13 births within the first 2 days. Over 2 years, they fundraised, bought land, and built a physical birth cente. Table 2 describes the timeline for the establishment and growth of the birth center.

TABLE 2 Timeline of the birth center establishment and growth.

1996	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
MSF departed without a government plan in place to reopen health facilities with Ugandan staff	Future birth center director worked in Gulu Hospital	Needs assessment over 6 months with 549 women and 60 traditional midwives	2008: President Kony flees Uganda; 500,000 people still living in IDP Camps with minimal health care		World Food Program, IDP camps disbanded		Mobile Midwives officially started with every midwife receiving a bike				Completion of the paving of the Gulu-Nimule Road				
		Atiak 2 room birth center opened	Ot Nywal Me Kuc Birth Center opened MHI established as an NGO											Land purchased and construction begun on new postpartum ward	New postpartum ward opened
Modes of transportation		1 SUV, 1 motorcycle & bicycles (2010)						Motorized tricycles, motorcycles, SUV, bicycles							
# nurse–midwives		2	2	4	4	3	3	5	5	5	6	6	5		5
# traditional midwives		27	29	32	30	36	60	58	55	59	59	60	59	59	
# births		600	625	982	889	900	999	1036	1118	1154	1127	1247	1677	1739	2118
# neonatal deaths		6	7	12	9	9	10	11	12	11	12	10	13	18	21
# maternal deaths		0	0	0	0	0	0	0	0	0	0	0	0	0	0
# hospital transfers		51	47	86	82	79	89	96	88	93	99	101	99	100	97
# cesarean deliveries		33	29	51	57	61	70	76	73	81	74	97	89	92	83

TABLE 3 Birth center demographics (2020).

Types of services provided	*N*	Comments
Primary care		
Malaria	1479	
Family planning	769	
Surgical sterilization	52	On-site clinic held 2×a year with visiting consultant
Antenatal visits	8729	
Labor and birth	1247	1026 births in the birth center
Nulliparous births	415	
Multiparous births	832	
Singleton births	1220	
Multiple	27	Twins
Breech	31	
Vacuum assisted	57	
Transfer to regional hospital	221	Failure to progress (87), Obstructed Labor (22), Malposition (9), Cord prolapse (1), Placenta Previa (2), Malaria in labor (10), Fetal distress (39), PPH (19), Neonatal care (27), other (5)
Cesarean deliveries	107	At referral hospital 1 hour away (0.8%)
Apgar <7 at 5 min	229	
Postnatal visits	5988	
12-year infant mortality rate	11/1000	
12-year maternal mortality rate	0 in 13,000 births	

TABLE 4 Contributions to neonatal demise over 10 years.

Contribution (*n*)	Contributory cause
34	Obstructed labor
33	Prematurity
25	Unknown
21	Fetal anomaly
19	Infection
14	Meconium
12	Cord prolapse or accident
7	Breech
Total: 165	

3.2 | Description of the birth center and services

The birth center is a large building with a circular common area and eight round rooms surrounding it. Private birth rooms have low accessible beds, birth tubs, birth stools, and yoga balls. The central room has hammocks

and grass mats for families and is used by the TMs for weekly education and peer review. There is an antenatal room, laboratory, and pharmacy. There is solar power and running water from a well. A thatched canopy outside has a charcoal stove for families or TMs to prepare food for laboring women and a wash area with clotheslines. Staff housing is on the compound. There is a kitchen/dining area and family-style meals are provided to all staff. Motorcycle ambulances, a van, and drivers are on-call to take the team for outreach, bring laboring women to the birth center and for emergency transfers. Clinical records are both written and image based so that illiterate TMs can also chart events such as rupture of membranes or fever.

During the founding, the collective created protocols reflexive to the needs of a displaced community and a system where TMs mobilized women for antenatal care and enrolled them to birth at the center. Before the birth center, 73% of women birthed at home either alone or with a TM, and 90% of women had fewer than three antenatal visits.[38] By 2019, 92% of women birthed at the center, attended by both a NM and a TM and 81% of women had eight antenatal visits.[21,39] During 2019, there were a total of 1247 births recorded in Atiak, of those, 1026 were at the center.[21] Table 3 provides an overview of services and outcomes. Table 4 provides an overview of contributors to perinatal demise.

[Picture 1 of TM reviewing prenatal records in birth center common space with adjoining rooms] [Colour figure can be viewed at wileyonlinelibrary.com]

The center is community owned. Services are supported by donations, grants, and some government support; no one is turned away. To subsidize fees, a collection drive occurs biannually with community members giving the equivalent of 1–3 U.S. dollars each. Donors become stakeholders and are invited to take part in the annual meeting. Additional funding is raised through the non-profit MHI.

3.3 | Results of the thematic analysis

Using an institutional ethnographic lens, we examined the social and institutional forces that organize and shape the environment and narratives told by participants in the study. In the process of examining our findings, we identified three prevalent themes that correlate to the QMNC framework.

(a) *Community knowledge and understanding*: Care is deeply rooted in the context of northern Uganda. Intrinsic to the model is respect for the TMs' knowledge and cultural fluency. The TMs, chosen by community elders, worked in the community throughout the war. Many attended workshops provided by the government or NGOs. The TMs named the center *Ot Nywal Me Kuc*, "House of Birth and Peace" in Acholi. *"It was founded when the war in northern Uganda was still ongoing, and the TMs felt it was important to convey that peace begins with birth, especially when conception has occurred as a result of rape or trauma and where women's bodies are used as tools of war. Being born in love holds promise to improve women's and children's lives in the future as they survive the trauma of conflict"* (staff NM).

This community lived through decades of war and returned to subsistence farming after a generation of displacement and reliance on the World Food Program.[40] In 2009, IDP camps abruptly closed. Daily life for women suddenly included long walks to collect water and farm. To miss even 1 day for antenatal care might destroy a family's food security. Women described being chastised in other settings for not seeking care. At the birth center, it was recognized that lack of attendance was often the result of prioritizing more immediate needs and organized bringing care to women through a "Mobile Midwives" outreach program.

(b) *Community integrated care*: TMs were made illegal in Uganda in 2010 yet women still sought their care. It was noted that many women are more comfortable with TMs so having them integrated as care navigators within a government-approved health clinic is central to the center's success. Women birth legally with licensed practitioners but have the support and community knowledge from TMs. This integration is reflected by the nickname, *Yala Yala*, which means to "*come together in community*." "*Yala Yala has changed the community by mobilizing TMs to bring women to deliver, and they are nicer to women in comparison to Health Center 4*" (staff

TM). The outreach program recognizes the mobilizing power of TMs alongside the need for clinical care from NMs brought to women's homes. Each village hosts a clinic twice per month.

[Picture 2: women waiting for antenatal/postnatal/infant checks in an outreach setting with the motorcycle ambulance used for team transport in the background]. [Colour figure can be viewed at wileyonlinelibrary.com]

One of the NMs described collaborative care with the TMs: "*... they [TMs] are the ones always helping us by bringing these mothers to the birth center. Most of this population is used to delivering at home. So, they help mobilize these mothers, so they know to come to us, either in labor or in antenatal. Some lucolos [TMs] are very knowledgeable and know how to identify high risk mothers on their own – this makes things safer, and we can refer quickly when necessary*" (staff NM).

The NMs and TMs collaboratively provide continuity of care from the antenatal period through the first year. A TM noted, "*you find them (pregnant women) when you are collecting water together; you always know who is pregnant*." She described pulling women aside to talk to them, encouraging them to come for care. The NMs and TMs consult one another in follow-up care. They described that this means that families "*do not get lost*" or slip through the cracks. The staff knows where each woman lives, her home circumstances, and history (i.e., if she is food insecure, experiencing intimate partner violence, or previously lost a child).

TMs each have a mobile phone provided by the center so at the onset of labor, women contact their TM, who call for transport. A driver is dispatched to bring them to the birth center. The TM stays with the woman through labor, offers support, and accompanies her home postpartum or to the hospital if the mother is transferred.

[Picture 3 – arrival in labor-motorcycle in background] [Colour figure can be viewed at wileyonlinelibrary.com]

The integration within the community extends to the referral hospital; our observations indicated that the NMs had a good relationship and provided an in-person detailed report when referring to ensure timely and effective treatment. They have a strong relationship with the District Medical Officer. He remarked on the strong referral system contributing to good outcomes – "*they use it well*" – compared with the government system that has limited emergency medical services and few working ambulances. With the center's dedicated ambulance and drivers, a patient in need of higher level care is taken immediately, eliminating delays in care.

(c) *Quality care that is respectful, accessible, and available*: Our observations indicated a highly competent workforce within a rural area. NMs receive additional training at orientation so they are not only clinically excellent but value a culture of respectful care. About 70% of women who present in labor come with their local TM; others are assigned support from an on-call TM at the birth center. The TMs are self-governed by elected leadership, attend weekly meetings to peer review cases, discuss concerns, and learn from the NMs. Many are illiterate; thus, the birth

[Picture 4 – TMs training for a birth at the birth center, hands show clapping as they sing the protocol] [Colour figure can be viewed at wileyonlinelibrary.com]

center protocols were developed using song and dance; a traditional means of sharing information. The songs cover everything from warning signs in pregnancy, labor support, signs of infection, and when to seek higher level care.

In addition to care that is clinically excellent, we observed interpersonal and cultural fluency. For example, belief in possession by evil spirits in pregnancy is common. One of the NMs who had worked in other settings believed honoring this was important. "*In most allopathic settings, these would be brushed off as beliefs that do not correlate to outcomes. In reality, what a woman believes about her labor impacts the physical outcomes and so having care providers who understand the nuances and are able to provide care where the client is, will have an impact not only on outcomes but on women's perceptions of care in labor and willingness to share perhaps other critical information*" (staff NM).

Another NM described how past experiences of trauma could present during labor and birth. "*Sometimes she can be in denial of the whole labor; there was a time with a mother who was deeply traumatized and didn't want to accept the labor. She was angry and cutting herself and saying the family members bewitched her, but in reality, it was her trauma. I was able to counsel her and eventually she accepted the labor and the whole purpose of labor. It was long; it was hard*" (staff NM).

One of the staff TMs described births in the IDPs, where "*there were too many to count*." She noted that the government moved to stop home births because TMs were not formally trained. She described a government training where she was given a fetoscope but never taught how to use it. She has since gained confidence in assessing vital signs and fetal well-being by working at the center. One previous government training insisted that TMs use razor blades to cut umbilical cords. However, there were no resupply mechanisms, so many TMs reused rusty or unsanitized blades and unknowingly put infants at risk for infection. TMs described using straw grass to cut cords before the razor blades were introduced. Straw grass is sterilized by the hot sun, sharp enough to cut through a cord and is renewable. The ripple effects of these kinds of "one off" trainings were addressed by the collective in order to define a set of best practices that honored local knowledge.

Women described experiencing violence in other health settings, but when they walked into the birth center, they felt like they were cared for as if "*being taken like a baby*." They said this jokingly, but the culture of respect was well known. Women said they knew they would be believed, cared for, not shamed, hit, or abused. Almost universally, when we interviewed women who had given birth in other settings, they described how their experience differed at the birth center. They described a good midwife as one who "*asks what you are feeling, asks what is needed, asks about pain, and stays close*" (patient). One woman described how she had experienced birth in the hospital: "*The nurses left me alone, and I ended up delivering my baby by myself, and then the nurses came in and slapped me when they found out. At the birth center they stay and check you and will not leave*" (patient).

4 | DISCUSSION

The purpose of this case study was to ask the question: What cultural, clinical, and contextual factors influence the outcomes documented at this center? Specifically, we aimed to identify: (1) clinical factors in place that address critical gaps in the care continuum and contribute to improved outcomes; and (2) sociocultural factors that this center and its staff incorporate that may contribute to improved uptake of services and outcomes.

We set out to understand "what is happening here?". The case-study analysis reflects components of the QMNC framework and the critical importance of safe, accessible, and respectful care. The women interviewed did not trust the government health workers or the medical system. Almost every woman who had given birth in a hospital reported being hit, strangled, or verbally berated by medical staff. Respectful maternity care (RMC) is described by the World Health Organization as "the care organized for and provided to all women in a manner that maintains their dignity, privacy and confidentiality, ensures freedom from harm and mistreatment, and enables informed choice and continuous support during labour and childbirth".[41] RMC has become a critical global goal, but especially in the Global South where the impact may be the greatest.[42] Without RMC in a supported healthcare system, women may avoid healthcare facilities.[43] In contrast, care at the birth center was described as respectful and loving, with critical components like transport and emergency care integrated into the organization. Local beliefs were addressed respectfully and incorporated into decision-making and clinical care. It is important to note that RMC can only be provided in a health system that supports its healthcare workers with safe staffing and critical supplies.[44] The birth center NMs and TMs are supported by staff, supplies, competitive salaries, and good living conditions. They do not work alone in a facility lacking in supplies or transport, which can be a terrifying prospect for a NM in a remote posting. This fear and lack of support often translates into disrespectful care to patients.[43]

The birth center organizes care around the "three delays"[5] which highlights key barriers to accessing maternal health services: (1) delay in the decision to seek care; (2) delay in reaching a facility; and (3) delay in receiving adequate care once at a facility.[5] This model has been widely reported on, yet it has not been studied alongside the

QMNC framework in a clinical setting.[7,8,11,13,45] The birth center sets an example for care that responds to the delays and integrates the QMNC framework. As discussed, the center sends NMs to remote villages to bring direct care, thus eliminating the first delay and increasing overall antenatal attendance which is known to reduce perinatal mortality.[46,47]

The second delay is access to care: Once the decision to seek care has been made (often at a time of emergency), transport can be a huge barrier. In rural areas, many women give birth alongside the road while walking to seek help. In response, the birth center uses ambulances to pick up women, bring them to the center for birth, and then drive them home postpartum, eliminating several delays.

The third delay is receiving care once reaching a health center. It is common for women to exhaust all resources to reach a health center only to find that there are no skilled staff, supplies, or essential medicine. Staff may berate women for waiting too long to arrive, and send them away for lack of plastic to birth on or ability to pay. At the center, once in labor, women are brought to an always staffed and stocked clinic with access to emergency medicine, transport, and skilled respectful practitioners. The organization of care in this way is the embodiment of midwifery as described in the QMNC framework. The focus on access in the hardest-to-reach areas, the importance of respectful relationships, and the value of quality care becomes intrinsic to the culture and well-being of a community. By mapping the QMNC framework to the structure of the birth center (Figure 2), it is clear how each element is addressed and integrated achieving a significant reduction in mortality.[48-51]

A recent case study of four low-income countries (LMICs) demonstrated that midwife-led birth centers, when adequately supported and staffed, can have similar improved outcomes in HICs.[52] More research is needed to determine the scalability of such models, with special focus on difficult to reach and underserved areas. This case study provides a glimpse into how birth centers using

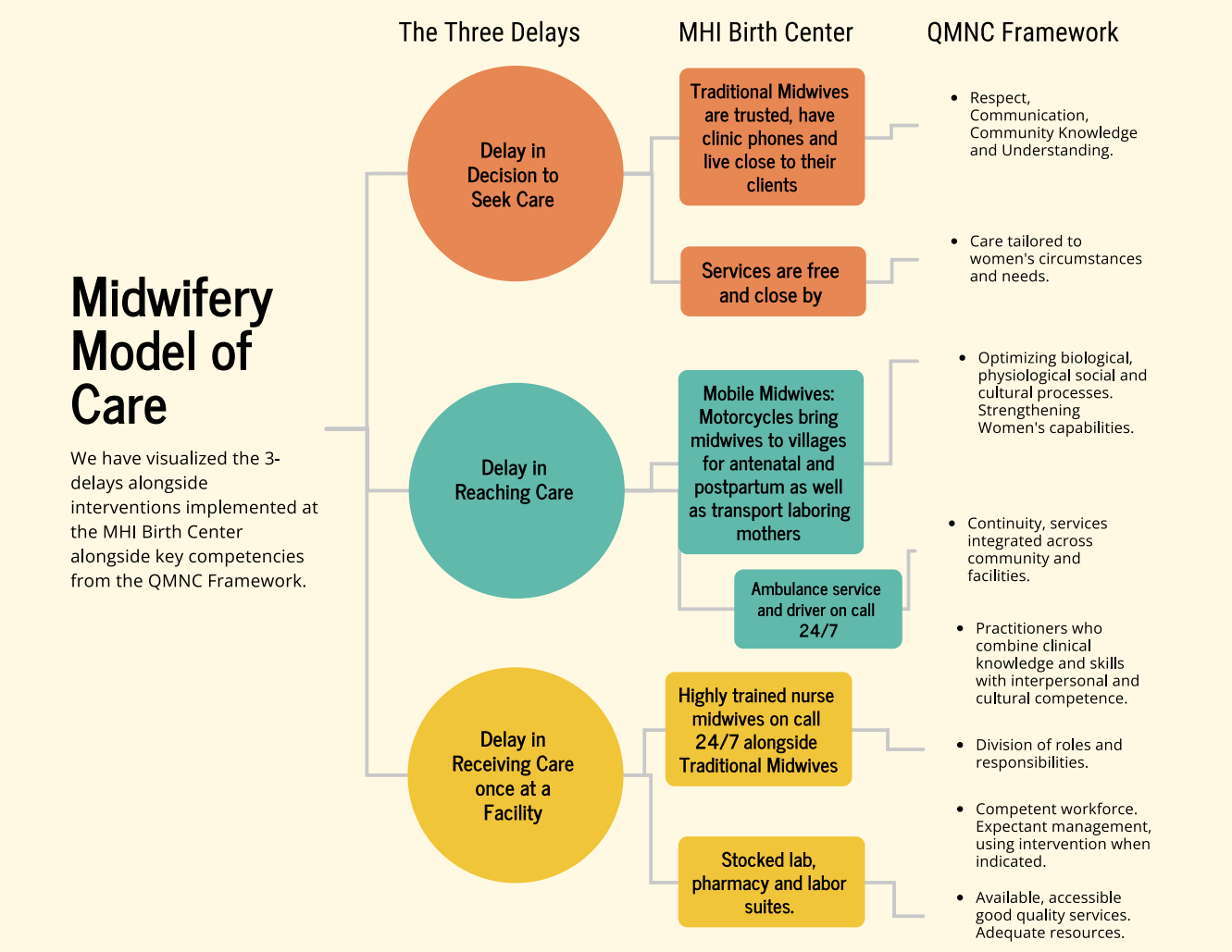

FIGURE 2 Birth center interventions mapped to three delays model and QMNC framework. [Colour figure can be viewed at wileyonlinelibrary.com]

the midwifery model of care and QMNC framework can improve outcomes.

Case studies are inherently limited by their focus. By looking at one birth center, the regional, cultural, or social influencers on outcomes may not apply in other settings. Simultaneously, a case study is strengthened by in-depth engagement with the community, multiple data sources, and participant observation. Therefore, these findings may be helpful in evaluating current models and developing future policies and proposals to put the QMNC framework into action.[53,54]

5 | CONCLUSION

This birth center is an example of perinatal care that addresses the three delays while embodying the QMNC framework. It reflects organized care that integrates different systems working together to support the practice of midwifery with subsequent excellent outcomes. Scaling up the model of care with skilled midwives organized around the unique needs of women within the community could be a pathway for significant change in many settings. Future research may consider replication of a similar collaborative community birth center model that invokes the QMNC framework for both method development and evaluation of outcomes.

CONFLICT OF INTEREST STATEMENT

We have no conflict of interest to declare. The Director of MHI did not participate in any of the research interviews, coding or data analysis. They participated in providing background information, cultural context and in writing of the final paper.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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