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Determinants of Low Maternal and Newborn Health Service Utilization in Haiti: A Community-Based Cross-Sectional Study

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Abstract

Background

Haiti suffers from among the world's poorest maternal and newborn health (MNH) indicators and utilization of skilled MNH care remains alarmingly low. In 2013, Enfants du Monde (EdM) and Doctors of the World Switzerland initiated a project aiming to empower women and communities to improve MNH and increase demand for skilled care. During 2013 participatory community assessment (PCA) was conducted, followed by a cross-sectional baseline study in 2014 to better understand the situation and lay the groundwork for implementation of interventions.

Methods

A cross-sectional design was adopted for the study, using a mixed-methods approach. The quantitative component consisted of a randomized survey of 320 women who had given birth during the previous year living in the intervention area. Qualitative methods included focus groups discussions with women (n=8) and male partners (n=2) and semi-structured interviews (n=10) with health workers:

Results

The baseline study revealed a number of factors which contribute to low use of MNH services in Haiti, with lower utilization in rural compared to urban areas. Notably, while use of antenatal care (ANC) remains relatively high, with 83% of women receiving ANC 1, only 34% of women give birth in the presence of a skilled birth attendant. Awareness of maternal health needs remains low, with few respondents able to cite three danger signs during pregnancy (63%), birth (41%) and after birth (39%). FGDs with men revealed low knowledge, as well. Geographic and financial barriers remain important obstacles. In addition, women express low satisfaction regarding health services and interactions with providers.

Discussion

These results of the study demonstrate that a number of factors come into play impacting on women's decision to seek care, reach health facilities and obtain skilled MNH care once at health facilities. While geographic and financial barriers remain important, other obstacles are also critical, including the social status of women, preference of care from *matrones*—traditional birth attendants (TBA) practicing widely in Haiti, and low perceptions of the quality of care and treatment by health care professionals.

Conclusion

These studies revealed a number of factors which contribute to preventing women and newborns from accessing MNH services. Effectively improving MNH in Haiti requires action at both the community- and health services-level to address the multitude of factors contributing to low utilization of services.

Keywords

Maternal health; Newborn health; Health promotion; Maternal health service utilization; Traditional birth attendants; Care seeking behavior; Haiti

Background

Haiti has been struck by more than its share of natural disasters, including the catastrophic earthquake of 2010 followed by the worst cholera epidemic in recent history. Despite heavy investment by the international community, the country is consistently ranked among those with the poorest health indicators, including those related to maternal and child health. Notably, the maternal mortality ratio (MMR) is the highest in the region, with 356 maternal deaths per 100,000, making Haiti one of only three countries outside of sub-Sahara Africa with a high MMR [1]. As for newborns, though neonatal mortality has dropped from 39 per thousand to 25 per thousand live births between 1990 and 2015, it remains the country in the region with the highest neonatal mortality rate [2].

Among the factors contributing to this situation is the low utilization of skilled maternal and newborn (MNH) services. Indeed, according to national estimates, just 67% of women receive four antenatal care visits during pregnancy, and only 36% of births take place institutionally in the presence of a skilled birth attendant [3]. Effectively addressing the health of women and newborns in such a context requires understanding and tackling the numerous barriers which prevent women and children from accessing life-saving health services when they need them. However, little published literature to date reports on these barriers in the Haitian context.

The *three-delays model* to maternal health care-seeking, that has been used extensively at international level over the past few decades to analyze the factors that contribute to preventing women and children from receiving routine and emergency MNH services at critical moments, is relevant for the Haitian context. These delays have been identified as the following: 1) the delay in deciding to seek appropriate obstetric care; 2) the delay in reaching appropriate services once the decision has been made; and 3) the delay in receiving services once at the health facility [4]. Improving MNH requires taking into consideration and working with women to overcome barriers which present themselves at each delay. While the expansion and improvement of health services is essential to improving MNH and serves to address the third delay in particular, it is equally important to address the first two delays, and more globally to empower women,

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families and communities in order to assure that women seek and reach the care which they need.

The World Health Organization (WHO) has elaborated a framework for Working with Individuals, Families and Communities (IFC) to improve MNH [5]. The IFC framework is designed to form a health promotion component of the broader MNH strategy in countries. The primary aims of the framework are to empower women, men, families and communities to improve MNH and increase access to and utilization of skilled MNH services, emphasizing community participation and intersectoral and interagency collaboration throughout the implementation process. Recognizing that the majority of efforts to improve MNH concentrate on overcoming the third delay by increasing coverage of skilled services, the IFC frameworks aims to complement these efforts by providing a concrete approach for overcoming the first two delays.

With these aims and against the backdrop of the challenging Haitian context, the Swiss non-governmental organizations Enfants du Monde (EdM) and Doctors of the World Switzerland initiated a project based on the IFC framework to improve MNH in the area of Petit Goâve and Grand Goâve, a predominantly rural, mountainous region of Haiti, located approximately 50 kilometers south of Port-au-Prince. Part of a larger programme led by Doctors of the World in collaboration with the local authorities to strengthen the local health system, the project intends to complement the ongoing work of health service provision with actions at the demand side. The aim is to address the underlying determinants at the community level that prevent women and families from accessing MNH services and enjoying optimal health.

A first step in local implementation was a participatory community assessment (PCA) conducted in 2013. This PCA brought together a total of 118 community members during six roundtable discussion, including women of reproductive age, grandmothers and traditional birth attendants (TBAs). The PCA laid the groundwork for the planning of interventions and prepared the way for a subsequent baseline study. This cross-sectional baseline study was conducted in order to generate in-depth information regarding the MNH situation in Petit and Grand Goâve, pave the way for optimal implementation of interventions, and establish baseline indicators. This article reports on the various factors contributing to low utilization of MNH services in Petit and Grand Goâve, particularly those at the first two delays of the three-delay model, adding to a better understanding of the MNH context and determinants of health in Haiti.

Methods

The baseline was designed as a cross-sectional study using mixed-methods, including quantitative and qualitative components. Quantitative data was gathered through an interviewer-administered randomized household survey of women having given birth during the previous year. Women between 15 and 49 years old living in the study site and having given birth in an area supported by a health facility (institutional or home birth) within the 12 months preceding the study were included in the study. Physical or mental incapacity to respond to the survey was considered exclusion criteria. Although an initial sample size of 384 women was calculated, the high level of internal migratory flow since the earthquake combined with a higher than expected rate of non-response led to a smaller sample than initially planned and a total of 320 women completed the survey. Data was collected between March and April 2014. Sites for administering the survey within Petit and Grand Goâve were selected in collaboration with the local health authorities based on the criteria of being situated within a one-hour walking distance from a health facility. Within this circumference, data collectors approached households in directions selected randomly. Before starting the study, the instruments used were pre-tested. Surveys were conducted in creole, the local language. Responses were collected manually by data collectors then compiled using Epi Info and exported to SPSS. Results were analyzed statistically using Chi-squared tests.

For the qualitative portion of the study, a total of 10 focus group discussions (FGD) with women with a birth outcome in the 12-month period preceding the study and male partners of women with a birth outcome during this period were conducted. Four FGDs were conducted with women 25 years or older, two of them with women having given birth in a facility and two with women having given birth at home. Another four FGDs were conducted with women aged 15-24, again two with those who had an institutional birth and two with those who gave birth at home. Finally, two focus group discussions were conducted with male partners of women. Each FGD was composed of approximately eight participants and lasted 1.5 hours. In addition, semi-structured interviews were conducted with ten health care providers, including doctors, nurses and community health workers. Teams of two data collectors were organized for each FGD or interview: one moderator who led the FGD or in-depth interview and one note-taker who carefully registered the verbal and non-verbal reactions of the participants. All FGDs or interviews were conducted in creole and were recorded with the consent of participants. Following data collection, FGDs and interviews were transcribed in their entirety, following which they were transcribed, coded and then submitted to thematic analysis.

Throughout the study, ethical requirements were respected. All potential participants were fully informed regarding the objectives and the scope of the study and of the voluntary nature of their participation, including their right to refuse to answer any questions, or to withdraw their participation at any point in the study. Confidentially and anonymity of participants was strictly maintained throughout the entire study. All participants signed (or gave their fingerprint if illiterate) a written consent in creole before initiating their participation.

Results

Profile of participants

Among the women surveyed, over three-quarters were between the ages of 20 and 34, with the majority (35%) in the 25-29 year-old category. In contrast, only 8% of respondents were adolescents between the ages of 15 and 19. Eighty-three percent of women had one or two children at the time of the survey, with only 15% of respondents having three or more children. The majority of women reported being married or in common-law partnerships; however nearly a quarter of them reported living in a different household than their partner. Single women represented 15% of the sample, with divorced or separated women and widows comprising only 5% of the sample. The majority (83.5%) of women had completed some level of primary or secondary education, though it is notable that 12.5% had received no education. In terms of religious affiliation, nearly 90% of women reported being either Catholic or Protestant, with only 1.6% stating that they practiced Vodou (Table 1).

Utilization of MNH services

Among the surveyed women, 83.1% had attended at least one

Table 1: Background characteristics of survey respondents.

Background characteristics	%
Age	
15-19	8.1%
20-24	19.1%
25-29	35%
30-34	22.8%
35-39	13.1%
40-44	1.9%
Parity	
1 child	45%
2 children	37.5%
3 children	9.1%
4+ children	5.6%
No response	2.8%
Family status	
Married/partnered	81.6%
Divorced/separated/widow	75.3%
Single	2.2%
Presence of partner in the household	
Yes	75.3%
No	22.5%
No response	2.2%
Residence	
Urban	31.3%
Rural	68.8%
Religion	
Catholic	50.3%
Protestant	37.8%
Vodou	1.6%
None	10.3%
Educational level	
No formal education	12.5%
Basic literacy	.6%
Primary level (complete or incomplete)	28.8%
Secondary level (complete or incomplete)	55.3%
Superior/University	2.5%
No response	.3%

antenatal care (ANC) visit during their previous pregnancy, with a slight difference between those residing in urban (88%) vs. rural (81% areas). Two-thirds of the women (63%) reported receiving the recommended four ANC visits, with a growing gap between those living in urban (72%) vs. rural areas (59%). In contrast, less than half (42%) of women gave birth in a health facility (hospital, health center or maternity), with a total of 34.4% reporting the presence of a skilled birth attendant[1] at their last birth. This is also where we found the greatest gap between rural and urban areas, with 61% of urban respondents benefiting from a skilled attendant at birth compared to only 22% of the rural respondents. Just over a third of women (38.8%) benefitted from skilled postnatal care in the 24 hours following birth. We obtain a similar result for the newborns. Again, our study highlighted a significant difference in the care of women and newborns by qualified staff between rural and urban areas. In general, women and newborns in urban areas were more likely to receive postnatal care by qualified health workers (52% and 32.7% for women respectively in urban and rural areas, and 53% and 30.5% for newborns in urban and rural areas).

Care-seeking for emergency obstetric and neonatal services was particularly low. Of the 21% of women declaring having noticed at least one danger sign during pregnancy and/or birth and postpartum, only 37.3% of this group reported having sought qualified help. Similarly, while 22% of women reported recognizing a danger sign in their newborn, 32.9% sought care from a trained health professional in response to the danger sign.

Knowledge related to MNH

For knowledge related to the awareness of the benefits of skilled health services, the majority of respondents (88.1%) could mention at least two benefits of ANC visits. Birth preparedness, monitoring of the pregnancy and education on danger signs were found to be the three most common reasons participants noted for attending ANC visits. However, in practice only 19% of respondents stated having been counselled by the health worker on birth preparedness and complication readiness, and 7% reported having received this type of counselling from their partner or family. Nevertheless, half of the participants reported discussing preparations for the birth with a relative.

During the FGD, women generally expressed that the most important component of preparing for birth were to prepare for the baby as well as grooming oneself and dressing well for the service provider: One participant stated that the most important part of preparation is to « *take a bath, wash our hair, put on clean clothes, to be well welcomed by the health workers* ». It is important to note, however, that this is typically not included as a component of birth preparedness and complication readiness.[2]

Regarding danger signs, 63% of women were able to state at least three signs of complications during pregnancy, but this knowledge tended to diminish in relation to birth and the postnatal phase: only 41% were aware of three danger signs during birth; similarly only 39% could state three danger signs postpartum. It is worth noting that awareness of danger signs during pregnancy was significantly higher among women living in rural areas (70%) vs. urban areas (50%) (OR=11.32; p<0.01). The FGDs with men revealed that men had difficulty stating danger signs at all phases (Table 2).

In addition, the causes of maternal and newborn death were not commonly known by study participants, and thus awareness that many maternal and newborn deaths can be avoided was low. Indeed, the FGDs revealed a commonly held fatalistic attitude among women and men. The idea that God decides was repeatedly expressed, as one women captured in a FGD by stating: "If it is God's will, he will do what he judges right."

Links between women, families, communities

According to the survey, it is rare for *matrones*, the local TBAs

[1]Defined as a medically trained health professional, i.e. a doctor, a nurse or a midwife/nurse with an obstetric specialization

[2]According to WHO, components of a birth preparedness and complication readiness are as follows: The desired place of birth, the preferred birth attendant, the location of the closest health facility for birth and in case of complications; funds for any expenses related to birth and in case of complications, supplies and materials necessary to bring to the facility; an identified labour and birth companion; an identified support to look after the home and other children when the woman is away; transport to a facility for birth or in the case of a complication; and identification of compatible blood donors in case of an emergency.

Table 2: Maternal and newborn health knowledge.

Maternal and newborn health knowledge	%
% of women aware of at least two benefits of antenatal care visits	**88%**
% of women aware of three danger signs during pregnancy	**63%**
% of women aware of three danger signs during birth	**41%**
% of women aware of three danger signs after birth	**39%**
% of women who sought care in response to an obstetric danger sign	**37%**
% of women having sought care in response to a neonatal danger sign	**33%**
% of who discussed a plan for birth preparedness and complication readiness with a health care provider	**19%**
% of women who discussed their plan for birth preparedness and complication readiness with their partner	**23%**

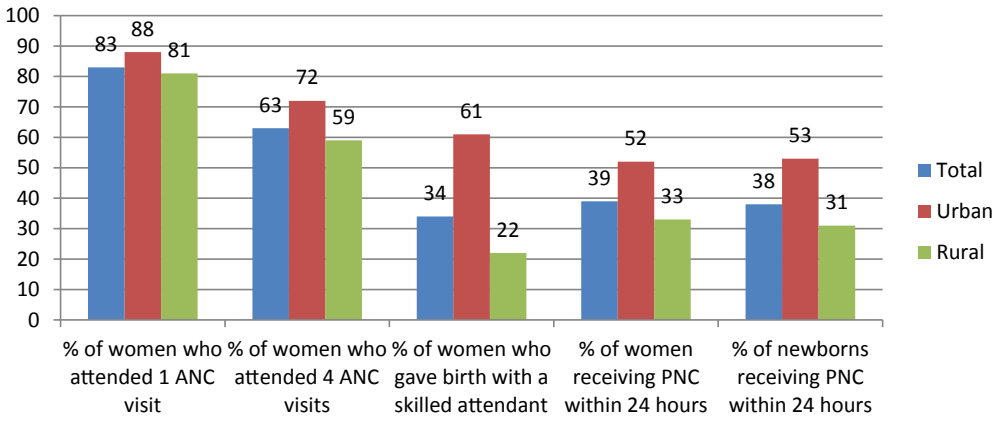

Figure 1: Utilization of routine maternal and newborn health services.

who attend that majority of births, to promote institutional birth or accompany women to the health facility in case of emergency (2.4%). This was, however, contradicted by the FGDs with women during which the participants expressed confidence that the *matrones* would refer and accompany them to the hospital in case of emergency. In the interviews with health care providers, they mentioned initiatives in the past aiming to encourage *matrones* to accompany women to health services, such as financial remuneration or provision of meals. However, these initiatives had since been discontinued.

The role of the husbands or male partners is another complex issue. The survey suggests limited involvement of men in accompanying women to health services: among the interviewed women, only 18.3% mentioned having their partner accompany them during an ANC visit. For the birth, 47% of the women stated that their husband or partner was present at the birth place but only 14% of the men were present during the birth. It is to be noted, however, that 23% of women reported being supported by a companion of their choice during birth. During the FGDs, the women expressed their desire of being accompanied by their husband/male-partner, but reported that medical staff prevent them from entering the room (Figure 2).

According to the women FGD participants, what they most expected from their husband/partner was to provide the financial resources to cover the costs of the birth and newborn care, but money was often lacking. As for the men, they mentioned that money was an obstacle to institutional care and few of them reported contributing to the financial costs of the birth. They did mention paying for the woman's food or the baby's clothing, but they rarely mentioned covering the costs of hospital fees or medication. Within the household, men reported supporting women by encouraging and assisting them to avoid heavy work during and after pregnancy and by helping them with the infant at night.

It is also worth noting here the role of decision-making, as it is a woman's right to decide to seek health services. In many cases women are not able to enjoy this right, as approximately one-third of respondents reported that they were not the final decision-maker in decisions regarding care-seeking for MNH services; indeed, 32% of women stated that they needed to obtain permission from somebody, typically the husband/male partner, prior to seeking health services.

Most of the support that the women reported receiving came from their relatives: 52% of the women mentioned having been supported by a third person in their decision to give birth in a health facility. Regarding postpartum and newborn care, the woman's parents and *matrones* were often mentioned as their main support, assisting with the cooking, bathing, laundry and housekeeping tasks.

Financial and geographic accessibility

Transportation remains a prominent barrier for the majority of women; indeed only 39.4% of the women stated that they could overcome the obstacle of transportation, with a significant difference between respondents living in rural and urban areas (33% and 53% respectively) (OR=11.31; p=<0.01). Interviews with the health workers revealed that, according to them, poor accessibility remains the predominant barrier for women related to seeking care. They reported that if the woman lived near the health center, she was more likely to seek antenatal care there; otherwise, they stated, she would typically consult a *matrone*.

Financial obstacles also surfaced as an issue. Over 70% of women reported that lack of money represented an obstacle for receiving

health care services, with rural respondents reporting significantly more difficulty in mobilizing resources than urban respondents (OR=6.5; p<0.05). At the policy level, maternal and newborn care should be provided free of charge, but according to our survey, women are unaware of this provision and have not benefitted from it. Women reported that accessing health services is expensive and that they are required to make payment for all services or material received, including medication, treatment, transportation, vaccination and newborn care. Despite the recognition of existing financial barriers, only 20.9% anticipated financial needs by mentioning them in their list for birth preparation (Figure 3).

From their perspective, health workers explained during the FGD that the institution they were working for did not have the capacity to deal with obstetric and neonatal emergencies. This lack of resources means that most of emergencies have to be referred to other health institutions in another locality, leading to extra costs to be covered by the patient. "*parents are not happy at all because if the hospital provides the ambulance, they need to pay for the fuel.*" The lack of financial resources is one of the main reasons for the women not going to a health institution: more than 70% of the women found the medication or laboratory tests unaffordable and less than a third of women (32%) declare being able to overcome financial barriers to services.

Quality of care

The general satisfaction of women with health services was reported as low. During the FGDs, community members described their perceptions of the low quality of the health services in general and their dissatisfaction regarding the way in which they are treated in the health institutions. Women mentioned excessively long waiting time at health facilities and reported lack of involvement and frequent absenteeism among service providers: "*When I was 2 months pregnant, I went to the hospital I was swollen, no one did anything for me…I waited a long time without seeing a doctor and I left.*" Another woman in the FGD stated:

"When I was 2 months pregnant, I went to hospital, I was swollen, no one helped me…. I waited a long time without being consulted by a doctor and left… To be taken care of at the health centres or the Petit Goâve hospital is not easy, we waste a lot of time, we don't get looked at and we return home without having received care, it's frustrating.

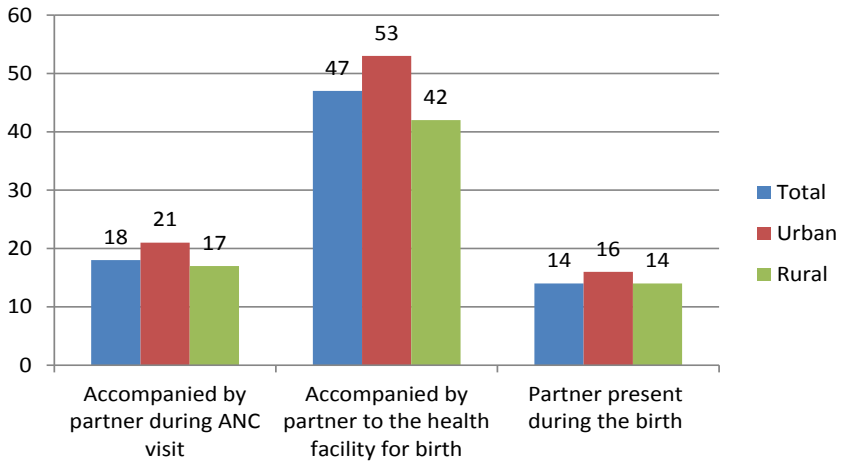

Figure 2: Male involvement in maternal and newborn health.

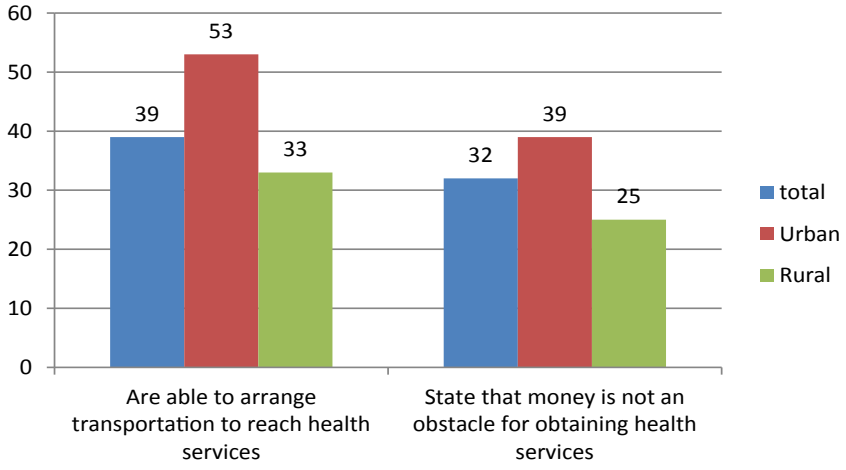

Figure 3: Transportation and financial barriers to health services access.

Every time that I have an ache when I'm pregnant I go to hospital and no one takes care of me."

Health care providers sometimes attributed their absence or unpleasant attitude towards the patients to the poor conditions of the hospital, which is source of demotivation. They described the difficult conditions under which they work and expressed their own frustrations, such as one provider in a FGD:

"We are owed 14 months' salary and the hospital does not have equity. The centre confronts a lot of problems currently, for example a lack of tests, no gas for the conservation of the vaccines, therefore people come to the health centre to vaccinate their children but are then forced to go back home without getting their children vaccinated"

Moreover, only 45% of women reported satisfaction with the reception that they received from health care providers and only slightly over half (56%) reported satisfaction with the interactions they had with the health workers during birth (Table 3).

For birth, women explained that staying home is often seen as more comfortable and reassuring, as the family and relatives are there to support and help, and it involves no costs. "At home, the mothers help us with our back, they bathe us during delivery and the *matrones* are there to help." Women also expressed preferring to stay home during birth so that they can give birth in the position of their choice. Women were less confident in the quality of care that they expected to receive at the health services

In addition to other quality concerns, women stated feeling a lack of respect, privacy and confidentiality. During the focus groups, some women shared that they feel they are victims of stigmatization, in particular for pregnant women who have already had several pregnancies and adolescents. Regarding unmarried mothers, one woman mentioned that *"Especially when you are not married, you are criticized [by health care providers] and no one offers you support."* This seemed to be especially true for adolescent mothers.

Discussion

Our baseline study provides a picture of the challenging situation of MNH in Haiti and highlights the complexity of factors impacting on low utilization of MNH services in Petit- and Grand-Goâve post-earthquake and cholera epidemic. Our results suggest that addressing this and overcoming barriers to health services at each of the three delays will required a holistic approach, taking into account the multitude of factors in play in the lives of women and families.

Mirroring the national situation, few women in our study site obtain all of the basic skilled routine and emergency services which they require during pregnancy, birth and after birth. Consistent with other research, our findings reveal that use of skilled services is lower in rural than urban areas [6]. This is not surprising, given the important geographic barriers which exist in rural areas, which have been found to be major obstacles in our study as well as others [7]. Is it interesting to note, however, that the gap between urban and rural services varies widely by the type of services, as the difference is minimal with regard to ANC 1, grows with regard to ANC 4, and is most striking with regard to birth with a skilled attendant, where 61% of women in urban areas give birth in the presence of a skilled attendant, while only 22% of rural women do (Figure 1). This may be explained by the fact that there is more flexibility in deciding when to seek ANC, whereas a woman has no control over when she will give birth; thus it is easier for rural women to arrange in advance to reach care for routine ANC. It may also be explained by a general preference for home birth in rural areas which tend to be more traditional.

In both urban and rural areas, it is interesting to note the low rate of birth with a skilled attendant compared to the percentage of women receiving ANC 1. This suggests that low rates of birth with a skilled attendant cannot be explained simply by inability to reach services, as most women have at least one contact with the health services during pregnancy. While some studies suggest that the number and quality of ANC visit lead to increased odds of birth in the presence of a skilled attendant [8,9] our study is consistent with other studies which fail to find a correlation between use of ANC and ultimately institutional birth [10]. In fact, other studies conducted in the Haitian context have shown a strong correlation between availability of a health center within 5 km, the availability of household transportation and household wealth and receiving four ANC visits, but no correlation between these variables and institutional birth [10]. Care seeking in the case of emergencies is also alarming, as women and families tend not to seek services even in the situation in which they recognize danger signs.

Our findings would suggest that important factors are at play at all three the levels of the three delays model in preventing utilization of skilled care. Within the first delay, *the delay in the decision to seek care,* lack of knowledge remains an important barrier. Our study suggests that there may be a positive link between knowledge and use of MNH services: the knowledge on the benefits of ANC visits is very high as it is for the danger signs during pregnancy, and the ratio of women obtaining at least one or even four ANC visits is relatively high, though we did not test for significance. In contrast, the knowledge on birth preparedness is poor, with many women mentioning items not specifically identified as components of birth preparedness and complication readiness such as bathing and wearing nice clothes for the health care provider. As would be expected, planning across the components of birth preparedness and complication readiness is also low.

In addition, social and cultural factors play an important role within the first delay. With regard to household dynamics, other studies have found that the husband or male partner tends to have a higher degree of power which often translates into a determinant in the attitude of the women towards her health [10]. Our study found that men remain important decision-makers within the household regarding whether or not women seek health services, which can be problematic as husband/male partners tend to have a poor knowledge regarding MNH needs, and are therefore less able to make decisions which will promote the health of their wife/partners.

Perceptions regarding the quality of health services and the respect of preferences of women and families also appear to play an important role in delaying women's decision to seek care. Women and community members expressed low satisfaction with health services received and feel that they cannot observe traditional practices in the health facility during birth. Women generally prefer to give birth in the environment of their own home where they can

Table 3: Satisfaction with MNH services.

Satisfaction with MNH services	%
% of women satisfied with the reception that they receive from health care providers	**44.7%**
% of women satisfied with their interactions with health care providers during birth	**55.9%**
% of women who give birth in the position of their choice at the health facility	**58.1%**

observe traditional practices, such as being surrounded by family, having the presence of a *matrone*, and giving birth in the position of their choice. As women feel that they will not be able to enjoy these benefits if they opt for an institutional birth, they often prefer to stay at home. This corroborates other research related to ailments which has found that Haitians prefer treatment which they can access in the community as opposed to skilled care [11].

Along this vein, the role of the *matrones* is important to explore in more depth. The role of TBAs, how they contribute to MNH, and how they can be included in MNH programming have long been disputed issues [12]. Indeed, WHO now recommends that TBAs be included in MNH programming in a new role, which excludes attendance at birth and promotes their collaboration with the health services [13]. What is clear from our study is that, particularly in rural areas, *matrones* continue to provide the bulk of care at the time surrounding birth. Unfortunately, our results would suggest little collaboration between the *matrones* and the health services. While women participating in the FGDs were confident that the *matrones* would not hesitate to send them to the health facility in the case of an emergency, the results of the survey indicate that this rarely happens in practice and that in any case they would not be welcomed by providers. The issues regarding the *matrones* and their role in MNH are multiple and complex, and need a deeper analysis to understand whether they are willing to collaborate with trained health workers or not, how their financial and social interests influence their behavior towards the pregnant women, and how they can be best leveraged to contribute to improving MNH. Moreover, in Haiti the issue of the *matrones* is also closely linked to the practice of Vodou, and other religious practices and beliefs.

In our discussion of cultural practices, it is important to note that other studies have suggested a link between the practice of Vodou and the decision to not seek skilled care within the health services [9]. Indeed, in the Haitian context Vodou has traditionally been used not only as a religious system, but also as a medical system [14,15]. Our study was not able to make this correlation as few women reported associating with or practicing Vodou during the survey, though it is important to point out that the practice of Vodou is neither homogenous nor mutually exclusive to adherence to another religion [15,16]. Participants did not address the practice of Voudou openly during the FGDs. This may have been due to the sensitive nature of the subject and the hesitancy that those who practice Vodou maintain in discussing the topic with outsiders. In contrast, community members spoke more openly of the practice of Vodou during the PCA, giving the impression that it is common in the region.

Within the second delay, geographic and financial barriers clearly continue to play an important role in women's ability to reach health services. Infrastructure is poor and transportation options are limited. This can be particularly problematic when women and families do not prepare in advance how they will reach health services at the onset of labour or in response to obstetric and neonatal danger signs, which may arise at any time. In addition, women and families feel that the fees demanded for services within the health sector are burdensome and often feel unable to pay; this in spite of the policy promoting the provision of free services. Though the policy is officially in place, women and families do not seem to be benefitting from it as they are often still required to pay at health facilities.

It is clear that the third delay also remains problematic, which seems to have changed little over the course of the past decades [17]. Indeed, coverage and quality of skilled health services remains grossly inadequate. Health workers deplore the poor working environment and women and families are frustrated by the lack of reliability of services. This perception creates a negative feedback loop into the first delay, in which women are less likely to seek health services due to their poor perceptions of these services. Significant investment will need to be put into improving these health services in order to break this chain and assure that women's expectations are met when they overcome other obstacles and manage to arrive at a health facility.

The results of our assessment suggest that, while improving and expanding the provision and quality of MNH services is necessary, it will take more than this to effectively increase utilization of skilled MNH care. Actions must also be taken at the level of the first and second delays. We recommend interventions to build the awareness of the community on the needs and rights of women during pregnancy, birth and after birth. An emphasis should be put on building the awareness of danger signs in women and in newborns, as well as the importance of birth with a skilled attendant, as timely action in response to these can be the difference between life and death. In addition, awareness should be raised on the causes of maternal and newborn death, as most of these can be avoided. Such efforts should aim to transform current fatalistic attitudes in the culturally sensitive manner towards empowerment which gives women a sense of influence over theirs and their children's health and well-being.

Birth preparedness and complication readiness is a particularly promising intervention which has proven effective in multiple settings [18], and study participants expressed a desire to engage in this type of preparation. In addition to increasing knowledge, prior preparation can also contribute to overcoming geographic and financial barriers, as women and families are encouraged to discuss and identify a way to reach health services when needed and also to save money for potential costs that may be incurred when seeking health services. In addition, advocacy efforts may be necessary in order to promote the full provision of MNH services free of service charges.

Our findings would also suggest the necessity of a multi-pronged approach targeting a broad array of stakeholders. The reliance of women on others surfaced repeatedly in the assessments. Women do not act in isolation but often make decisions in collaboration with others within her entourage, including male husbands/partners, who are often the final decision-maker within the household as is the case in many patriarchal societies, as well as other household members and decision-makers. As such, awareness building activities should involve the broader community so as to engage the woman's entire circle and the wider community to support women and newborns to enjoy the care which they need. In addition, it is important to involve community leaders, including *matrones,* who often play a decisive role in the health or women and children.

Finally, as efforts are made to improve the quality of health services, they should not be limited to the technical and material quality of health facilities. Low-satisfaction of women with health services is troubling and serves as an important barrier to women's care-seeking. Efforts should be undertaken to improve health workers capacity to provide respectful maternity care and to improve their interpersonal skills. Moreover, in order to encourage women to avail services, these services will need to respond to the cultural and personal preferences. Allowing women to observe the cultural and social practices which they enjoy during a home birth (e.g. having a companion of choice present, giving birth in their position of their choice, massage during labour, etc.) may encourage them to come to the health facility to give birth. Creating mechanisms which allow communities to express their opinions and be involved in monitoring

health services may facilitate this process.

Limitations

There are several limitations to our study that are worth mentioning. First, it is important to mention the inevitable memory lapse bias especially when asking respondants to recall precise information such as the details of the newborn care or even the number of ante/postnatal visits. The lapse of memory and subjective reconstruction could have affected the internal validity of the data.

Moreover, we could add the social desirability bias, which refers to the benefit that the participant believes she or her family may receive if s/he responds in a certain way to the interviewer. Indeed, the positive or negative perception of the study and of the potential repercussion of the project among the participants also affects the way they answer the questions: whether they perceive a benefit or not in the project implementation, they could have reported certain answers.

In addition, it is important to note that, while the decision to include only sites within a one-hour walk of a health care facility was made in collaboration with local health authorities due to logistical reasons, this certainly limits our ability to generalize our results to the entire region.

Conclusion

A complex interplay of factors at all three delay of the three delays model prevent women and families from reaching the skilled MNH care which they need in Haiti. In order to increase utilization of skilled services and effectively improve MNH, a broad approach must be adopted at both the community- and the health facility-level which takes a holistic approach, simultaneously addressing the factors contribute to poor use of services at each level.

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