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Midwives, Rain, and Donkey Carts: Factors affecting women’s decisions to deliver at home or at a clinic in rural Mali

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Introduction

Background

Throughout the developing world, Sub-Saharan Africa in particular, maternal and neonatal mortality continue to be grave problems which have yet to be effectively solved. As their presence in the Millennium Development Goals suggests, both are essential problems; however, as the report from the Countdown to 2015 for Maternal, Newborn, and Child Survival initiative demonstrates, most countries are not making sufficient progress to reach the goals (Countdown Coverage Writing Group, 2008). If Millennium Development Goals 4 and 5 are to be reached, ⅔ reduction of under 5 mortality and ¾ reductions of maternal mortality ratio between 1990 and 2015, quick and effective solutions are needed (Millennium Project, 2006). In Sub-Saharan Africa alone, 570 women were dying every day in 2008 from childbirth or related complications. Also, maternal mortality is an important indicator of health, showing the largest discrepancies between rich and poor (World Health Organization, 2010). One proven answer to these problems, studies show, is increasing access to health care for obstetric services, for example having a skilled birth attendant present at birth or having an institutional birth, a birth that takes place in a medical facility (Fournier, Dumont, Tourigny, Dunkley, & Drame, 2009), (Ronsmans, et al., 2003). Despite this clear link between better outcomes and institutional births, over half of women in Sub-Saharan Africa still give birth without a skilled birth attendant present; even worse, there has been almost no progress on this front in Africa over the last decade (World Health Organization, 2010).

The maternal and neonatal situation in Mali, one of the poorest countries in the world, is worse. With the third highest total fertility rate in the world, each women having an average of 6.54 children in her life, the lifetime risk of maternal mortality in Mali in 2005 was 1 in 15 and
the under-5 mortality rate in 2008 (Countdown Coverage Writing Group, 2008), (Central Intelligence Agency, 2010), (Global Health Observatory, 2009). And here, over half of women (54%) still give birth at home according to WHO’s country profile in 2006. In rural areas, which account for 73% of the births in Mali, a scarce 37.6% of births are attended by a skilled birth attendant (Department of Making Pregnancy Safer).

**Previous Studies**

Various studies have been conducted across the globe to determine the reasons why women continue to give birth at home. Most of these studies rely on population level data that is subjected to a plethora of statistical analyses to determine correlations. Relationships have been found covering an immense range of individual factors, household factors, and community factors, revealing the complexity of this problem. Past studies have shown that education, socio-economic status, urban or rural residence, proximity to health clinic, age, mass media exposure, quality of care received at clinic, parity, village opinion of the clinic, and ethnicity can all impact a woman’s access or decision to go to a clinic and receive adequate care for delivery (Babalola & Fatusi, 2009), (Kesterton, Cleland, Sloggett, & Ronsmans, 2010), (Zere, Tumusiime, Walker, Kirigia, & Mwikisa, 2010), (Amin, Shah, & Becker, 2010), (Rahman, Tarafder, & Mostofa, 2008), (Ali, Bhatti, & Kuroiwa, 2008), (Kruk, Rockers, Mbaruku, Paczkowski, & Galea, 2010), (Spangler & Bloom, 2010). These factors are variable by culture, and have different degrees of importance in different areas studied. For example, in Tanzania, where there are many primary care facilities yet a low rate of institutional delivery, researchers found that perception of quality of care had a greater influence that proximity or cost (Kruk, Rockers, Mbaruku, Paczkowski, & Galea, 2010). In contrast, household wealth was determined to be the most important variable in access to health care in a study conducted in India (Kesterton, Cleland, Sloggett, & Ronsmans,
For Pakistani women, in yet another setting, low availability of female care providers was found to be a significant barrier to health services utilization (Ali, Bhatti, & Kuroiwa, 2008). As these studies show, a vast array of variables can be correlated with institutional birth, differing between regions and even between individual studies.

However, despite the vast number of these demographic studies, very few go directly to the women themselves to hear in their own words why they do not go to a health institution to deliver. Although statistical analyses are useful, they cannot determine causation, and do give the women an opportunity to express themselves as actors capable of making decisions. A few such studies have been conducted in different regions around the world. For example, researchers in Indonesia used interviews and focus groups to investigate this question. They found that distance from a clinic and money had the greatest influence on place of delivery, but other subjective factors such as misunderstanding the role of midwives also affected decisions (Titaley, Hunter, Dibley, & Heywood, 2010). In Tanzania, a discrete choice experiment in which participants selected between two different birthing scenarios found that a respectful provider attitude and the availability of medical equipment were the most important variables in choosing a clinic (Kruk, Paczkowski, Mbaruku, Pinho, & Galea, 2009). Two other studies employing interviews in Tanzania discovered that village opinion of a clinic, discussion with husband, advise obtained during antenatal consultations, and knowledge of pregnancy risk factors were all tied closely to place of delivery (Mpembeni, et al., 2007), (Kruk, Rockers, Mbaruku, Paczkowski, & Galea, 2010). Clearly, the issue of home deliveries is complex and multi-faceted, going beyond demographic data and influenced to a greater or lesser extent by a broad range of factors. This subject warrants more attention, and needs to be investigated in a variety of countries since factors may differ from culture to culture.
Purpose

This study focuses on this complex array of factors that affect women’s decisions or abilities to go to a local clinic, a Centre de Santé Communitaire (CSCOM), to give birth. The influence of money, distance from a CSCOM, and beliefs about the CSCOM and modern medicine are all investigated, as well as an open discussion about the decision and ability surrounding place of delivery. Both qualitative and quantitative data is gathered through interviews regarding these factors to allow for a broad range of data analysis; interviews are used to communicate directly with the women, and to obtain a more thorough understanding of the reasons women themselves report for giving birth at a clinic or at home.

Factors are grouped into two main categories, those that involve the ability to go to a CSCOM and those involving attitudes or beliefs about delivering in a CSCOM. Data collected is further grouped into individual, community, and health professional responses to be analyzed. Information from all of these sources is then brought together to create a more holistic understanding of the multi-dimensional problem of women delivering outside of a health facility.

Methods

Participants

Participants in this study were women of reproductive age or beyond that had at least one child. They varied greatly in age and number of children (the average number of children in the group being 3.71), but all had delivered at least once and were almost exclusively housewives. In total, 67 women from different rural villages participated. These women were found in one of two ways; the researcher would walk around the village and enter different compounds to conduct interviews in the courtyard, then once there other women would wander by or be
brought to participate. In each village, the translator had a contact that served as a guide through the village and helped to find participants. Additionally, five medical professionals from three different villages, including a midwife, a nurse, and several matrons, were interviewed.

**Study Area**

This study was conducted in villages in and near the commune of Sanankoroba, located in the region of Koulikoro in southern Mali. All of the villages are in the commune of Sanankoroba except Douban, which is just over the border in the neighboring commune (see Appendix 1 for map). The villages from which data was collected included Sanankoroba (population = 8,960), Madina (565), Bancocoura (951), Tourela (1,367), Douban (unknown), Sinsina (1,865), Koniobla (2,709), and Dikato (1,602). The villages were selected by a local contact, and are presumably a random sampling of villages in the area. The village of Sanankoroba is about 30 km south of Bamako on the main, paved road, with Sotramas (public buses) providing easy and cheap transportation to and from Bamako. It is a fairly large village, and differs from the other villages in having the paved road and electricity during part of the day. The other villages are connected simply by dirt roads in varying states of repair and lack electricity. Four of the villages visited, Sanankoroba, Bancocoura, Tourela, and Koniobla, have CSCOMs, while the other four do not.

The public health infrastructure in Mali is organized with community health centers (CSCOMs) as the first level and most basic facility, present in a number of villages throughout Mali. The next level is a Centre de Santé Reference, to which cases get referred if they are beyond the capabilities of a CSCOM. A variety of professionals can work at a CSCOM, including doctors, nurses, midwives, and matrons. Most CSCOMs have at least one matron, a woman who has had approximately 9 months of formal training and further field experience. A
larger CSCOM may have a larger variety, such as the CSCOM in Sanankoroba that has a doctor, a midwife, and several nurses and matrons. A midwife has had more formal training than a matron, typically several years (Sy, 2010).

Data Collection

Individual interviews and one group-discussion were used in this study to gather data on women’s beliefs and perceptions regarding delivery. First, the project was explained by the translator and oral consent was obtained. A log of consent, with researcher’s and translator’s signatures, was kept in a separate place from the interviews. Semi-structured interviews were used for data collection in this study, interviews lasting anywhere from 5-30 minutes. Questions were asked of a quantitative and qualitative nature about the participant’s life and her decision regarding delivery. The exact nature and wording of questions evolved, as they were fine-tuned based on actual field experiences (see Appendix 2 for sample interview questions). Interviews were conducted primarily in the house of the interviewee or the house of a neighbor, although a few were held in other places such as a local kindergarten. If the participant did not object, the interview was recorded. A couple interviews were conducted with two or three women at once, since they were already sitting in a group and were preoccupied with other tasks. In Bancocoura, a group discussion was held rather than individual interviews, so the data is used for community comparisons only and not for individual analysis. Of the 67 women who participated, 59 individual interviews were held and 8 women took part in the group discussion.

In addition to interviews conducted with rural mothers, health professionals who work at the CSCOMs were sought out and asked questions, also based on a pre-set questionnaire and semi-structured. Five professionals in total, a matron from Tourela, a matron from Koniobla, and a matron, nurse, and midwife from Sanankoroba, were interviewed. Through these
discussions, a better understanding of how a birth at a CSCOM takes place was gathered and the opinions of local professionals regarding home births were obtained.

Data Analysis

Data was primarily analyzed in two ways, as correlations against the variable of going to a CSCOM and by percentages of responses for qualitative data. To analyze correlations between variables and place of delivery, a 0 was used for women delivering exclusively at home, a 1 for exclusive CSCOM deliveries, and a fraction representing the proportion of home births for women who had delivered in both places (e.g. 1/6 if the woman had given birth in a clinic 1 time out of 6 total deliveries). For qualitative questions, answers were translated from French to English by the researcher, coded, and divided into different categories. Percentages were then calculated based on number of responses to a certain question out of total number of participants who had answered that question, which in some cases was less than the total of 59. In addition, one odds ratio was calculated to compare women living in a village with a CSCOM and those not.

Results

Individual

Of the 59 individual participants, 39 women (66%) had delivered exclusively at the clinic, 14 women (24%) had delivered exclusively at home, and 6 women (10%) had experienced clinic and home births. The two strongest correlations were found between the woman having a voice in the decision on place of delivery and institutional birth, 0.462, and travel time to closest CSCOM and likelihood to give birth there, -0.403 (see Appendix 3 for graphs). The other variables all produced very weak or negligible correlations with place of delivery: woman or
husband having an occupation other than housewife and farmer (0.175), number of years completed in school (-0.065), and number of children (0.008). An additional statistical analysis, an odds ratio, was calculated to determine the effect of living in a village with a CSCOM on the likelihood to give birth there. The odds ratio for women living in a CSCOM village versus those not was 5.33 (95% confidence interval = 4.10, 6.56). This figure means that the odds of a woman who lives in a CSCOM village of giving birth there are 5.33 times higher than the odds of a woman living in a non-CSCOM village of delivering in a clinic.

Other quantitative data gathered can better be represented as percentages. The average price of delivery reported was 6015 FCFA (approximately US $12), although prices given tended to cluster based on village as discussed later. Based on the prices given, 87.5% of women believed that this was elevated or that everyone could not afford this price. When asked what the price of delivery should be so that everyone could afford delivery at the CSCOM, the average of prices given was 2285 FCFA (approximately US $5).

Questions aimed at gathering a qualitative response and producing a more holistic understanding were also posed, and the answers obtained were coded and placed into categories. An open-ended question regarding why the participant delivered where they did produced a broad range of responses. For deliveries that took place at a CSCOM, the most common reason given for going there was to deliver in “bonnes conditions”, or good conditions, with 80% of women who had given birth in a clinic citing this. A plethora of similar responses to this were given, including one is taken care of there (15.6%), one has good health there (8.9%), problems that arise can be taken care of (6.7%), it’s reassuring (4.4%), one has a simple delivery there (4.4%), and the clinic is a good environment in which to give birth (4.4%). Although these constituted the majority of reasons, there were other responses that differed greatly. Seven of the
45 women that had given birth at a clinic (15.6%) said they chose this because they were sick during their pregnancies or had experienced difficulties with past births. This response was primarily given by women who had experienced some deliveries at the clinic and some at home. One woman said that the traditional birth attendant had asked her to go to the clinic, interestingly (Interview 10, Tourela, 2010). And one woman, who was originally born in Bamako and later moved to a village, stated that she was simply not accustomed to home births (Interview 5, Madina, 2010).

For births that occurred at home, a similar range of reasons was present. The most common explanation given for delivering at home was a lack of a CSCOM (35%). Similar responses, such as lack of transportation (20%), distance (15%), and rain at the time of delivery (10%), were also fairly common. The other main response was that the participant delivered too quickly to make it to the CSCOM (30%); although this was sometimes related to the distance, it was also a reason given by women who lived in the same village as a CSCOM, making it slightly different. A lack of means, usually meant as money to pay the fee, was also given as a reason for staying at home (25%). Two women (10%) stated that although there was a CSCOM, there was not a qualified matron working there when they delivered.

The most common response when asked what the advantages are of giving birth at a CSCOM was that one receives care (71.2%), followed closely by mentions of good conditions (67.8%). Other advantages stated included: problems that arise can be resolved (27.1%), the clinic is a good environment (16.9%), medications (16.9%), fewer risks (6.8%), relaxing/easy birth (6.8%), someone follows the pregnancy and health of mother (5.1%), the health is guaranteed (3.4%), and there is a trained midwife present (1.7%).
A last question focusing on the participants’ opinions asked why women in general did not go to the clinic to give birth, and inquired as to what the interviewee thought a solution would be. For the first part of the question, the quickness of delivery was mentioned by 62.7% of women as an explanation for home deliveries. The high cost of delivery and simultaneous lack of money on the part of the women was the second most common answer (40.7%). Following this were the distance or lack of a CSCOM (32.2%), lack of transportation (13.6%), and some deliveries take place at night (3.4%). A general lack of means was also mentioned by 37.3% of respondents.

Almost all of the women presented having a CSCOM in villages where there is not one as a solution to get more women to deliver at a clinic (85%). Lowering the price was also mentioned fairly often as a solution (35%). A few women, however, gave more inventive solutions. Two women (5%) suggested increasing antenatal consultations would lead to an increase in the number of women giving birth at a clinic, in part because they would have a better idea of the progress of the pregnancy (Interview 37, Sanankoroba, 2010), (Interview 38, Sanankoroba, 2010). Another woman (2.5%) felt that helping the men by creating more jobs in the villages would lead to an increase in institutional deliveries (Interview 55, Dikato, 2010).

Through discussions with the women and through questions about satisfaction with the clinic, other elements that may affect women’s decisions regarding delivery were discovered. For example, although the closest clinic to Madina is Bancocoura, one woman mentioned that most of the women went to Siené if they had to go to a clinic because they did not trust the matron at Bancocoura (Interview 3, Madina, 2010). In Touréla, there were also problems with a matron in the past; although there was a CSCOM in the village, women cited problems with not having a qualified matron or with her not being present the day they delivered. From Douban,
the closest CSCOM by distance is in Koniobla, but due to the terrible condition of the road, most women chose to go to Sanankoroba. Other complaints from women included a lack of electricity at the CSCOM and matrons that chat too much in Sanankoroba (Interview 55, Dikato, 2010), (Interview 56, Dikato, 2010). Although these factors do not necessarily cause a woman to deliver at home and cannot be analyzed to show influence on women’s decisions, they highlight the multi-dimensional nature of this question and demonstrate that a number of different factors interact to lead to a woman’s place of delivery.

Aside from different variables to be analyzed, there were also questions that elicited universal responses from the participants. Every woman stated that she would prefer to deliver at the CSCOM if it was an option, and that her husband agreed with this. There was also a consensus between all participants that there were no disadvantages to giving birth at a CSCOM, and with two exceptions (which have been discussed previously) all women stated that there was nothing about the clinic that they did not like.

**Community**

When individual factors are grouped together by community, some interesting patterns emerge, demonstrating that some variation may be based on village. The number of women that delivered in a clinic was not equally spread throughout all villages. In Madina, only one woman regularly delivered at a CSCOM, whereas every woman interviewed in Bancocoura, Sanankoroba, Koniobla, and Dikato had exclusively given birth at a clinic. Tourela, Douban, and Sinsina had a mixture of home and clinic births. Madina was also an outlier in price of delivery reported; while the averages in the other villages ranged from 4,000-6,500 FCFA, the average given in Madina was 15,000 FCFA. Similarly, the average price given for what it should cost fell between 2,000-3,000 FCFA in all villages except Dikato. Here it was 1,306
FCFA, mainly due to three women who answered that it should be free. The question regarding the ability of everyone to pay produced similar divisions by village. All of the participants in Madina, Tourela, Douban, Sanankoroba, and Dikato and 85% of participants in Sinsina stated that everyone could not pay the delivery fee. In contrast, everyone in Bancocoura and 75% of women in Koniobla felt that all women could pay to deliver in a CSCOM.

A few categories of subjective answers also varied according to village. While the majority of women who had delivered at a CSCOM cited the good conditions and other positive aspects of the clinic as reasons to go there, 4 of the 5 women in Madina who had ever delivered at a CSCOM stated that it was because they had been sick during the pregnancy. In general, participants from villages without CSCOMs were more likely to state rapidness, distance, or lack of CSCOMs as reasons why women still give birth at home. On the other hand, women living in villages with CSCOMs were more likely than the others to cite a lack of money as a reason for not going to a clinic for birth.

Another interesting dimension uncovered were community attitudes towards institutional delivery in Bancocoura and Koniobla. In both villages, women claimed that everyone delivered at the CSCOM and there were no home births. Although these claims could not be verified, it is a significant community-wide perception. These villages also had different attitudes about money; as stated previously, they had much higher percentages than other villages that believed everyone could pay for delivery at a CSCOM.

Medical Professionals

Five medical professionals were interviewed in total: a midwife, a matron, and a nurse from Sanankoroba; a matron from Tourela; and a matron from Koniobla. In Sanankoroba, all three women said that most of the women in the village came to the clinic to give birth. At this
CSCOM, a woman must be dilated 9-10 inches before the midwife or a matron will begin delivery; otherwise, she must leave and return later. After the delivery, a new mother may stay in the resting room for 6 hours. The stated price for delivery was 2,900-3,400 FCFA, although the price depends on several factors. It costs more if a woman has not gone to antenatal consultations, and if there are complications or injections are needed it is an additional cost. The matron and nurse both felt that everyone could pay this cost, the matron stating that a woman may even find the money after she has given birth and pay later. The CSCOM staff’s replies had more variation than that of other women regarding why some women still give birth at home. Money, traditions, the employment of traditional birth attendants, bad condition of the roads during the rain, and lack of transportation were all mentioned. The matron commented that some women chose to deliver at home because they were ashamed. The nurse felt that the main reason was ignorance and negligence, since women said they delivered too quickly while in fact women have two hours of warning before they actually deliver(Sy, 2010), (Matron, Sanankoroba, 2010), (Nurse, Sanankoroba, 2010).

In Tourela, the matron highlighted the interplay between traditional birth attendants and the CSCOM. She stated that the women from Tourela did not come, giving the excuse that they did not have enough money. However, she believed that everyone could pay, particularly since the price at the clinic was 2,000 FCFA compared to gifts amounting to 1,750 FCFA one would have to give a traditional birth attendant. As long as there are traditional birth attendants, the women would not want to come to the clinic she said. After a birth at this clinic, the resting time is 2 hours, much shorter than the other clinics. Giving an additional reason for women to deliver at home, the matron said that some women are ashamed with her because they feel she is too small; however, she did not expound on this to explain why this would cause shame. She also
commented that many women came from Fada N Kungu, a neighboring village, because they had encountered difficulties with their traditional birth attendants there (Matron, Tourela, 2010).

The matron in Koniobla explained that all the women of Koniobla come to the clinic to deliver, that there are no home births and no traditional birth attendants. She added that if a woman gives birth at home, she has to pay a 7,500 FCFA “tax”. At this CSCOM, a woman may stay for 1 – 2 days after she has delivered. The price at this clinic also depends, ranging from 3,500 FCFA without gloves or care, to 5,000 FCFA. The matron stated that everyone could pay this, and that it was obligatory. The reasons women in other villages delivered at home, according to this matron, were a lack of money and a lack of transportation. She said the solution is to make people aware, to talk with husbands and tell them they must bring their wives to the CSCOM even if they do not have money (Matron, Koniobla, 2010).

**Discussion**

In assessing the data gathered from interviews, factors that affect women’s decisions regarding delivery can be divided into two basic categories to better understand the information: those involving ability, such as money or distance, and those involving choice, such as views towards clinics and view of necessity.

**Ability Factors**

Ability to access a CSCOM to give birth, due to distance or the cost, was the main factor that affected women’s decisions concerning where to give birth. Within this broad category, distance appeared to have a greater influence than cost. One of the highest correlations examined was between distance and place of delivery, with women living farther away being less likely to have an institutional delivery. The odds ratio for institutional delivery of women living in a
CSCOM village to those living in a non-CSCOM village also demonstrates that distance from a CSCOM may be a barrier in delivering there. These statistic measurements also do not reflect the exact reality of every woman’s situation, underestimating the impact of distance. The distances used in calculations are based on where the participant lives; however, during discussions, a number of women who lived far from a CSCOM said that they went to stay with family in a village with a clinic near the end of their pregnancies. This means that a participant who lived 30 minutes from a CSCOM may have in fact been within walking distance when she was actually delivering, overcoming the problem of finding transportation.

Further supporting these statistical measures are the answers given by women regarding their reasons for their own decisions and their perceptions of the reasons of other women. The most common reason given by a participant who had delivered at home was a lack of CSCOM, and several other related answers were stated such as lack of transportation, distance, and inability to travel due to rain. Collectively, these suggest that a major barrier to institutional births in this region is lack of access to a CSCOM due to distance and transportation. This is further underscored by the case of Madina, apparent when the data is examined by village. The amount of time it takes to get to the nearest CSCOM by donkey cart (the most common form of transportation in this village) is 3 hours, a prohibitively long amount of time for a woman in labor. Reflecting this, only one woman of the eight, a woman who had moved to the village from Bamako, regularly delivered at a clinic. The other participants from Madina who had experienced institutional births, delivering once each at the clinic, all cited sickness as their reason for making the long journey to the CSCOM.

The high cost of delivering at a CSCOM is another barrier in the ability of women to have an institutional birth, although data suggests it is not as influential in women’s decisions as
distance. Although it is not a perfect measurement of ability to pay, the woman or her husband having an occupation other than housewife or farmer was slightly correlated with institutional delivery. A lack of means was given third most commonly, after a lack of CSCOM’s and quickness of labor, as a reason that the interviewee delivered at home.

The issue of money is slightly more ambiguous than distance, so it is difficult to determine the actual impact of it on delivery decisions. The price of delivery seems to vary based on several factors, and many women cited figures far above those given by the medical professionals interviewed. According to the staff of these various CSCOMs, the base price of delivery is 2,000 – 3,500 FCFA, although if there are complications or injections are needed the price can reach 5,000 FCFA. However, the average price given by women for delivery was 6,015 FCFA, with some estimates going as high as 20,000 FCFA.

Although the reality of the situation is difficult to determine, it is clear that women perceive price as being a barrier. Almost all of the women questioned said that the cost was too high or that everyone could not pay. Also, in contrast to women’s self-assessments for reasons they delivered at home, when asked why there are still women that deliver at home in general the most common response was money. It is possible that money had a larger impact than stated by interviewees, perhaps due to shame.

Belief/Attitude Factors

Overtly, women based their decisions about delivery primarily on the ability factors of access to a CSCOM and money. When asked about the advantages and disadvantages of delivering at a CSCOM, interviewees listed a broad range of positive aspects and without exception had nothing negative to say. Similarly, all respondents except two said that they had no problems with the CSCOM and there was nothing they did not like there. Every woman also
agreed that a home birth was not sufficient, that it was necessary to go to a clinic. Another variable that supports the idea of women’s positive attitude towards institutional births is the voice of the wife in making the decision. The woman helping to make the decision was correlated moderately with giving birth in a CSCOM, suggesting that when given the option women choose the CSCOM. Clearly all of the women trusted modern medicine in general and believed that delivering at a CSCOM was more advantageous.

Another aspect of positive attitudes towards delivery became clear when comparing villages. In Bancocoura and Koniobla, women said that everyone in their village delivered at the clinic. In both villages there was the sense that delivering at the clinic was simply what one did, that there was no other option. Participants in this village also viewed the money situation differently, being much more likely to report that everyone could pay the fee. They argued that men could save up money as soon as they learned of the pregnancy, or they could go into debt and pay afterwards. This attitude, that one pays no matter what the financial circumstances, was lacking in other villages. These villages demonstrate that attitudes and beliefs can also work as a positive, very strong factor, leading women to overlook financial considerations and deliver at a CSCOM.

However, looking deeper gives a slightly different picture than the desire to deliver at a clinic hindered by practical considerations; while ability still seems to be the deciding factor, there clearly is some discrimination regarding when it is necessary to go to the clinic. Although all women believe delivering at a CSCOM is better as an abstract concept, women still made decisions about when it was absolutely necessary to go and when it would be worth it. For example, not all of the women chose to deliver at a CSCOM simply because it was advantageous. All of the women who had experienced both clinic births and home births chose to
go to the clinic because they were sick or had experienced difficulties in the past, demonstrating that they can find the means to go but distinguish between different levels of necessity.

Problems with individual CSCOM’s also informed women’s decisions in some cases. Two women in Tourela said they delivered at home because there was not a qualified matron at the clinic at the time of their deliveries. Interviewees in Madina also cited problems with a matron, saying they did not trust the matron in Bancocoura so they went to a more distant CSCOM to deliver. As mentioned, two participants also voiced complaints about the CSCOM in Sanankoroba, although they both had gone there to deliver. One woman stated that there was no electricity at the clinic, while the other woman did not like the tendency of some of the matrons to excessively chat. Although it is uncertain if these are always deciding factors in whether a woman goes to the clinic, clearly trust in the health care provider and facility is an essential aspect of delivering at a clinic.

The health professionals, interviewed to provide supporting information to the interviews of mothers, stated more often that the cause of home deliveries was grounded in beliefs or attitudes. One matron said that to get more women to come to the CSCOM, the solution was to talk with people and convince them to come even if they do not have money. Although the local people do not have much money, they still make decisions about how to spend it; she clearly felt that if they were better informed, they would put money towards a safe delivery. Other professionals mentioned the traditions of people, of how they are used to doing things a certain way, and the relationship with the traditional birth attendants. Both of these reflect attitudes held by women, even if they are unconscious, that giving birth at home is simply the way it is done or the least complicated method. Two professionals also mentioned something out of the ordinary, claiming that women were ashamed to come to the clinic to give birth. One said that this was
due to her own small size, while the other matron did not expound. But once again, the small, perhaps unconscious influence of attitudes and beliefs weaves through and interacts with the decision a woman makes concerning where she will give birth.

“Quickness” of Labor

Numerous women in this study stated that the quickness of labor was the reason they or other women delivered at home; in other words, from when they first felt labor pains and realized they were in labor, they did not have enough time to reach a clinic. This is an interesting factor to consider, since it is uncertain if the women did in fact deliver too quickly to reach a CSCOM or if they were ignorant of early warning signs. It could fall under the category of ability or could be a type of belief/attitude, depending on the actual circumstances. This reason also takes on different meanings when cited by someone living in a different village from a CSCOM, who must find transportation then make the journey to the CSCOM, and someone living a five minute walk from a clinic. The nurse at Sanankoroba believed that women were simply ignorant or negligent of early warning signs of labor, saying they had approximately two hours to get to a clinic from the first sign of labor. According to the Merck Manual, labor typically lasts 10-12 hours in first time mothers and 6-8 hours in subsequent pregnancies, although this can vary greatly (Brown, 2008).

Whatever the actual situation, whether women deliver too quickly or are unaware or ignore early labor signs, it is clearly a major problem. Two interviewees in Sanankoroba had a novel solution to increase institutional deliveries that may alleviate this problem. It was suggested that if more women participated in antenatal consultations, they would be more likely to deliver at a CSCOM. These women would have a better idea about when the delivery would begin, and so would be better prepared and would be anticipating it.
Conclusion

Clearly, a plethora of factors influence the decisions women make regarding location of delivery, producing a complex problem with multiple dimensions. Based on both qualitative and quantitative data, distance and presence of a CSCOM in the village appear to have the greatest effect on the outcome of delivery location. Money is also a barrier to a woman deciding to deliver in a clinic, although it is perceived to be a larger problem than it is actually reported by women. Deliveries that happen too quickly are also a large problem, although if this is a problem of ability to get to a clinic or knowledge of the birthing process is uncertain. Interweaving through these main factors are less influential but still present attitudes and beliefs that may positively or negatively affect a woman’s decision to have an institutional birth.

Solutions

Since the problems of birth and associated risks are something the rural Malian woman lives with her whole life, it follows that she will have legitimate suggestions on how to improve the birthing situation. In the interviews, numerous women offered their opinions on what a solution would be so that more women could deliver at a CSCOM. Reflecting the major problem of distance, the overwhelming response was to have a CSCOM in villages that currently lacked one. After this came a smaller percentage suggesting lowering the price, and one innovative suggestion of creating more jobs for the men of the village. Another creative suggestion was to increase antenatal consultations.

Given the positive attitudes of women towards institutional births, the prospect of increasing them seems to be feasible. Clearly the majority of these women think the ideal is to deliver in a clinic, although real-world problems and situations get in the way. However, the
logistics of an intervention to raise the percentage of institutional births are daunting. As the women indicated, placing a CSCOM in each village would be ideal but not very practical. Even if a CSCOM could be built in each community, it is doubtful they could all be staffed with competent matrons. And as several women underscored, having a matron the village trusts is essential to the women going to her to deliver.

An alternative to having more CSCOMs is to have better transportation. This could come in the form as something as simple as a moped-drawn cart, an “ambulance”, such as was present at the CSCOM in Koniobla. However, there are also a number of barriers to this solution. The ambulance would have to be cheap and run effectively, and it would have to be easy to call and have it arrive at a village quickly. Roads are another problem with this idea, since from many villages transportation time will still be high unless roads are improved. Another uncontrollable factor is the rainy season, which makes transportation of any sort very difficult.

In addition to trying to overcome the main hurdle of distance, other possible interventions could have mild impacts on the rate of home births. Lowering the price and talking with people about the importance of an institutional birth might increase rates some. Having a flexible plan for paying and holding discussions about saving up money could also potentially make people more able or more willing to pay the fee. And encouraging prenatal consultations, as some women suggested, would have multiple advantages. It would first help women to be more aware of the progress of their pregnancies and to be better prepared for labor to begin. Women would also be more used to the clinic, and it might naturally follow that if they went to consultations at a CSCOM that they would then deliver there. Lastly, it may help with the cost by spreading it out over a greater period of time; delivery is cheaper if a woman has gone to consultations since she has already paid for medications she will need during these visits.
Limitations of Methodology

Several limitations existed in this study regarding the methodology. A number of them related to the short period of time allowed for data collection, only three weeks. Obviously, this small time period limited the amount of data that could be collected and kept sample size small. Due to this short time period, questions could not be tested in the field before hand and adjusted according to observations and feedback. Instead, the interview guideline had to continuously evolve throughout the study, meaning not every woman was asked an identical set of guiding questions. It also meant that factors that emerged as potentially significant could not be added to the interview after a few days of interviews, so a limited set of questions was used that did not necessarily reflect the reality of the complex decision made by women.

The issue of language and translator was also a significant barrier in this study. Questions had to be translated from French to Bambara by a translator, and then answers had to be translated from Bambara to French and subsequently to English for the purposes of this paper. Whether it is a function of the language or the translator, open-ended questions were also sometimes rephrased into yes or no questions. The presence of a translator is a limitation in itself, and this translator was a particular barrier. He was inattentive, raised his voice at the interviewees if they did not understand, and occasionally had to be prompted to actually pose the question to the participant rather than answer himself. Overall, the translator did not seem to understand the true purpose of the research and often became bored and frustrated.

Another limitation is a weakness inherent in interview studies, which is that data is being collected in a subjective, self-reporting manner and is not verified. This, coupled with the barrier of language, led to a number of contradictions within and between interviews. Participants could give incorrect information for numerous reasons, including misremembering, being misinformed,
or choosing to not tell the truth. Women might choose to withhold the truth because they are ashamed of it, particularly in the presence of a translator and other members of the community that occasionally hung around interviews. In addition, the researcher being from a different country could produce mistrust or intimidation. Having a Western interviewer could also drive a desire to please and praise modern medicine, since Westerners are often associated with health care facilities.

**Future Directions**

This study leaves numerous questions unanswered, and further research in this area, which could take several directions, is clearly needed. A demographic analysis of factors affecting institutional births using survey data from Mali would provide a useful foundation. From there, a study could be performed of a similar nature to this one but with a much larger sample size, including more people and more areas of Mali. Also, a multitude of additional factors could be analyzed, including perceived quality of care from a CSCOM, number of prenatal and postnatal consultations attended, family member who actually paid, the education level of the woman and her husband, complications or difficulties experienced in past childbirths, knowledge about labor and warning signs, actual wealth of the family, and reliance in the past on traditional medicine. Ideally, the ultimate outcome would be health professionals and Malian women using this accumulated data to improve the health care infrastructure and increase the rate of institutional births in rural Mali.

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**Appendix 1: Map of Sanankoroba Commune**
Appendix 2: Sample Questions for Interviews
Questions for midwife:

- Comment est-ce qu’une naissance se passe à un CSCOM ?
  How does a birth happen at a CSCOM (community level health center) ?
- Quels sont les problèmes typiques dans une naissance ? Et comment est-ce qu’on les résout ?
  What are the typical problems with a birth ? How do you resolve them ?
- Quels sont les matériels qu’on utilise pour tous les naissances ?
  What materials are used for every birth ?
- Comment est-ce que les femmes paient pour les services ? Combien ? Avant ou après ?
  How do women pay for the services ? How much ? Before or after ?
- Pourquoi est-ce qu’une femme ne viendrait pas à CSCOM pour l’accouchement ?
  Why would a woman not come to the CSCOM to give birth ?

Questions for women who delivered at a CSCOM:

- Combien d’enfants avez-vous déjà ? Tous à CSCOM ?
  How many children do you already have ? All at the CSCOM ?
- Pourquoi est-ce que vous êtes venue ici pour l’accouchement ? (Si un accouchement passé pas à la maternité) Pourquoi vous n’étiez pas venue au passé ?
  Why did you come here to give birth ? (If a birth in the past not at the maternity) Why did you not come in the past ?
- Où est-ce que vous habitez ? A quelle distance d’ici ? Comment est-ce que vous êtes arrivée ici aujourd’hui ?
  Where do you live ? What distance from here ? How did you get here today ?
- Quel est votre occupation et celle de votre mari ?
  What is your job and that of your husband ?
- Que pensez-vous du paiement pour l’accouchement ? Est-ce que vous pensez que tout le monde peut le payer ? Facilement ?
  What do you think of paying to give birth ? Do you think that everyone can pay ? Easily ?
- Qu’est-ce que votre mari pense du fait que vous venez à la maternité pour l’accouchement ?
  What does your husband think of the fact that you came to the maternity to give birth ?
- Qu’est-ce que vous pensez de la médecine traditionnelle ? Moderne ?
  What do you think of traditional medicine ? Modern ?
- Quel est la plus grande distance que vous marcheriez pour venir pour l’accouchement ? Si vous habitiez plus loin, auriez-vous une méthode pour y arriver ?
  What is the longest distance you would walk to come to give birth ? If you lived further away, would you have a way to get there ?
- Pourquoi est-ce qu’il y a des femmes qui ne viennent pas à CSCOM pour l’accouchement, d’après vous ?
  Why are there women who do not come to the CSCOM to give birth, according to you ?

Questions for women with home births:
• Combien d’enfants avez-vous déjà ? Quand est la dernière née ? Déjà à un CSCOM ou une autre clinique ?
  How many children to you have already ? When was the last born ? Ever at a CSCOM or another clinic ?
• Si vous devez aller à Sanankoroba, ça prend combien du temps ? Comment est-ce que vous y arrivez normalement ?
  If you had to go to Sanankoroba, how long would it take ? How would you get there normally ?
• Quel est votre occupation et celle de votre mari ?
  What is your job and that of your husband ?
• Pourquoi est-ce que vous avez resté à la maison pour l’accouchement ?
  Why did you stay home to give birth ?
• Si vous avez le choix, où est-ce que votre accouchement se passerait ? Est-ce que vous avez de la famille ou des amis qui sont contre cette décision ?
  If you had the choice, where would you give birth ? Do you have family or friends who are against this decision ?
• Qu’est-ce que vous pensez de la médecine traditionnelle ? La médecine moderne ?
  What do you think of traditional medicine ? Modern medicine ?
• Que pensez-vous du paiement pour l’accouchement ? Est-ce que vous pensez que tout le monde peut le payer ? Facilement ?
  What do you think of paying to give birth ? Do you think everyone can pay ? Easily ?
• Qu’est-ce que votre mari pense de l’accouchement ?
  What does your husband think about giving birth ?
• Si vous habitiez dans le village de Sanankoroba, iriez-vous à la maternité pour l’accouchement ?
  If you lived in the village of Sanankoroba, would you go to the maternity to give birth ?
• Si l’accouchement à la maternité était moins cher, y iriez-vous pour l’accouchement ?
  If giving birth was cheaper at the maternity, would you go there ?
• Dans votre accouchement domicile, qu’est-ce qui s’est passé ? Qui était avec vous ? Après la naissance ?
  In your home birth, how did it happen ? Who was with you ? After the birth ?
• Qu’est-ce que vous pensez de la maternité en général ? Vous aimez y aller ? Qu’est-ce que vous ferez pour améliorer la maternité ?
  What do you think of the maternity in general ? Do you like to go there ? What would you do to make it better ?
• Il y a toujours beaucoup de femmes qui accouchent à la maison. Selon vous, pourquoi ?
  There are still many women who give birth at home. According to you, why ?

Appendix 3: Graphs of Correlations
Distance vs Institutional Delivery

Number of Children vs Institutional Delivery

$R^2 = 6E-05$

$R^2 = 0.1627$
**Occupation vs Institutional Deliveries**

- Occupation vs Institutional Deliveries
- Proportion of Deliveries at CSCOM
- Proportion of Deliveries at CSCOM
- Occupation
- Proportion of Deliveries at CSCOM
- Occupation
- $R^2 = 0.0308$

**Power of Decision vs Institutional Delivery**

- Power of Decision vs Institutional Delivery
- Proportion of Deliveries at CSCOM
- Power of Decision
- Proportion of Deliveries at CSCOM
- Power of Decision
- $R^2 = 0.2136$

**Education vs Institutional Delivery**

- Education vs Institutional Delivery
- Proportion of Deliveries at CSCOM
- Years of School
- Proportion of Deliveries at CSCOM
- Years of School
- $R^2 = 0.0042$