ORIGINAL RESEARCH ARTICLE

"I don't know anything about their Culture": The Disconnect between Allopathic and Traditional Maternity Care Providers in Rural Northern Ghana

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Abstract

The provision of maternal and neonatal health care in rural northern Ghana is pluralistic, consisting of traditional and allopathic providers. Although women often use these providers interchangeably, important differences exist. This study explored the differences in approaches to maternal and neonatal care provision by these two different types of providers. This research was part of the Stillbirth and Neonatal Death Study (SANDS), conducted in northern Ghana in 2010. Trained field staff of the Navrongo Health Research Centre conducted in-depth interviews with 13 allopathic and 8 traditional providers. Interviews were audio-recorded, transcribed, and analyzed using in vivo coding and discussion amongst the research team. Three overarching themes resulted: 1) many allopathic providers were isolated from the culture of the communities in which they practiced, while traditional providers were much more aware of the local cultural beliefs and practices. 2) Allopathic and traditional healthcare providers have different frameworks for understanding health and disease, with allopathic providers relying heavily on their biomedical knowledge, and traditional providers drawing on their knowledge of natural remedies. 3) All providers agreed that education directed at pregnant women, providers (both allopathic and traditional), and the community at large is needed to improve maternal and neonatal outcomes. Our findings suggest that, among other things, programmatic efforts need to be placed on the cultural education of allopathic providers. *(Afr J Reprod Health 2014; 18[2]: 36-45).*

Keywords: Allopathic medicine, traditional medicine, maternal health, delivery care, culture

Résumé

La prestation de soins de santé maternelle et néonatale dans les régions rurales du nord du Ghana est pluraliste, composé de fournisseurs traditionnels et allopathiques. Bien que les femmes utilisent souvent ces fournisseurs interchangeables, il existe des différences importantes. Cette étude a exploré les différences dans les approches à la prestation de soins de santé maternelle et néonatale par ces deux types de fournisseurs différents. Cette recherche fait partie des études sur la mortinatalité et les décès néonatales (EMDN), menées dans le nord du Ghana en 2010. Le personnel de terrain formé du Centre de Recherche en santé de Navrongo a mené des entrevues en profondeur avec 13 allopathique et 8 fournisseurs traditionnels. Les entrevues ont été enregistrées sur bande audio, transcrites, et analysées à l'aide du codage in vivo et la discussion entre l'équipe de recherche. Trois grands thèmes ont été constatés : 1) De nombreux fournisseurs allopathiques ont été isolés à partir de la culture des communautés dans lesquelles ils pratiquaient, tandis que les fournisseurs traditionnels étaient beaucoup plus conscients des croyances et des pratiques culturelles locales. 2) les fournisseurs allopathiques et traditionnels de soins de santé ont des cadres différents pour la compréhension de la santé et de la maladie, alors que les fournisseurs allopathiques s'appuient fortement sur leur connaissance biomédicale, les fournisseurs traditionnels s'appuient sur leur connaissance des remèdes naturels. 3) Tous les fournisseurs sont d'accord que l'éducation qui vise les femmes enceintes, les fournisseurs (allopathiques et traditionnels), et la communauté au sens large, est nécessaire pour améliorer la santé maternelle et néonatale. Nos résultats suggèrent que, entre autres, les efforts programmatiques doivent être appliqués à l'éducation culturelle des fournisseurs allopathiques. *Afr J Reprod Health 2014; 18[2]: 36-45).*

Mots-clés: médecine allopathique, médecine traditionnelle, santé maternelle, soins de l'accouchement, culture

Introduction

Maternal and neonatal mortality rates in much of sub-Saharan Africa are unacceptably high and the rates in Ghana are no exception. Recent data from studies conducted in Ghana show a lifetime risk of maternal mortality of 1 in 66, and a neonatal mortality rate of 24 per 1,000 live births[1,2]. Almost half of maternal deaths in Ghana occur in the first 24 hours after birth, often resulting from delays in seeking and receiving adequate medical care[2,3]. Thus, one focal area for intervention to improve maternal and neonatal outcomes surrounds the pregnant woman's decision of whether or not to seek medical care during pregnancy and delivery.

Currently, Ghana has a pluralistic health care system consisting of both traditional and allopathic medicine (See Table 1). When seeking antenatal care, Ghanaian women use traditional medicine, allopathic medicine, or some combination of the two[4]. The system of traditional healers has been widely used for centuries, and these healers typically live within the communities they serve[5]. Medical care through traditional healers has advantages. Since traditional healers share history and culture with their patients, they provide care that complements their patients' belief systems and fits within their worldview of the causes of illness[4,6-9]. In addition, traditional healers are often readily accessible and affordable. Most communities have at least one traditional provider present[4,10,11].

Disadvantages abound as well. Many aspects of traditional medicine are not scientifically proven or necessarily reproducible. Healers often rely on spiritual guidance for their treatments, and herbal medicines typically have limited or nonexistent dosing guidelines, leading to potentially serious risks for patients[6,11,12]. While some traditional healers undergo training through an apprenticeship, many are without any formal or recognized training[10]. They are frequently characterized by a spiritual calling rather than completion of a formalized training program[6, 13].

Table 1: Operational definitions of provider cadres

Provider Cadre	Operational Definition	Type of Providers
Allopathic providers	Providers with formal medical training that is recognized by some formal accrediting body and who provide care that reflects a western medical model of illness	Doctors, nurses, midwives, medical assistants, nursing assistants
Traditional providers	Providers without formal training who provide care that reflects a cultural understanding of health and illness.	Traditional birth attendants, herbalists, traditional healers

Challenges exist in providing conventional allopathic maternal and child care in Ghana. Among other challenges, these include: 1) Providers knowing what to do, but having insufficient resources; 2) The cost of allopathic care – particularly when factors such as travel, lost work hours, and the cost of medication and supplies are taken into account[4,11,14]; 3) Allopathic medicine's inherent separation of the physical from the spiritual, which is contrary to many local beliefs and can make it difficult for patients to understand their illnesses and the need for allopathic treatment[6,9]; and 4) Lack of skilled health providers. According to one report, the physician-to-population ratio in Ghana is 1:20,000[15]. This discrepancy is magnified in rural areas. For example in the capital city of Accra, the physician-to-population ratio is 1:6,000 while in the northern rural regions it is 1:100,000[16]. By contrast, the traditional healer: population ratio is 1:200. Possibly as a result of these statistics, much of the population – as much as 80% - relies upon traditional healers[17].

In practice, patients often combine traditional and allopathic medicine[11,16]. Tabi et al. found that Ghanaian citizens frequently use both types of health care, noting the interplay between family, friends, employers, education, religion, and culture as factors dictating which health care system to rely upon. Additionally, the authors reported that people often sought *diagnosis* from allopathic medical providers, while seeking both *treatment and spiritual meaning* from traditional medicine[4]. As Green and Makhubu note, the "shortcomings of traditional healing should be balanced against its beneficial or useful functions. The same can be

said for [allopathic] medicine"[6]. Most literature to date on the interplay between traditional and allopathic medicine focuses on topics such as how traditional providers need to improve, why patients choose one over the other, the limited resources available, and how to educate women and communities to emphasize utilization of allopathic health care providers. In contrast, the aim of this research was to compare and contrast the approaches to maternal and neonatal care taken by traditional and allopathic providers in rural northern Ghana.

Methods

Setting

This research was part of the Stillbirth and Neonatal Death Study (SANDS), conducted between July and October 2010. The setting was the Kassena-Nankana District (KND) of the Upper East region of northern Ghana. The region is largely rural and contains one district hospital, located in Navrongo, and five community health centers. A comprehensive description of the region and methods is detailed elsewhere[14,18-20].

Identifying Participants

The Navrongo Health Demographic Surveillance System (NHDSS) operates within the Navrongo Health Research Centre (NHRC) with the purpose of monitoring population dynamics, including births and deaths. The NHDSS has divided the Kassena-Nankana District into five zones. For this research, we randomly selected two zones for inclusion in the study (North, South).

We conducted in-depth interviews (IDIs) with 13 allopathic health care providers (3 nurses, 3 midwives, 2 medical assistants, and 5 doctors) and 8 traditional providers (4 herbalists and 4 traditional birth attendants). Providers were selected based upon their availability for interview during the study period.

The nurses, midwives, and medical assistants were interviewed in the selected zones. As medical doctors are generally only stationed in hospitals in this area, the selection of doctors for the interviews was done at the district hospital. The Senior Medical Officer (SMO) in charge of the district hospital was intentionally selected, and the remaining doctors interviewed were conveniently selected based on scheduling availability.

The Interviewers

Six trained field staff members conducted all of the interviews. The interviewers were employees of the NHRC, and each received a minimum of one week of instruction from one of the co-investigators prior to beginning interviews. This instruction included mock interviews and a pretest interview. Of the field members, 4 were Ghanaian (3 male, 1 female), and 2 were American medical students (both female). The American students conducted the interviews with the 13 health care providers in English. The Ghanaian field staff members were fluent in English, Kasem, and Nankani, and conducted all interviews in the respondent's native language. There were no known relationships between interviewers and study participants.

Data Collection

In-depth interviews (IDIs) were one-on-one interviews based on a semi-structured interview guide. Interviews typically lasted 45-60 minutes each and followed a semi-structured interview guide. We conducted interviews with allopathic health care providers in the health care setting, and typically in respondents' homes for the traditional providers. We audio recorded and then transcribed all interviews into Microsoft Word. For the interviews conducted in English, transcription was verbatim; however, for the interviews conducted in either Kasem or Nankani, the conversation was translated into English for transcription. At least three of the co-investigators read all transcribed data, including field notes, and reviewed them for completeness and clarity. Unclear portions of the recordings were reviewed by all interviewers and the project director, and, if a consensus was unable to be reached on the content, the data were eliminated from the research record.

Data Analysis

We began our analysis using "in vivo" coding to assist in the development of the main codes. This involved making written notes on hard copies of

the transcripts and creating a list of potential codes. Members of the research team discussed the potential codes and created a preliminary codebook. Two of the authors (RH, EH) then conducted focused coding, reviewing each transcript line-by-line and assigning codes reflected in the codebook. When coding was complete, we compiled quotes reflecting each identified coding "node." Field notes, coding nodes, and transcripts were then reviewed together amongst the investigators.

Ethical Issues

We sought permission from local community leaders, the District Health Officer, and the Senior Medical Officer in charge of the hospital to conduct this study. All participants were taken through an informed consent process, during which the aims, objectives, risks and benefits of the study were described. Only those who consented to participate were enrolled in the study. We also asked permission to audio record all interviews. All interviews were conducted in private or semi-private locations with attention to maintaining confidentiality. No identifying information was recorded, and all audio files and transcripts were stored on password-protected computers.

This research was approved by the Institutional Review Boards of the Navrongo Health Research Centre (NHRC), University of Michigan, and University of North Carolina- Chapel Hill.

Results

We conducted a total of 21 in-depth interviews (IDIs) with traditional and allopathic health care providers in rural Northern Ghana about issues surrounding childbirth. Three main themes emerged from the data: a disconnect between allopathic provider knowledge and community practices, differing frameworks of understanding pregnancy and childbirth, and the need for increased education of all people involved in pregnancy and childbirth.

"In Touch" with the Community

Traditional providers interviewed were more aware of the practices of the local community than were the allopathic health care providers in the same communities. In response to questions about pregnancy-related behaviors, rituals, spiritual protection, herbal preparations, and decision making in the community, allopathic health care providers used the phrase "I don't know" a combined total of 35 times throughout the interviews and used numerous other phrases such as "I'm not sure," "I wouldn't know," and "I can't be certain." While several of the allopathic health care providers were able to provide answers to some of these questions, gaps in their knowledge still remained. In contrast, the phrase "I don't know" was used only once by a traditional provider. These differences are highlighted in the examples below.

I (Interviewer): Who decides on spiritual activities?

R (Respondent): Hmm… This one, ma, that is why I say I can't be, I can't talk much about this place.

I: Okay.

R: So if you are talking, maybe it's the male. The man they are in charge that. But I didn't, I don't know anything about their culture here much.

(IDI, Allopathic health care provider- Midwife)

R: At times when a baby is born, the father goes to consult a smooth-sawyer and he is told the baby wants something to be done for him.

I: Give me an example.

R: The baby can say he wants a bangle; so after the baby is born, the bangle is put on his wrist to protect the baby.

(IDI, Traditional provider- Healer)

Furthermore, allopathic health care providers frequently answered questions in ways that later seemed incorrect when viewed against traditional providers' perspectives. For example, allopathic health care providers regularly stated that there were no rituals or spiritual protections used in the first days or months of a baby's life, herbal preparations were not used, and colostrum was always given, despite the fact that several of the traditional providers reported the opposite

occurring. The following excerpts illustrate this point:

I: What food is the baby given during that first week?
R: Breast milk.
I: What about water?
R: No.
I: What about gripe water?
R: No.
I: What about colostrums?
R: Yes.
I: And what about herbal preparations?
R: No, please.
I: Are there any rituals in that first week?
R: No.

(IDI, Allopathic health care provider- Nurse)

R: We give the breast milk and those millet water and the herbs or grasses for a full week before we stop them.
I: How about the colostrums?
R: No if it is bitter the baby can't suck… another Nursing Mother whose breast milk is not bitter will breastfeed it for some time.
I: How about the gripe water?
R: We don't give because we don't have those things here.
I: How about ritual water and foods?
R: In some homes, they will put the baby alone in a certain room and allow it to cry for some time and the mother wouldn't even attend to it. Then after that she can go and pick it and breastfeed it .

(IDI, Traditional provider- Healer)

Different Frameworks of Understanding Pregnancy

When discussing pregnancy and childbirth practices in northern Ghana, allopathic and traditional providers often appeared to have quite different methods of approaching the same issues. For example, when asked, "Can you tell me a little about how women take care of themselves during pregnancy?" the allopathic health care providers were likely to discuss clinic visits, vital signs, physical exams, various medications, laboratory studies, and other medical issues. Traditional providers, on the other hand, were largely focused on what women should be eating. Of the eight traditional providers interviewed, only two mentioned clinic visits. None mentioned any of the other medical issues raised by the allopathic health care providers. These differences are highlighted in the excerpts below.

"So they come for weighing monthly and then we give them routine drugs, immunizations like tetanus, then de-wormers, mmm, and then we do PMTC test…. Take their HB. Then… we give them the malaria drugs."

(IDI, Allopathic health care provider- Nurse)

"First, when a woman is pregnant, she needs to eat well and now with this wet season she needs to stay away from cold and not do a lot of work."

(IDI, Traditional provider- Herbalist)

Similarly, when asked, "What can a woman do if she's having trouble breastfeeding?" all of the allopathic health care providers spoke of seeking medical advice or the specifics of what such medical advice would entail, such as repositioning, frequent feeding, and examining the breasts for abnormalities, as illustrated here:

"Basically they need to be shown the proper positioning which puts the baby, to breastfeed the baby. And they need to be encouraged to continue doing it. Particularly in the early days, when for some of them there's not much breast milk coming out. They need to be encouraged to keep putting the baby to the breast because it's the only way that the reflex will be activated to allow more milk to be made."

(IDI, Allopathic health care provider- Doctor)

In contrast, only three local healers spoke of seeking medical advice, while the rest spoke of different things that women can ingest to stimulate milk production.

"*If the breast milk doesn't come. We have certain things they called "kaligongo" (local medicine) mixed with "yara mum" (flour from guinea corn) and drink that water the breast milk will come"*

(IDI, Traditional provider - TBA)

Different approaches were also evident in management decisions regarding the newborn. While all 13 allopathic health care providers recommended sending a child with a seizure to a clinic or hospital, three of the eight traditional healers stated that traditional medicines were preferred over allopathic medicine for such an event. Similarly, in response to breathing troubles in newborns, allopathic health care providers recommended interventions such as oxygen, suction, and better delivery care. Traditional healers did recommend seeking medical attention, but also recommended actions like whistling in the baby's ear or putting water on the baby's chest.

The Need for Education of the Entire Community

Both allopathic and traditional healers agreed that one of the most important things that can be done to improve maternal and neonatal health outcomes is to implement more education, both directly to the mother and community-wide, on issues related to pregnancy and childbirth. There was an overall sense that many women in the community are not very knowledgeable when it comes to pregnancy and neonatal care, and, despite the current efforts, many are still not receiving the information and the education they need. This is illustrated by the following provider account:

"What I have to say, that we still educate them so that they know the importance of delivery at the health center, and also the attendance at the antenatal clinics. Some don't know the importance, so we taught them when they come they get early detection of any case and they detect it. … We try to educate the woman on the importance of it. And to know to understand and to come, so that they get skilled delivery."

(IDI, Allopathic health care provider- Nurse)

"If you could organize the women together and educate them about those signs and advise them to go to the hospital if they should see any, this would prevent complications."

(IDI, Traditional provider- TBA)

Respondents were asked for specific suggestions about how pregnancy outcomes and neonatal care could be improved, and how they proposed that knowledge could best be spread through the community. Some of the suggestions from the allopathic health care providers included more education at antenatal clinics and incorporating education about pregnancy and neonatal care into the educational curriculum of the schools. Many respondents stressed that it would not be effective to only educate the pregnant women, because many of the other members of their families and communities are involved in the decisions of when they should seek medical care. Thus, it was suggested to use the "natural flow" of information in the community, by meeting with community leaders (chiefs, elders, and opinion leaders), as well as community gate keepers (mothers in law, fathers in law), and to then let the information trickle down to the rest of the community. For instance:

" … A whole lot of community sensitization. Um, focus group discussions … And these should be channeled through the chiefs, the people, the natural flow. How generally information flows in the community. That's from the chiefs to the elders to opinion leaders. Yeah, these are people to rope in, in, in order to get information like this to seep down … to women in the community. … And you'll be surprised if you get opinion leaders to, to buy into this, information spreads like wildfire in a community."

(IDI, Allopathic health care provider- Doctor)

Some of these education initiatives have already begun, as described below:

"We are meeting with the community leaders, the chiefs, the mother-in-laws, and the father-

> *in-laws of course. They are the sole decision makers behind them. But when the woman is pregnant, unless they give the option that the woman should come to the hospital, the woman cannot come."*

(IDI, Allopathic health care provider- Medical assistant)

Traditional providers also emphasized the importance of community gatherings to spread information. Given that much of the region is rural, several of the respondents stated that it would be much more practical to conduct the education in a group setting. For example:

> *"If we have a community gathering we can ask the nurses to come and talk to them about those things and give them advice."*

(IDI, Traditional provider- Herbalist)

> *"We have to call them together because we cannot go [to] them house by house."*

(IDI, Traditional Provider - TBA)

Discussion

In summary, we found that allopathic and traditional health care providers in northern Ghana have very different levels of understanding of the cultural practices surrounding maternal and newborn health in their communities. They also appear to approach health care based on different frameworks for understanding health and disease. While allopathic health care providers were well informed on evidence-based medical care, they lacked knowledge and understanding about the cultural beliefs and practices of their patients when compared to traditional providers. Despite these differences, both allopathic and traditional providers agreed on the need for education to help women achieve healthier pregnancies.

We have previously reported on how local understanding of illness influences treatment practices in rural northern Ghana. Community members reported bitter or bad breast milk as a cause for poor feeding or diarrhea, seizures being caused by an illness that needs to be "smoked out" of the newborn's fontanelle, and decreased arousal as a cause of breathing troubles[20]. These understandings are in line with what we report here as treatment strategies suggested by traditional providers, notably herbal concoctions for breast feeding difficulties, traditional remedies for seizures, and whistling into the ears of a newborn with breathing troubles. Because they are part of the communities they serve, traditional health care providers are able to relate to these concepts of disease and help patients understand their illnesses and devise treatment strategies within these frameworks. In contrast, allopathic providers approach pregnancy from a biomedical framework and favor pathophysiologic explanations over supernatural, which may not resonate with community members.

The fact that allopathic and traditional providers conceptualize disease differently also has implications for collaboration between the two groups. Green and Makhubu found that 98% of traditional providers desired more cooperation with allopathic providers; however, many did have concerns that their own lack of formal education might make communication with allopathic providers difficult[6]. If the two sectors of health care have different starting points in their understanding of disease, it could make communication and future efforts at collaboration difficult as well. There are also significant concerns on the part of allopathic providers regarding the efficacy of traditional treatments, as well as their potential to do harm. Specific examples from the literature include exacerbations of diarrhea caused by the provision of medicinal enemas[6], traditional vaccinations being delivered via unclean razors and introducing various infectious diseases[6], and liver damage caused by pyrrolizidine alkaloid poisoning, which is found in various plants that are used by traditional providers to treat a "wide range of diseases and conditions"[12].

Culture and traditions play an important role in management of health in rural northern Ghana. Our findings suggest that allopathic health care providers in this area have limited knowledge about the cultural beliefs and practices of the communities they serve. Other researchers have

found that this gap in knowledge can have negative consequences. Hardy reported that the doctors serving her study area in Cameroon were not originally from that region, did not speak the local language, and did not fully understand the culture. As a result, doctors were perceived as foreigners and patients were hesitant to seek their care[11].

In addition to the above noted beliefs and practices, we have previously reported on other beliefs held by community members of which allopathic providers did not seem to be aware of in this study. Despite the fact that all allopathic providers reported that they counsel women not to put anything on the umbilical cord, we previously found that 70% of women in our study area report dressing the cord with at least one substance[19]. In addition, we have reported that women commonly delay breastfeeding for up to 4 days while undergoing cleansing rituals[18], that they fear repercussions as severe as death if they disobey a soothsayer, and often require permission, or at least assistance, from community members before seeking allopathic health care[14]. Allopathic providers did not commonly report on such practices when asked about rituals surrounding childbirth, while traditional providers did. Although it is clear that allopathic providers need to ask about such practices, our findings show that they first need to understand that such beliefs even exist. A previous report from our study area noted that women were able to forgo the standard permission seeking required for allopathic care when being treated by a nurse living within the community[10]. This may indicate that if allopathic health care providers were better able to assimilate into the communities they serve, the population may become more willing to utilize their services.

Throughout our study, we resoundingly heard that more education is needed on maternal and neonatal care to help women have healthier pregnancies. Pregnant women have previously reported a desire for more information regarding pregnancy and early child care[21], and a correlation has been found between higher education levels and increased use of allopathic medical facilities[13,22].

Our prior research has noted that, when compared to literate women, illiterate women were equally knowledgeable about pregnancy and childbirth related issues, and were equally likely to seek out a facility based delivery; however, illiterate women often had more logistical barriers such as the need to seek permission to use allopathic health care[14]. As long as this cultural hierarchy exists, educating the community as a whole is the most likely way to help more women get the care they need, a point that was echoed by several of our respondents.

While most respondents agreed that more education for everyone in the community is needed, Tabi et al found that those who are more educated in Ghanaian society often look down upon traditional medicine for various reasons, including hygiene and a hesitation to accept information from someone with less formal education than themselves[4]. Given the current provider to population ratios in Ghana, traditional providers are an important proportion of the manpower needed to provide care. In addition, other authors have noted that traditional medicine is a "respectable profession, and perhaps the best one that women and those lacking formal education can aspire to"[6]. Education that trivializes the social and cultural value of traditional medicine is likely to be counterproductive. A better option might be to educate communities about when to seek which type of care and to help allopathic and traditional health care providers work together to improve the health of Ghanaian women. This approach would be particularly helpful given the different approaches and knowledge bases noted by this study and the fact that many Ghanaian women utilize both traditional and allopathic sources of health care. Encouragingly, Hardy found that patients with higher levels of education desired more integration between the two types of health care providers[11].

While not directly noted by any of our respondents, it is clear from our data that education of allopathic providers is needed as well. Their lack of understanding of cultural beliefs and practices places significant gaps in the knowledge needed to adequately relate to and treat their patients. In addition to implementing programs designed to educate communities about antenatal health, programs should also be implemented to train allopathic providers on local

customs and disease conceptualization. We recommend an orientation and continuous traditional learning program throughout the stint of allopathic providers' attachments in a new health district or area, determined and delivered in conjunction with mothers, community leaders, traditional birth attendants, and traditional healers.

We believe that this research has several important strengths. We gathered information from a diverse population of health care providers in an effort to create a sampling that is as complete as possible. Our study's focus on the different approaches of traditional and allopathic providers to antenatal care provides important insight into the functional advantages and disadvantages of each sector of health care in Ghana. Perhaps most importantly, it places significant emphasis on the lack of cultural understanding by allopathic providers. Very little research to date has been done on this topic and our findings provide a framework with which to implement future interventions and outcomes research.

Despite these strengths, there are several limitations to our study. First, data were self-reported; we did not directly observe what occurs in health care settings in this region. Future research would benefit from comparisons of behaviors and practices in traditional versus allopathic settings. Second, allopathic providers were interviewed in English by American graduate students, while traditional providers spoke their native languages with Ghanaian graduate student interviewers, and their conversations were translated into English. It is possible that unconscious biases, language issues, and other subtleties of communication might have been affected by these differences. However, all interviewers underwent rigorous training – including pretest interviews with debriefings afterward – and adhered to neutral, open-ended interviewing techniques. In addition, the interview guide was designed to explore a variety of issues surrounding maternal and child health – not to question existing practices or provider expertise. Thus we do not believe that the differences in types of interviewers is likely to significantly bias the results, as providers were not likely to feel challenged by any of the questions asked. It is also possible that interviews being conducted by graduate students – whether American or Ghanaian – may have biased reporting by respondents. It is equally possible, however, that respondents may have been less guarded than they might have been reporting to their peers. The 20-year history of research in the area combined with the volume of information volunteered suggests that respondents were comfortable enough with the interviewers that any bias present was likely minimal. This study focused on the disconnect between allopathic and traditional providers, but did not investigate whether this translates to a disconnect between providers and the community. As noted throughout our discussion, our previous research indicates that the disconnect does exist at the community level as well; however, more research is needed in regard to significance of this disconnect and what it means for health care seeking behavior and health outcomes.

In conclusion, we believe this study provides unique insight into the disconnect between traditional and allopathic providers in rural northern Ghana. We found that traditional and allopathic providers approach antenatal healthcare very differently, and each approach has unique advantages and disadvantages. Notably, we emphasize traditional providers' important role in disease conceptualization based on community understanding and allopathic providers' role of biomedical management. Allopathic providers were found to be far less knowledgeable about community practices than traditional providers. Similarities did exist between allopathic and traditional providers in their advocacy for antenatal health education for women and community members. Additionally, our findings suggest that programmatic and research focus needs to be placed on the cultural education of allopathic providers.

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Conflict of Interest

All authors mentioned in the study approved this manuscript.

Contribution of Authors

Elizabeth Hill, MD- collected data, analyzed data, prepared manuscript

Rebecca Hess, MD- collected data, analyzed data, prepared manuscript

Raymond Aborigo, MPH- collected data, analyzed data, prepared manuscript

Philip Adongo, PhD- conceived and designed study, assisted with manuscript editing

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Cyril Engmann, MD- conceived and designed study, assisted with manuscript editing

Cheryl A. Moyer, PhD, MPH- conceived and designed study, analyzed data, prepared manuscript

References

1. UNICEF. At a glance: Ghana. *Unicef.org*. Retrieved March 2, 2013, from [http://www.unicef.org/infobycountry/ghana_statistics.html#93]
2. Welaga P, Moyer CA, Aborigo R, Adongo P, Williams J, Hodgson A, Oduro A & Engmann C. Why are babies dying in the first month after birth? A 7-year study of neonatal mortality in northern ghana. *PLoS One*, 2013; 8(3):e58924.
3. Issah K, Nang-Beifubah A & Opoku CF. Maternal and neonatal survival and mortality in the Upper West Region of Ghana. *Int J Gynaecol Obstet*, 2011; 113(3):208-210.
4. Tabi MM, Powell M & Hodnicki D. Use of traditional healers and modern medicine in Ghana. *Int Nurs Rev*, 2006; 53(1):52-58.
5. WHO. Primary Health Care. Report of the International Conference on Primary Health Care, Alma-Ata, USSR, World Health Organization, Geneva. 1978:63.
6. Green EC & Makhubu L. Traditional healers in Swaziland: toward improved cooperation between the traditional and modern health sectors. *Soc Sci Med*, 1984; 18(12):1071-1079.
7. Freeman M & Motsei M. Planning health care in South Africa--is there a role for traditional healers? *Soc Sci Med*, 1992; 34(11):1183-1190.
8. Jager AK. Is traditional medicine better off 25 years later? *J Ethnopharmacol*, 2005; 100(1-2):3-4.
9. van der Geest S. Is there a role for traditional medicine in basic health services in Africa? A plea for a community perspective. *Trop Med Int Health*, 1997; 2(9):903-911.
10. Ana J. Are traditional birth attendants good for improving maternal and perinatal health? Yes. *BMJ*, 2011; 342:d3310.
11. Hardy A. The Integration of Traditional and Western Medicine in Ngaoundéré, Cameroon. In: *SIT Cameroon Fall 2008*. Wesleyan University 2008.
12. Steenkamp V, Stewart MJ & Zuckerman M. Clinical and analytical aspects of pyrrolizidine poisoning caused by South African traditional medicines. *Ther Drug Monit*, 2000; 22(3):302-306.
13. Nelms LW & Gorski J. The role of the African traditional healer in women's health. *J Transcult Nurs*, 2006; 17(2):184-189.
14. Moyer CA, Adongo PB, Aborigo RA, Hodgson A, Engmann CM & Devries R. "It's up to the Woman's People": How Social Factors Influence Facility-Based Delivery in Rural Northern Ghana. *Matern Child Health J*, Advance online publication 20 February 2013; doi 10.1007/s10995-01301240-y.
15. Patterson L. 2nd Annual International Conference on Traditional Medicine in Ghana, Africa. Retrieved April 1, 2013, from http://www.ccnh.edu/newsletr/holtimesv8n4/conference.html.
16. Warren DM, Bova GS, Tregoning MA & Kliewer M: Ghanaian national policy toward indigenous healers. The case of the primary health training for indigenous healers (PRHETIH) program. *Soc Sci Med*, 1982; 16(21):1873-1881.
17. WHO Regional Office for Africa: Promoting the Role of Traditional Medicine in Health Systems: A Strategy for the African Region. (Resolution AFR/RC50/R3). 2001.
18. Aborigo RA, Moyer CA, Rominski S, Adongo P, Williams J, Logonia G, Affah G, Hodgson A & Engmann C. Infant nutrition in the first seven days of life in rural northern Ghana. *BMC Pregnancy Childbirth*, 2012; 12(1):76.
19. Moyer CA, Aborigo RA, Logonia G, Affah G, Rominski S, Adongo PB, Williams J, Hodgson A & Engmann CM. Clean delivery practices in rural northern Ghana: A qualitative study of community and provider knowledge, attitudes, and beliefs systems. *BMC Pregnancy Childbirth*, 2012; 12(1):50.
20. Engmann C, Adongo P, Akawire Aborigo R, Gupta M, Logonia G, Affah G, Waiswa P, Hodgson A & Moyer CA. Infant illness spanning the antenatal to early neonatal continuum in rural northern Ghana: local perceptions, beliefs and practices. *J Perinatol*. Advance online publication 24 January 2013; doi: 10.1038/jp.2012.151
21. Bansah M, O'Brien B & Oware-Gyekye F. Perceived prenatal learning needs of multigravid Ghanaian women. *Midwifery*, 2009, 25(3):317-326.
22. Ngom P, Debpuur C, Akweongo P, Adongo P & Binka FN: Gate-keeping and women's health seeking behaviour in Navrongo, northern Ghana. *Afr J Reprod Health*, 2003; 7(1):17-26.