A QUALITATIVE ASSESSMENT OF BARRIERS TO CHILD AND MATERNAL HEALTH IN THE RIO COCO REGION OF RURAL NICARAGUA

by

Alisa Stanton
MPH-Global Health Candidate, 2010
BSc, University of Victoria, 2006

CAPSTONE PROJECT
SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF PUBLIC HEALTH

In the
Faculty of Health Sciences

SIMON FRASER UNIVERSITY

Spring 2010

APPROVAL PAGE

STUDENT'S NAME : Alisa Jean Stanton

DEGREE: MASTER OF PUBLIC HEALTH

TITLE: **A QUALITATIVE ASSESSMENT OF BARRIERS TO CHILD AND MATERNAL HEALTH IN THE RIO COCO REGION OF RURAL NICARAGUA**

Chair Of Defense: _____
Dr. Michel Joffres
Professor
Faculty of Health Sciences

Senior Supervisor: _____
Dr. Nicole Berry
Assistant Professor
Faculty of Health Sciences

Supervisor: _____
Dr. Susan Erikson
Assistant Professor
Faculty of Health Sciences

External: _____
Dr. Craig Janes
Professor
Faculty of Health Sciences

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ABSTRACT

People living within the Rio Coco region of rural Nicaragua are vulnerable to poor health outcomes as a result of a multitude of barriers within their living environments. The purpose of this study is to understand local health needs and assets within the Rio Coco, and make recommendations for improving health. Local knowledge of health needs was collected through 41 semi-structured interviews with mothers and community health workers. The study describes how health within the communities is greatly constricted by factors within the context and environment, and how community feedback can be used to help identify effective points of action. The case study offers broader lessons learned regarding the importance of prioritizing local knowledge, and having mechanisms to mobilize and allocate funds at the local level. These findings offer insight into how child and maternal health can be better addressed in rural and remote communities.

Keywords: Rural Health; Health Service Access Barriers; Child Health; Maternal Health, Nicaragua

Subject Terms: Maternal Health Services – Nicaragua;
Rural Health Services – Nicaragua; Children – Health and Hygiene- Nicaragua

DEDICATION

I would like to dedicate this paper to all my friends and family who have supported me through my Master's degree. I would also like to dedicate this paper to the families in the Rio Coco region who graciously accepted me into their homes during my stay there and made me feel welcomed and at home. Finally, I would like to dedicate this paper to my father whose example and memory has inspired me to travel and explore the world I live in.

ACKNOWLEDGEMENTS

I would like to first and foremost acknowledge the interview participants in the Rio Coco, who contributed their time and insight to this project. Without their contributions this project would not have been possible. I would also like to acknowledge the support and contributions from my committee members, including my senior supervisor Dr. Nicole Berry, my supervisor Dr. Susan Erikson, and my external examiner Dr. Craig Janes. Thank you for your feedback and support in the completion of this project. I would also like to thank the project staff and administrators at project ENLACE for their assistance, and support during my stay in Nicaragua, and for welcoming me to work with them in the Rio Coco region. Finally, I would like to extend my gratitude to all my friends and family who have helped me bring this project together.

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GLOSSARY

CBPR	Community Based Participatory Research
CHW	Community Health Worker
GNI	Gross National Income
MCH	Maternal and Child Health
MDGs	Millennium Development Goals
NGO	Non-Governmental Organization
RAAN	Region Autonoma del Atlantico Norte
PAHO	Pan American Health Organization

INTRODUCTION

Too many women and children are dying in the Rio Coco region of Nicaragua. In this remote part of Nicaragua, regional specific health statistics are limited, however, there is consensus among government officials and health care professionals that the area has among the poorest health outcomes in the country (Canadian Red Cross, 2008). The region is remotely located in the north of Nicaragua within the department of Jinotega, and the Region Autonoma del Atlantico Norte (RAAN) where mortality statistics are already poorer than the national average for Nicaragua (Pan American Health Organization, 2007). The region has no road or air access, and all transportation must occur by foot, horseback or boat. Women and children within the Rio Coco region face a multitude of challenges on a daily basis, which affect their ability to live healthy and productive lives. Poor health is a product of the economic, geographic and historical context of the region and families are challenged by a multitude of factors including limited access to health services, poor living environments, limited access to nutritious food and geographic isolation.

These burdensome challenges to health are far too common among remote communities within low income countries. Rural and remote communities are among the most marginalized populations throughout the world, and the disproportionate burden of poor health experienced by remote communities has

been commonly cited in the literature (Cham et al, 2005; Gorter, 1995; Lindstrom and Munoz-Franco, 2006; MacLeod and Rhode, 2005; UNICEF, 2009). Rural and remote communities are particularly vulnerable to poor child and maternal health outcomes as a result of a multitude of barriers within their environments. Many remote communities experience geographic and political marginalization as a result of being distantly located from capital cities, and many of the barriers to health experienced within these regions reflect this marginalization (Schellenburg et al, 2003; MacLeod and Rhode, 1998). Remote communities commonly have limited access to health services, employment opportunities, and other resources essential for good health (Cunnigham, 2008; Ganatra et al, 1998; Gorter et al, 1995; Long, 2004). In addition, these communities often experience barriers to health that reflect the specific culture, geography, and political climate of the region. For example, many remote communities are ethnic minorities within their countries and their perceptions of health needs may differ from those of the countries' majority.

The research presented in this paper offers a case study which documents context-specific health needs and assets in the Rio Coco region of Nicaragua. The purpose of this study is to understand local health needs and community assets in order to make recommendations for improving health. The study describes how health within the communities is greatly constricted by factors within the context and environment, and how community feedback can be used to help identify effective points of action. The case study also offers broader

lessons learned regarding how to better approach child and maternal health within other rural and remote contexts.

I will first give some background on the political and historical context of the Rio Coco region. I will then describe the current status of child and maternal health within Nicaragua, and will discuss rural urban differences in health. This is followed by a presentation of my research methods, and my findings from interviews conducted with mothers and community health workers in the region. Lastly, I discuss the project findings and how the results from this case study can be applied to better address child and maternal health within remote contexts.

The Political and Historical Context of the Rio Coco Region

The Rio Coco region of northern Nicaragua is an area of extreme poverty situated within one of the poorest countries in Latin America (Ross, 2007; Dennis, 2004). The Rio Coco River defines the northern border between Nicaragua and Honduras, and is located within the Nicaraguan department of Jinotega and the Region Autonoma del Atlantico Norte (RAAN) a semi-autonomous region established in 1985. The portion of the river that extends from the town of Wiwili to the Atlantic coast is distinguished by the communities' reliance on the river for transportation, communication, and trade. Throughout the history of Nicaragua the region has experienced political and economic marginalization as a result of geographic isolation, the indigenous ethnicity of its inhabitants, and a history of conflict (Cunnigham, 2008; Quesada, 1998; Long; 2004). Although there are limited health statistics available for the region, ample

evidence exists of the historic and continued marginalization of the region and the impacts this marginalization has had on the health of the population.

The region has had a long history of conflict which has slowed progress toward improved health. For example, it was a political stronghold for Contra rebels during the Sandinista war of the 1980's (Long, 2004; Metoyer, 2000). Development in the region was slowed during this period as a result of this conflict and the ensuing lack of economic and political support to the region (Long, 2004; Levie, 1985). As a result, the region has very limited transportation infrastructure and the majority of communities have no road access. The development of health Infrastructure was also delayed during this period of conflict and very few health posts were established. This meant that although the Sandinista government put in place many progressive and socialist health policies (Lane, 1995), the region did not benefit from these policies in the same way as other parts of the country. The region is also home to a large Miskito population. This is significant because, throughout the history of the country, there have been variable relationships between the Miskito people and the Nicaraguan government which have led to further economic and political marginalization (Dennis, 2004; Dozier, 1985; Vilas, 1989).

The Rio Coco region is further isolated from the rest of Nicaragua due to its geographic location in the far northeast of the country (Dozier, 1989, Dennis, 2004). The large geographic distances between communities in the region challenge access to health services as most families do not have the means to travel to distant health posts. This geographic isolation also reduces food security

during times of drought when local subsistence farms are not able to provide sufficient food, and food transportation costs are high as a result of the poor transportation infrastructure.

Economic hardships within the country have also challenged health in the region. The country as a whole suffered economically during the United States trade embargo of the 1980's, and the neo-liberal economic policies of the 1990's (Lane, 1995; Metoyer, 2000). During these times, government financial resources became constrained and spending was focused on the nation's capital region leaving very little resources for health improvements in peripheral regions such as the Rio Coco.

All of these factors have contributed to a perpetuation of poor health outcomes in the Rio Coco region, as well as an increase in health disparities between this region and the general population of the country.

Child and Maternal Health in Nicaragua: Rural Urban Divide

Despite Nicaragua's poverty, the country as a whole is doing somewhat better in terms of mortality than other low-income countries in the region. Nicaragua is the second poorest country in Latin America and has an under-5 mortality rate of 38 per 1000 live births and a maternal mortality rate of 230 per 100,000 live births (WHO, 2006). In comparison, Bolivia, for example, has a higher gross national income (GNI) per capita than Nicaragua, but has much poorer child and maternal mortality rates. The under-5 mortality rate in Bolivia is 68 per 1000 live births and the maternal mortality rate is 450 per 100,000 live

births (WHO, 2006). The primary reason for the somewhat promising national level child and maternal mortality statistics in Nicaragua is the large investments the government made into primary health care programs in the 1970's and 1980's (Sandiford et al, 1991). These programs resulted in a substantial reduction in the country's overall child mortality rate between 1970 and 1990.

Although child and maternal mortality rates in Nicaragua have improved over the last 20 years, there continues to be large inequities within the country (Babb, 2001; Metoyer, 2000; Sandiford et al, 1991). Latin America is one of the most inequitable regions in the world (Belizan et al, 2007; Lloyd-Sherlock, 2009), and health inequities within Nicaragua are no exception. Rural and urban populations differ with respect to access to improved drinking water, access to health services and economic opportunities (Johnson, 2006; Metoyer, 2000; UNICEF, 2009). The North Atlantic region of the country is particularly vulnerable to poor health outcomes as a result of poor living conditions and limited access to health services (Dennis, 2004; Long, 2004). Although the Nicaraguan government has devoted resources to improving child and maternal health services, and some significant overall improvements have been made (Sandiford et al, 1991), access barriers continue to limit coverage in remote areas (Canadian Red Cross, 2007). Communities in remote regions such as the Rio Coco continue to suffer from poor child and maternal health outcomes, despite relatively successful efforts to improve child and maternal health within the country as a whole.

RESEARCH DESIGN

The purpose of the current research was to understand local needs and assets related to child and maternal health within the Rio Coco, in order to make locally relevant recommendations for improving health in the region.

Information was collected through 41 semi-structured interviews with mothers and community health workers, as well as direct observations in the communities. The interview questions were designed to collect information on locally relevant barriers and assets as they relate to child and maternal health. The protocol touches on four different areas: 1) barriers to child and maternal health 2) barriers to accessing health services 3) community strengths and assets and 4) local perceptions of the external support offered through health projects currently operating in the region.

Sample Questions

Barriers to child and maternal health were assessed directly through open-ended interview questions such as “What makes it difficult for you to care for your child’s health?” and “What makes it easy or difficult for you or other mothers in the community to come to the community health sessions?” Local attitudes and perceptions regarding health projects were assessed using open-ended questions such as “What are your overall perceptions regarding the health

projects working in your community?", "How have these projects impacted your community?" and "Are these projects beneficial for your community? Why or why not, and how?" Community strengths and assets were primarily assessed through direct observations in the communities and non-structured open-ended interviews with mothers and community health workers.

Study Setting

The study was conducted in four remote communities located along the Rio Coco River, within the department of Jinotega in northern Nicaragua. Two of the four communities (Ulwaskin and Yacalpanani) are primarily Miskito, an indigenous ethnic minority. The other two communities (Banco Grande, Somotine) are primarily Spanish speaking and residents are part of the ethnic majority.

The four communities were selected because of their remoteness and limited access to health services. All four of the communities were participating in a Canadian Red Cross project called project ENLACE at the time of the study, and received some basic health services through this project. This project has been operating since 2006 and aims to improve access to health services in the region by offering prenatal services, child health check-ups, immunizations and health education within communities in the region. Since 2006, the project has been slowly increasing its presence in the region. In 2008 the project was offering each of the above named services on a monthly basis within selected communities along the Rio Coco River, within the department of Jinotega.

Participants

Interviews were held with mothers and community health workers in each of the four communities alongside the project ENLACE child health visits in June and July, 2008. Eligibility criteria included being a resident of the region, and being either a mother of a child under two years of age or being a volunteer health worker within the community. When mothers attended regularly scheduled health sessions for children under two years, the outreach team asked them if they would like to be interviewed. A separate station, away from the regularly scheduled health sessions, was set up to interview mothers. A total of 23 mothers were interviewed. Similarly, community health workers were recruited from a regularly scheduled training session for health workers, and they were invited to be interviewed either before or after the session. A total of 18 community health workers participated. Informed consent was obtained verbally from all participants prior to interviews.

Data Collection

All interviews were conducted in Spanish by the primary researcher (Alisa Stanton) and the assistance of a non-professional translator was used in those communities where Spanish is not the first language. Separate interview guides were developed for both the interviews with mothers and for the interviews with community health workers. Detailed field observations and notes were taken daily while in the field and interview questions were revised based on feedback

and responses during initial interviews. Equipment included a voice recorder, notebook, pens, and interview guides.

Data Analysis

Each interview was audio recorded and transcribed verbatim. Where a local language was used, the discussion was translated into Spanish. Transcripts, along with field notes were analyzed for key themes and sub-themes, outlined in Tables 1.1 and 1.2. Themes were recorded using both a priori and emergent codes. The coding system was also used to identify key quotes from the transcripts, which highlighted key thematic categories. Some of the original a priori codes were further broken down throughout the coding process, and others were converged in order to most accurately reflect the information presented in the transcripts. Findings were grouped into several themes for ease of analysis and are presented in Tables 1.1 and 1.2.

FINDINGS

Overview of the Health Needs and Assets Identified

The findings outlined bellow highlight both community assets and local health needs within the Rio Coco region of Nicaragua. Assets and strengths are presented first and are listed in Table 1.1. Assets recorded include: motivated volunteer health workers, strong community commitment to improving health and high community collaboration and resiliency. Local health needs and barriers to health are discussed second and are presented in Table 1.2. The most dominant health needs to emerge through the fieldwork and interview data reflected barriers to health service utilization and included: transportation challenges; conflicting demands on limited resources; and inconsistencies in service delivery. Each of these categories is discussed bellow, along with other context specific health needs which emerged. It is important to note that although the barriers are presented separately, they are all very much interconnected and the majority of families experience two or more of the identified barriers.

Community Assets and Strengths Identified

In order to offer a comprehensive view of health within the region, community assets and strengths were documented alongside barriers and health needs. Asset based approaches are often used in community-based

participatory research (CBPR) to avoid representing communities in terms of their problems alone (Minkler and Hancock, 2003). By offering a more balanced view of community needs and strengths, this approach to research avoids perpetuating a deficit mentality in which communities are viewed by themselves and others as “bundles of pathologies” or “problems to be solved” (McKnight and Kretzmann, 1993). The themes which emerged relating to community assets are highlighted in Table 1.1.

The strong spirit of volunteerism within the communities is one of the greatest community assets identified through the study. Community health workers in the Rio Coco are all volunteer workers. Those interviewed were proud of their work, and were dedicated to improving health in their communities. Many of these volunteers work long hours to support health in their communities, and several of the volunteers have worked for up to thirteen years without any financial compensation. These examples demonstrate the dedication that these workers feel towards their communities. These volunteer workers are a huge asset to the communities they work in. They receive training from the Nicaraguan government and from various non-governmental projects in many health-related topics including: first aid; nutrition; child health check-ups; and how to recognize signs of danger during pregnancy. In many smaller communities, they are the only person with health training available to residents. Their willingness to work and their interest in ongoing training is a huge asset to any project aiming to improve health in the region. As community members, they act as leaders within

their communities who can encourage participation in health projects and spread health knowledge.

Another asset identified within the communities was a genuine commitment from the communities at large to working to improve health. The communities' willingness to participate in health improvement activities was demonstrated through the high attendance at community health sessions and was expressed verbally by mothers.

"I am happy to be able to participate; I come to all the sessions"

-Mother Rio Coco, [4,2]

At many health sessions, the vast majority of mothers who resided in the community attended the sessions. Furthermore, many mothers were willing to walk for up to three hours through mud to attend the sessions, indicating their commitment to the event and to their children's health.

The commitment to health within the region was often accompanied by an attitude of resiliency and a willingness to continue to work hard to improve health despite difficult living conditions. The following quote demonstrates how women in the region persevere in difficult conditions, and often maintain a positive outlook, which downplays the challenges they face in providing health for their families. A mother who has just walked for three hours without shoes explains with a smile that "No it is not hard to get here, I walked like this" (indicating her bare feet).

Table 1.1 Community Assets and Strengths Identified

Community Assets and Strengths Identified
– Motivated, committed and trained volunteer health workers – Community interest in working to improve children's health is high – Collaboration and resiliency

Local Health Needs and Barriers to Health

Conflicting Demands on Limited Resources

Among the most dominant barriers to health that emerged through the interview data were conflicting demands on limited time and financial resources. Because the majority of families in the region have limited access to resources, increasing demands in one area of need means fewer resources in another. This is a particularly pressing issue for mothers, who must manage multiple demands within the home. Many mothers often have upwards of five children that they must provide for and they therefore have to make difficult decisions regarding seeking care and managing responsibilities essential for survival at home. A mother describes her experience:

"Yes, it is hard to care for my children here. In one year I had two children die. I took the first to the health post for treatment, but when I came home the other child had become ill. She did not have enough food while I was away."

-Mother, Rio Coco [6,4]

This highlights the difficult choices that women have to make as a result of both limited time and limited financial resources. Multiple demands on limited financial resources impact a woman's ability to travel to seek care, her ability to adequately feed her family and her ability to provide for her family in other ways. These conflicts are further illustrated through the following quote:

"*The children need food, but here, everything costs. If we buy medicines we can't buy the food. But if we leave them without the medicine, they could die."*

-Mother, Rio Coco [2,6]

Multiple demands on limited time, also emerged as a major barrier to women seeking care. As women are often the sole caregiver of multiple children and are responsible for various household activities, it is difficult for them to leave the house in order to access health care. On two occasions, mothers expressed that a child had died as a result of these barriers. In one case, the child died because the mother waited too long to seek care [Field notes: Book 2, pg 7]; in the other case the mother took one child to the hospital for an extended period of time and while she was gone, another child died at home [6, 4]. This highlights the true dilemma of the choice that these women have to make with regards to deciding when, and if, to seek care.

Gender roles in the region limit women's ability to navigate the barriers of conflicting demands. This theme emerged in the interviews, particularly with regard to women often being the sole caregivers of children and the only adult

able to prepare food in the home. This meant that women leaving the home for several days to receive medical treatments at the hospital would have to find a friend or relative who was able to prepare food for the rest of the family. This theme also emerged with regard to women requiring permission from their husband to seek care. One woman was seen at a Project ENLACE outreach visit in Ulwaskin, who was three weeks overdue in her pregnancy. She was assessed by the Project ENLACE doctor as being at high risk for complications and was therefore referred to the hospital. However, she chose not to go because she did not have permission from her husband [Field notes: Book 2, pg 28]. These examples highlight how gender roles within the region can limit a woman's autonomy, and further challenge her decision to seek care.

Transportation Challenges

Other dominant barriers which emerged from the interview data included transportation barriers which limit mothers' ability to arrive at a health facility. Because there are no roads in the region, women walk or rely on river transportation to access health care. The majority of women interviewed experienced one or more barriers in this regard. To get to a health post, many mothers must walk two to three hours through thick mud, and then must try to hitch a ride on a river boat. The boats do not come frequently, and drivers usually charge the women a fee for the trip. Walking is further challenged by lack of boots or other protective footwear, and women frequently walk through mud barefoot.

"We don't have boots, and when it rains the trail gets so muddy that it is too hard to walk, it is especially hard to walk with the other children as well."

– Mother, Rio Coco [2,3]

During the rainy season, mud becomes very heavy and often reaches knee height, making walking without boots extremely difficult. As most mothers have multiple children who cannot be left alone at home, they often bring the children with them for the walk, further challenging the journey. The rainy season also brings high river waters, which impede some of the foot paths. In one community, Yacalpanani, high waters during the wet season prevented all the families on one side of the river canyon from walking to the health sessions held on the other side of the river. Community members suggested that a bridge would therefore greatly assist them in attending health sessions.

Financial costs and other difficulties associated with boat travel were also cited as barriers to accessing health services. As described above, women must often hitch a ride on a boat for which they are charged a fee. The cost of the fee as well as the time spent waiting for a boat willing to take hitchhikers were both cited as barriers to arriving at health services.

"Sometimes we wait for a long time and a boat never comes that will take us, so we have to go back home".

-Mother, Rio Coco [5,3]

In the Rio Coco region, river transportation is urgently required in times of emergency, because it is the only means of accessing the hospital from the

communities out along the river. At the time of the interviews, however, local health posts did not have access to a boat and fuel in cases where emergency transportation to the hospital was required**.** Women and health workers interviewed repeatedly expressed that these barriers greatly impacted health in the region.

> ***"****This post serves fourteen communities, but we don't have a boat to transport people to the hospital when they are very sick. Sometimes people come and they can't afford to pay for the trip, but if we had a boat and gasoline we could take them, otherwise they have to try to hitch a ride, and that is not always easy."* Another health worker adds, *"You can die waiting for transportation here."*
>
> -Community Health Workers, Rio Coco [4,8]

Inconsistencies in Health Service Delivery

Inconsistencies in health service delivery within the Rio Coco limit the communities' ability to trust in the quality and consistency of care. Inconsistencies recorded in the study included gaps in time where services were not offered, inconsistencies in the availability of medications, and limited follow up training with health volunteers. Many women and community health workers reported that these inconsistencies not only affected health within the region, but also impacted their choice to make the journey to attend health services.

The most dominant theme which emerged under this category was the need for consistency in terms of programs being delivered on a regular and

consistent schedule. In the months before the study took place there had been some administrative challenges which resulted in certain clinics not occurring as scheduled. The community noted the resulting absence in service, and described how it directly impacted health. In one community, a child died of diarrhoeal disease during the month without service and several women in that community suggested that had the session occurred as scheduled, that child would have received care [Field notes: Book 3, pg 16]. These inconsistencies also affected women's decision to seek care, as many women did not want to make the difficult journey to the health session without being certain that the session would be held.

Similarly, mothers expressed that the limited supply of medicine at health posts was a concern to them and influenced their decision to make the trip to the health facility. Mothers and health workers both expressed that the supply of medications at health centres was inconsistent and that this negatively impacted health within their communities.

"Sometimes we make the trip to the health post, but the medicine we need isn't there, so we might have to go without it."

-Mother Rio Coco, [4,6]

Many of the community health workers interviewed expressed that increased follow-up training would enable them to more effectively do their work. These health workers are volunteer workers, who receive some basic training from the Ministry of Health and from independent health projects operating in the region. They suggested that increased follow-up training would be beneficial for

them personally, and would help them to serve their communities better. These health workers are committed to their work but suggested that without review sessions it was often hard for them to maintain an adequate standard in their work. In many communities, they are the only health workers available and are responsible for relatively complex tasks such as making referrals and keeping records of illnesses and deaths. Increased follow-up training, including review sessions, would greatly support them in these roles.

As highlighted in the following quote, ongoing training would also support the continued commitment of volunteers, by helping to acknowledge the value in their work.

"I would like to have more training because the training helps me to serve my community, and this makes me feel proud of my work and makes me want to keep doing this work".

- Community Health Worker, Rio Coco [3,5]

A final theme that emerged with regard to program delivery was the potential for differential attitudes of health workers towards the Spanish communities and the Miskito communities. There has been a long history of mistrust and conflict between the Spanish speaking majority in Nicaragua and the Miskito people (Dozier, 1985; Vila, 1989), and there was evidence that the mistrusting relationship had potential to influence the quality of healthcare delivery. Although the breadth of this study did not allow for in-depth analysis of

these issues, these themes have been explored by other researchers within Latin America (Berry, 2008; Arps, 2009), and should be further explored by future qualitative health research in the region.

Other Important Context-Specific Barriers Identified

Although all of the above described barriers are specific to the context of the Rio Coco, additional barriers were identified that did not fit within the above defined categories. These are broader barriers to health that reflect the way the context and environment impact health through a number of different pathways. These barriers included lack of food, seasonal weather patterns, lack of government funding and animals being kept in the home. These are all contextual factors that increase the incidence of childhood disease by either increasing exposure to pathogens, or limiting access to food and other protective factors.

In the Rio Coco region, domesticated animals such as pigs, dogs, and chickens are generally not kept in pens and can therefore wander in and out of homes and yards. One of the side effects of this is that it is difficult to keep animal excrement contained, and it is therefore common for floor surfaces to become contaminated. As children often play on the floor both inside and out, they are exposed to potential pathogens. This is particularly true for young children who are biologically susceptible to diarrhoeal disease and often put objects in their mouths as they play.

Exposure to pathogens becomes worse in the rainy season as heavy rains wash wastes into the water system. This results in increased numbers of diarrhoeal disease at the beginning of the wet season. Seasonal weather patterns can also limit crop yields reducing the availability of foods. Crops can be affected by both excessive rains during the rainy season and droughts during the dry season. As the majority of families rely on subsistence farming for food, low crop yields result in a general lack of food in the region, which greatly impacts health. Because low nutritional status increases vulnerability to disease, the combined effects of seasonal weather patterns, lack of food and exposure to pathogens can be detrimental to health, particularly for children who have increased natural vulnerability.

A final contextual factor that emerged in the data was lack of government funds to support health activities in the region. This was repeatedly mentioned as a barrier to health because it impacted the quality of health services, availability of medicines, and the accessibility of health centres.

The Complexity of Barriers within the Context of the Region

In the Rio Coco region of northern Nicaragua there are a multitude of complex barriers which impact child and maternal health. As described above, the majority of the barriers identified in this study are highly context dependent, and they all impact health through a variety of interrelated pathways. Many of the barriers identified exist simultaneously, and the majority of people interviewed experienced at least two or more of these barriers. Additionally, because of the

limited resources within the region, multiple barriers often confound one another, making it increasingly difficult for families to access health services. For example, a woman who is already challenged by limited time and financial resources and is struggling to provide sufficient food for her family will experience barriers of conflicting demands when deciding whether to take a sick child to the clinic, or stay home to provide for the other children. If she faces additional barriers such as costly transportation, or inconsistency of care at the clinic, she is even further challenged in her decision, and these barriers may become insurmountable.

Table 1.2 Local Health Needs and Barriers Identified

Themes	*Sub-Themes*
Conflicting Demands on Limited Resources	Limited time, limited finances, limited food, multiple responsibilities of mothers, multiple children, gender roles.
Transportation Challenges	Distance, lack of transportation infrastructure and public transportation, cost of boat trip, infrequency of boats, lack of equipment including; boat, gas, boots, umbrella. Physical hazards including; canyon, high waters, lack of bridge, heavy rains and mud.
Inconsistencies in Health Service Delivery	Inconsistency in availability of care, inconsistent availability of medicines, limited follow up training with community health workers, translation issues and/or quality of care issues in Aboriginal communities.
Other Important Context-Specific Barriers	Lack of food, animals in the home, seasonal weather patterns, lack of government funding for health services in the region.

DISCUSSION

Recommendations for Improving Health in the Rio Coco

This case study provides insight into how child and maternal health within the Rio Coco region of Nicaragua can be improved. Table 1.3 highlights recommended points of action for the Rio Coco region, along with more general recommendations for improving heath in remote communities. Each of these recommendations is discussed in more detail bellow.

Table 1.3 Recommended Points of Action:
Recommendations for Improving Child and Maternal Health in the Rio Coco – Improve transportation infrastructure – Increase frequency and consistency of child and maternal health services – Increase collaboration with local residents to ensure child and maternal health project plans are congruent with local perceptions of health needs
Broader Recommendations for Working in Remote Regions – Prioritize local knowledge in expanding and delivering health projects – Improve mechanisms to mobilize funds at the local level

The findings indicate that one of the most important points of action is to improve transportation infrastructure. Specifically, there is a need for public

transportation on the river and a boat, with gasoline, that could be used for emergency transportation to the health posts. Walking conditions also need to be improved, especially for community health workers who must often transport patients by foot on difficult terrain. This could be facilitated by boots, and by the construction of a bridge in Yacalpanani, where high waters limit foot travel during the rainy season. Longer term investments in larger scale transportation infrastructure such as roads or public transportation would also be beneficial because they would not only increase access to health services and emergency services, but would also reduce the isolation of the region, potentially opening the door for increased economic and social opportunities.

Another point of action identified for the Rio Coco region, is the need for consistency in medical service delivery. This includes the need for improved consistency in terms of the operating hours of services and the quality of services. The current findings demonstrate that inconsistencies in medical service delivery have negative impacts in the communities. As discussed in the results section, inconsistency in service delivery not only impacts health directly, but also negatively impacts the decision to seek care by women who are already experiencing conflicting demands on their time and resources. Given the multiple barriers to transportation in the Rio Coco, it is logical that families would not want to make the difficult journey to seek care, only to arrive at a closed clinic or to receive limited care at that clinic. It is therefore vital that all health services operating in the region be maintained on a consistent schedule and with a satisfactory quality of care. Defining satisfactory quality of care is a complicated

task that will require close collaboration with the community to ensure that the services offered are congruent with their expectations of health care and their perceived health needs. Several researchers have documented the negative impacts that can result from clinical service delivery being incongruent with local perceptions of health and wellness (Berry, 2008; Yahya, 2007). This emphasizes the need to prioritize local input when planning health improvement strategies.

One of the most dominant needs identified by the communities within the Rio Coco region was the need for improved access to basic child and maternal health services such as prenatal visits and child health checkups. Because of the large geographic distances within the region and the limited transportation infrastructure, addressing this need would require an increase in the frequency of these services being offered within the communities themselves. Although basic health services are currently offered once a month in some of the communities in the region, it is highly recommended that these basic child and maternal health services be offered more frequently and within more communities within the region.

Broader Recommendations for Improving Health in Remote Regions

The findings offer insight into several broader lessons learned regarding improving health within rural and remote communities. These lessons learned are listed in Table 1.3 (above) and are discussed in more detail bellow.

1. The Importance of Prioritizing Local Knowledge

Improving health within remote communities such as those in the Rio Coco requires an understanding of local health needs (Ronsmans and Graham, 2006). This is facilitated by close collaboration with local communities, and making local knowledge central to health delivery. The barriers identified by this research are highly specific to the context of the Rio Coco, and were identified as a result of the interview participants' complex understanding of their living environments and the restrictions that these environments place on their ability to be healthy. The complexities and nuances of the findings were facilitated by direct input from mothers and community health workers who offered important insights into the realities in which they live. Local knowledge is extremely important in terms of understanding the challenges families in the Rio Coco face, and can lead to rich and complex information on health barriers that is important in terms of advancing child and maternal health goals.

Prioritizing local knowledge is also important as it can minimize inconsistencies between health interventions and local perceptions of health needs. Prioritizing local knowledge can help ensure that programs are not only clinically effective but are also acceptable, or perceived as helpful to the local communities. This can help alleviate any disconnect between service delivery and local perceptions of health needs which could otherwise lead to low perceived quality of care and low usage of health services.

2. Mechanisms to Mobilize Funds at the Local Level

Opportunities to make use of local knowledge and improving health within remote communities may be missed if there are not adequate mechanisms to mobilize and allocate funds at the local level.

Over the last ten years, public health funding has shifted to an approach which emphasizes sustainability and capacity building, rather than one time funding to develop infrastructure or supply durable goods (Berman, 1995; Kennely and Krause, 1995; Litsios, 1994; WHO, 1997). Although focusing on sustainability is beneficial because it helps ensure that health improvements are maintained over time, this approach to allocating funds may be best combined with other short term funding strategies. For example it may be beneficial for projects to provide a small amount of funds to address local needs, identified throughout the implementation process, which have the potential to greatly contribute to the effectiveness of a project's overall goals. This is particularly true in communities where resources are scarce. In such communities, there are often basic needs that require limited financial input to resolve, yet, if left unresolved, these needs can have detrimental impacts in terms of the communities' health and dignity. In the current case, where Project ENLACE is involved in the area to improve child and maternal health an example of this is the need for an emergency boat and gasoline, which would enable community volunteers to transport patients to the hospital in a timely fashion. This would help the community and project ENLACE achieve the joint goal of saving lives. The cost of addressing this need would be very minimal in comparison to the

project's overall budget, but the impacts would be substantial. Needs such as these may not be apparent to project administrators until a project is already operating, and therefore, unless there is some flexibility in terms of distributing funds at the local level, these opportunities for improving health are missed. This does not suggest that projects should not have sustainability or training as their primary focus. However, it implies that having a relatively small fund to address needs identified by the community, which are in line with a project's overall goals, would be beneficial for all.

Limitations

Several limitations to the study should be noted. Data collection was limited by the low quality of recording equipment. As a result, some interview data was lost as it could not be distinguished from the background noise in the room. Additionally there was potential for data to be lost as a result of translation issues. Firstly, as described above, the interviews were conducted in Spanish by a non-native Spanish speaker, and that may have resulted in some misunderstandings of either the interview questions or responses. To control for misunderstandings of questions, all participants were asked at the end of the interview if the questions had been clear and if there was anything that was not understood. All participants stated that the questions had been clear, however, there was still potential for missed nuances in the language that could have affected the accuracy of the data. In addition, some of the interview participants spoke only Miskito and their responses had to be translated into Spanish by an

on-site non-professional translator. This translation process may also have influenced the quality of the information recorded.

In terms of methodology, the study was limited by several factors. Firstly, the study was originally designed to elicit feedback from project participants during a regular medical outreach trip to the Rio Coco region. Participant recruitment was, therefore, limited by the relatively short time interval during which the team was in the region. As a result, only community health workers and mothers attending child health sessions in four distinct communities were involved in the interviews. This limited the breadth and scope of the barriers identified as families from different communities may experience different barriers. Many mothers mentioned that the families who live farther into the mountains have greater access challenges and it would therefore be advisable for future research to look into the barriers that these families experience in accessing health services. This being said, many mothers stated that although distances were larger for the mountain communities, the kinds of barriers experienced were similar throughout the region. Additionally, some of the mothers interviewed were from the mountain areas, and were therefore able to confirm that the barriers experienced in these areas were similar in scope.

Finally it should be noted that interview questions were revised throughout the interview process to reflect emergent themes. This process is not uncommon in grounded qualitative research, where questions are often revised to best reflect the perspectives of the community, and to more deeply explore the issues which are of greatest importance to the community. This process of revising

questions has in fact, been referenced as being an important feature of good qualitative research (Ulin et al, 2005).

Conclusions

The research presented in this paper offers a case study which describes barriers and assets related to child and maternal health in the Rio Coco region of Nicaragua. The purpose of this study was to understand local health needs and community assets so that recommendations could be made for improving health.

The primary recommendations made for the Rio Coco region were the need for improved river transportation infrastructure and increased consistency and frequency of medical services. It is hoped that these findings will be used by project ENLACE or other health development projects in their efforts to improve child and maternal health within the region.

The case study also offered several broader lessons learned regarding how to address child and maternal health needs within rural and remote contexts. These include the importance of prioritizing local knowledge, and the need to find some flexibility in funding mechanisms at the local level so that projects have the ability to respond to emergent local health needs. It is hoped that these broader lessons learned will be used to help tailor interventions to the needs of remote communities and contribute to improved health outcomes and health equity amongst these populations.

REFERENCE LIST

Arps, S. (2009). Threats to safe motherhood in Honduran Miskito communities: Local perceptions of factors that contribute to maternal mortality. *Social Science and Medicine 69* (4): 579-586.

Babb, F. (2001). *After Revolution: Mapping Gender and Cultural Politics in Neoliberal Nicaragua.* University of Texas Press: Austin.

Belizan, J., Cafferata, M., Belizan, M., Althabe, F. (2007). Health inequality in Latin America. *The Lancet 370* (9599): 1599-1600.

Berman. (1995). Health sector reform: making health development sustainable *Health Policy 32* (3): 13-28.

Berry, N. (2008). Who's Judging the Quality of Care? Indigenous Maya and the Problem of "Not Being Attended". *Medical Anthropology. 27* (2): 164-189.

Bryce, J.,Terreri, C.,Victoria, E., Mason, E., Daelmans, Z., Bhutta, F., Bustreo, F., Songane, P., Salame, T., Wardlaw, T. (2006). Countdown to 2015: tracking intervention coverage for child survival. *The Lancet 368* (9541):1067-1076.

Canadian Red Cross. (2007). *Annual Work Plan:* Submitted to the Canadian International Development Agency. Unpublished.

Castro, R., Campero, L., Hernández, B., Langer, A. (2004). A Study on Maternal Mortality in Mexico Through a Qualitative Approach *Journal of Women's Health & Gender-Based Medicine 9* (6): 679-690.

Cham, M., Sundby, J., Vangen, S. (2005). Maternal Mortality in the Rural Gambia, A Qualitative Study on Access to Emergency Obstetric Care. *Reproductive Health 2* (3):1-8.

Cunningham, M. (2008). *Nicaragua: Healthy Women, Healthy Families*. Retrieved Jan. 6th 2009 from MADRE website at http://www.madre.org/index.php

Dennis, P.A. (2004). *The Miskitu People of Awastara*. University of Texas Press: Texas.

Dozier, C.L. (1985). *Nicaragua's Mosquito Shore: The Years of British and American Presence.* The University of Alabama Press: Alabama.

Fawcus, S. Mbizvo, M., Lindmark, G., Nystrom, L. (1996). A Community-based Investigation of Avoidable Factors for Maternal Mortality in Zimbabwe. *Studies in Family Planning 27* (6): 319-327.

Ganatra, B., Coyaji, K., Rao, V. (1998). Too far, too little, too late: A community-based case-control study of maternal mortality in rural west Maharashtra, India. *Bulletin of the World Health Organization 76* (6): B1 591-598.

Gladwin, T.N., Kennelly, J., Krause, T.S. Shifting Paradigms for Sustainable Development: Implications for Management Theory and Research. *The Academy of Management Review 20* (4): 874-907.

Gorter, A.C., Sanchez, G., Pauw, J., Perez, R.M., Sandiford, P., Smith G.D. N. (1995). Childhood diarrhoea in rural Nicaragua: beliefs and traditional health practices. *Bol Oficina Sanit Panam. Nov; 119* (5):377-90.

Hill, K., Thomas, K., AbouZahr, C., Walker, N., Say, L., Inoue, M., Suzuki, E. (2007). Estimates of maternal mortality worldwide between 1990 and 2005: an assessment of available data. *The Lancet 370* (9595): 1311-1319.

Johnson, M. (2006). Women's Experiences with Migration in Nicaragua: Connections between Globalization and Local Health. Retrieved February 15th, 2009 from the *University of Saskatchewan Library* at:http://library2.usask.ca/theses/available/etd-09192006-195119/.

Lane, P. (1995). Economic Hardship has put Nicaragua's Health Care System on the Sick List. *Canadian Medical Association Journal 152* (4): 580-582.

Levie, A. (1985). *Nicaragua: The People Speak*. Bergin and Garvey Publishers: Massachusetts.

Lindstrom, D., Muñoz-Franco, E. (2006). Migration and maternal health services utilization in rural Guatemala. *Social Science & Medicine 63*: 706–721.

Litsios S. (1994). Sustainable Development is Healthy Development. *World Health Forum 15*: 19-195.

Lloyd-Sherlock, P. (2009). Social Policy and Inequality in Latin America: A Review of Recent Trends. *Social Policy and Administration 43* (4): 347-363.

Long, L.D., Oxfeld, E. (2004). *Coming Home? Refugees, Migrants and Those Who Stayed Behind.* University of Pennsylvania Press: Philadelphia.

MacLeod, J., and Rhode, R. (1998). Retrospective follow-up of maternal deaths and their associated risk factors in a rural district of Tanzania. *Tropical Medicine & International Health 3* (2): 130-137.

McKnight, J.L. and Kretzmann, J. (1993). *Building Communities from the Inside Out: The Asset Based Community Development Institute, Northwestern University*. Chicago: ACTA Publications.

Metoyer, C. (2000). *Women and the State in Post-Sandinista Nicaragua*. Lynne Rienner Publishers: Boulder Colorado.

Minkler, M., Hancock, T. (2003). Community-driven asset identification and issue selection In: *Community-Based Participatory Research for Health.* Jossey-Bass Inc Pub: San Francisco.

Nicaraguan Ministry of Health. (2007). *Casos y Tasa de Mortalidad Materna Anos 2006 y 2007.* Retrieved March 22, 2010 from: http://www.minsa.gob.ni/planificacion/estadisticas/compendio/index.html

Obaid, T. (2007). No Woman should die giving life. *The Lancet 370* (9): 1287-1288.

Pan American Health Organization. (2007). *Health in the Americas.* Retrieved March 21st, 2010 from http://www.paho.org/English/sha/prflnic.htm

Quesada, J. (1998). Suffering Child: An Embodiment of War and Its Aftermath in Post-Sandinista Nicaragua. *Medical Anthropology Quarterly 12* (1): 51-73.

Reidpath, D., Morel, C., Mecaskey, J., Allotey, P. (2009).The Millennium Development Goals Fail Poor Children: The Case for Equity-Adjusted Measures. *PLoS Medicine 6* (4): e 1000062.

Rena, R., Wall, S., Persson, L.A.. (2000). The effect of poverty, social inequality and maternal education on infant mortality in Nicaragua. *American Journal of Public Health 90* (1): 64-69.

Ronsmans, C., and Graham, W. (2006). Maternal mortality: who, when, where, and why. *The Lancet 368* (9542): 1189-1200.

Rosenfield, A., Maine, D., Freedman, L. (2005). Meeting MDG-5: an impossible dream? *The Lancet*, 368 (9542): 1133-1135.

Ross, C.A. (2007). Nicaragua: An example of commitments and Strengths despite problems of poverty. *Journal of Professional Nursing 23 (*6):9-12.

Sandiford, P., Morales, P., Gorter, A., Coyle, E. and Smith, G. (1991). Why do child mortality rates fall? An analysis of the Nicaraguan experience. *American Journal of Public Health 81* (1): 30-37.

Schellenberg, J., Victoria, C., Mushi, A., Savigny, D., Schellenberg, D., Mshinda, H., Bryce, J. (2003). Inequities among the very poor: health care for children in rural southern Tanzania. *The Lancet 361* (9357): 561-566.

Stekelenburg, J., Kyanamina S., Mukelabai, M., Wolffers, I., Roosmalen, J. (2004). Waiting too long: low use of maternal health services in Kalabo, Zambia. *Tropical Medicine and International Health 9 (*3): 390–398.

Thaddeus, S., Maine, D.(1994). Too far to walk: maternal mortality in context. *Social Science Medicine. 38* (8):1091-110.

Ulin, P., Robinson, E., Tolley, E. (2005). *Qualitative Methods in Public Health: A Field Guide for Applied Research*. Jossey-Bass: San Francisco.

UNICEF. (2009). State of the World's Children: Special Edition. Retrieved online at:http://www.unicef.org/rightsite/sowc/pdfs/SOWC_SpecEd_CRC_ExecutiveSummary_EN_091009.pdf.

Vilas, C.M. (1989). *State, Class and Ethnicity in Nicaragua: Capitalist Modernization and Revolutionary Change on the Atlantic Coast.* Lynne Rienner Publishers: Boulder, Colorado.

World Health Organization (1997). *Health and Environment in Sustainable Development: Five Years after the Earth Summit.* Geneva.

World Health Organization. (2006). *Country Statistics.* Retrieved March 13th, 2009 from: http://www.who.int/whosis/database/core/indicators.

Yahya, M. (2007). Polio Vaccines – “No Thank You!” Barriers to Polio Eradication in Northern Nigeria. *African Affairs 106* (423): 185-204.