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The maternity ward as mirror

Maternal death, biobureaucracy, and institutional care in the Tanzanian health sector

Strong, A.E.

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Chapter 2: Methods

2.1 Introduction

The overall goal of this study was to contribute to the existing literature on maternal mortality by conducting an ethnography to examine if and how the history and contemporary structures of the healthcare system in the Rukwa region of Tanzania contribute to maintaining high rates of maternal morbidity and mortality. The topic of maternal mortality often evokes ideas about clinical practices and biological processes. However, past literature has demonstrated just how important socioeconomic factors can be and I extended this perspective into biomedical healthcare facilities. I worked to uncover, through a variety of methods, the effects of both everyday healthcare provider actions and institutional structures on healthcare provision and women's and providers' experiences of obstetric emergencies. My research design and methods addressed four interlocking realms which, together, help to elucidate the social, historical, institutional, and political economic structures and dynamics that shaped maternal risk, particularly within the hospital setting. The four different realms included the regional hospital, biomedical facilities lower down the referral chain (health centers and village dispensaries), communities, and history. In all cases, I conducted the research in Swahili. My research assistant, Rebeca Matiku¹, aided in the collection of data related to sub-objectives 2 and 3 and she helped transcribe interview and focus group recordings.

2.2 The Regional Hospital

Within the regional hospital, I used a variety of methods in order to collect data on the ways in which the social and institutional environment of the hospital was influencing the care

¹ In the transcripts from focus group discussions in chapter 4, Rebeca appears as RM and I appear as AS.

that women were able to receive and how sequences of events sometimes led to a woman's death. My primary method was participant observation. Over the course of a cumulative 18 months spent almost exclusively on the hospital's maternity ward, I engaged in nearly every aspect of daily life on the ward. The nurses, physicians, and hospital leaders and administrators were the primary focus of my study and, therefore, I spent a great deal of time following them in the course of their activities, helping with various tasks, and conducting informal interviews about topics related to the maternal mortality but also related to the hospital work environment and general challenges the hospital employees faced. I was particularly interested in the ways in which institutional factors, such as bureaucracy, hierarchy, the supply chain, financing, and leadership intersected with the personal strategies of the healthcare providers and shaped obstetric emergencies. These personal strategies included, for example, interpersonal communication, engaging in non-job related activities at the hospital, acting above or below their skill or training levels, and ways in which staff members improvised or innovated while on the job.

The data presented here are primarily based on the cross-sectional data I collected from the healthcare providers, administrators, and women as described below. The maternity ward was a relatively small environment² which meant I had access to all of the healthcare workers involved in each case of maternal death and was able to use the posted duty rosters to follow-up on specific incidents with the staff members who had been on duty at the time.

Between February 2014 and the end of May 2015, there were a total of 35 maternal deaths that occurred at the hospital (Table 9.1), including those women who died from pregnancy-related problems both on the maternity ward and the gynecology ward (women with

² Roughly thirty total staff members including aids, nurses, and doctors though it did increase in size throughout 2014 and 2015 as they continued to add additional nurses to the ward.

early pregnancies, abortion complications, or ectopic pregnancies, for example, were admitted to this ward). Whenever possible, as in the case of women who suffered complications or near-misses,³ I interviewed the women themselves (as their health allowed), though this was not terribly common due to the traumatic nature of the events, frequently brief stays on the ward, and/or some women slipping out of the ward without receiving an official discharge. I was, however, able to interview, both formally and, more often, informally, several women about their experiences before arriving at the hospital and the care they had received once admitted. Due to the fact that many of the women who came to the hospital with emergencies were originally from outside of the urban district in which the hospital is located, it was difficult to plan interviews outside the hospital setting. It has always been my feeling, based on my own previous research (and the findings of Kruk et al. 2014), that women often bias their answers towards a more positive interpretation of hospital staff, care, and their treatment when they are still within the hospital/health facility setting. This has a great deal to do with fears of repercussions if they say anything negative about the nurses.

2.2.1 Cross-sectional Data

As a starting point, I conducted open-ended interviews with women and healthcare providers to generate free lists concerning the causes of maternal death and severe morbidity in the region. In order to generate these lists, I asked participants to think of all possible causes of maternal death. I then conducted a general review of the lists generated by women, doctors, and nurses (more experienced vs. less experienced). My observations of the lists provided some of the basis for interview and focus group discussion questions meant to elicit more detailed

³ Near misses are cases in which a woman almost died but did not, often from a cause that other times results in death, such as severe infection, eclampsia, or hemorrhaging (Nelissen et al. 2013).

explanations of the causes of maternal deaths. My original hope had been to use the generated lists to conduct pile sorts with the same groups of respondents. However, the nurses and doctors were slow to warm up to my research goals and were often suspicious and unwilling to participate in activities for more than six months after I arrived. This made it difficult to find willing participants. I also began to worry about participation burnout for the hospital staff members due to their already heavy workloads and low familiarity with qualitative research. I therefore made the decision to prioritize other aspects of the data collection, including the Conditions for Work Effectiveness Questionnaire, a leadership pile sort, and formal interviews.

As an initial exercise for examining the working environment of the Regional Hospital, I adapted the Conditions for Work Effectiveness Questionnaire (CWEQ) (Appendix C; Laschinger 2012). This Likert scale has been tested and used to measure perceived empowerment in nursing work environments and, when paired with interviews and observation, has helped to provide a picture of the degree of autonomy, agency, support, and empowerment maternity nurses perceived in their jobs (Laschinger 2012). These factors are often related to the institutional identity of an organization, which allows or disallows actions such as innovation and autonomy. The questionnaires have not been used in an African context, so I modified them based on data from my observations and early interviews. I used cognitive interviewing (Willis and Miller 2011) to pretest the questionnaires with a sample of nurses before using the questionnaires with the rest of the maternity ward at the regional hospital. The comments from my cognitive interviews around the questionnaire during the pretesting phase helped improve my understanding of the nurses' selections. The CWEQ also provided the basis for several of the formal interview questions.

In addition to the CWEQ, I conducted participant observation of working conditions on the maternity ward, including standard procedures, meetings about protocols, training sessions and daily activities. I observed interpersonal dyads (e.g., nurse-nurse; nurse-patient; nurse-doctor; ward staff-administrators) in order to understand the performance of formal and informal leadership roles, hierarchy, and general interactions, especially during times of crisis. I took detailed field notes that systematically documented staff interactions and crisis management, as well as protocols and how providers deviated or adhered to these protocols under everyday working conditions, and any interventions from hospital administrators. In total, I spent approximately 1600 hours on the maternity ward and in hospital meetings. Typically, I arrived at the hospital at 7:30am each morning, the start of the government workday, and began each morning in the hospital's clinical meeting, typically referred to simply as "the morning meeting," in which we would hear a report from the night staff, including the Nurse Supervisor and the Out Patient Department doctor on duty. This report included the number of patients received, admitted, or discharged, as well as any surgeries, emergencies, or deaths that occurred over night. The doctor or nurse supervisor would also present particularly critical or difficult cases for review by the collected staff members, soliciting comments and suggestions for the patient's care. A person from accounting read the financial report from the previous 24 hours (or, on Mondays, the weekend), including the amount of money collected, the amount billed to health insurance, and the amount of exemptions from the care of patients such as the elderly, pregnant women, and children under 5. Typically, thereafter followed a time for announcements and, sporadically, continuing education or death review presentations put on by various hospital departments. Ideally, the meeting ended by 8am and rarely after 9am, after which time the staff members proceeded to their assigned wards for the rest of the morning shift, which ended at

approximately 3:30pm. Nurses often left as soon as the evening shift members arrived (as early as 2:30pm) and doctors often stayed later in order to finish clinics, rounds, surgery or administrative duties. I attended all such morning meetings, as well as ward meetings and other miscellaneous staff meetings throughout the fieldwork period.

Additionally, I attended surgeries (primarily C-sections and the occasional fistula repair or evacuation post-abortion/miscarriage), assisted nurses with the intake and discharge of patients, counseled and tested women for HIV, took vital signs, filled out paperwork related to birth records, labor progress, doctors' rounds, death certificates, and patient consent forms. I also tested urine for protein (a sign of eclampsia), took blood samples to the hospital lab, collected lab results, restocked supplies, provided laboring mothers with comfort measures, delivered babies, and resuscitated newborns, as well as mopped floors, took equipment to the autoclave, helped fetch supplies from the main store or central pharmacy, and any other tasks that arose as part of the maternity ward nurses' duties. Though I most frequently worked the morning shift with the nurses, I did go to the hospital for several evening shifts, sometimes staying from the morning through the evening shift, which ended at approximately 6pm. I stayed at the hospital only for one complete night shift in order to experience the conditions, but I stayed for half of the night shift on a number of other occasions, particularly after I had a car and could safely travel home at night.

I conducted formal, open-ended, semi-structured interviews with the maternity ward nurses and doctors (n=17, representing more than half of the nurses and half of the doctors assigned to the ward) in order to understand incentives or punishments for deviating from hospital protocols and in order to explore the personal motivations of such actions (e.g., does deviating from formal protocol allow workers to serve patients better? Access more social

capital? Accrue other personal or collective benefits?), as well as to explore a number of other relevant topics. These topics included, briefly, information on their educational backgrounds, motivations for entering the health professions, their perceptions of challenges in their work environment, reflections on the number of maternal and neonatal deaths, how they cope with maternal deaths, their perceptions of ward and hospital management, communication, and reflections on their interactions with women and community members (see interview schedules in Appendix A). In recruiting nurses from the maternity ward, I excluded any nurses who had arrived on the ward within the last six months because they were all new school graduates and had comparatively little experience at the regional hospital. These newcomers had also not participated in the CWEQ, from which I had derived several interview questions. From there, I posted a notice on the ward bulletin board announcing my desire to schedule interviews with as many of the nurses and doctors as possible. I then approached nurses individually, trying to recruit a variety of different people in order to build a sample that included enrolled nurses (ENs), registered nurses (RNs), nursing officers (NOs), nurses with more than ten years of experience and those with as little as one year of experience. I interviewed three of the doctors who had worked on the maternity ward for more than one year and the others, then currently posted to maternity, had only been working in the department for a matter of months and did not participate in the formal interviews.

I also conducted open-ended, semi-structured interviews with the hospital (n=3), district (n=2) and regional government health care administrators (n=6) in order to gain insight into the difficulties they face when implementing national policies, staffing facilities, and improving care for pregnant women. These participants included the hospital's Medical Officer In Charge, the hospital Patron and Assistant Matron, the regional pharmacy ordering person, the Regional

Nursing Officer, Regional Medical Officer, two District Medical Officers, the Regional Reproductive and Child Health Coordinator, and the Regional Health Secretary. These interviews have helped to connect local institutional structures and outcomes with broader national policies and influences. I used purposive sampling to recruit district and regional medical administrators. I conducted all of the formal interviews in the last six months of my time at Mawingu, which meant that nearly all of the administrators already knew me and were familiar with my research questions and the ward staff members had been working alongside me for the past year. This meant I only had one person who declined to participate in an interview, all others did so willingly and several told me after the interview that they were very happy to have had the opportunity to express their thoughts and opinions on so many topics, as well as to tell someone about their experiences working in the healthcare system. When I returned to Sumbawanga in May 2016, the nurses and doctors with whom I had worked on the maternity ward very enthusiastically welcomed my return, expressing their desire that I should stay for another year. The Regional Health Secretary also told me that she still remembered what we had talked about in her interview and expressed her thanks because I had relayed to her that many of the nurses looked to her as an example of a leader who cared about their issues and spent time to listen and resolve them. The interviews were, on average, approximately one and a half hours long with none shorter than one hour. Several were more than two hours, with one being over three hours, which I conducted over the course of three subsequent days. Interview schedules are located in Appendix A.

2.2.2 Data Analysis

The CWEQ includes a key for analysis, with higher scores indicating higher levels of access to resources, more support from superiors, and a more empowering workplace. The

CWEQ's Likert scale also lent itself to visual representation and the hospital administration found it to be a useful tool in informing them of the needs of their staff members. After I presented the results to members of the hospital administration in a Hospital Management Team (HMT) meeting in May 2015, they expressed some interest in using the questionnaire with nurses in other departments at the hospital. Additionally, for analysis of the CWEQ results, I used descriptive statistics in order to arrive at the mean and mode for each question. I represented the results for each sub-section of the questionnaire as a bar graph showing the distribution of responses.

More generally, for the cross-sectional data, I developed a codebook and inductively coded my field notes and the transcripts from the interviews, by using the participants' own words, to generate themes related to hospital structure and working environment (e.g., apparent delays, communication, issues related to supplies, different forms of leadership demonstrated in hospital-based interactions), as well as to identify the mission of the hospital and its bureaucratic ethos. I have checked for interrater reliability (Krippendorff 2013:277), by having a key informant code random selections of the interview transcripts and field notes, and coded for recurring themes, which form the basis of most of the analysis in the dissertation.

2.3 Referral Chain

Women who arrived at the regional hospital often came from other biomedical facilities lower down the referral chain (see chapter 1 for the healthcare system's formal organization). With this in mind, I was interested in the events that precede a woman's arrival at the regional hospital from these other locations. Healthcare workers in these lower level facilities were often responsible for determining when a woman has a complication that they cannot handle. The providers then sought to facilitate a timely referral to another facility with the necessary

expertise, infrastructure, or supplies to provide appropriate clinical care for the woman in question. What actually transpired in these facilities often deviated from formally stated protocols or guidelines due to the difficult conditions or remote locations of these facilities. Some women may not even have started their care seeking journey, once labor started, within the biomedical system, instead preferring to consult a local midwife, or *mkunga wa jadi*. Within this context, I visited dispensaries and health centers in 27 villages in order to learn about the sequences of events that typically preceded a woman's referral to a higher level of care and why these events might differ from an idealized sequence of referral procedures.

2.3.1 Sampling and Data Collection

I collected cross-sectional data from the healthcare providers at lower level health centers and dispensaries, local midwives/birth attendants, district and regional health care administrators, and government health representatives. These cross-sectional data were critical for my development of a more complete picture of the sequences of events that may transpire within and outside the biomedical care system when a woman develops a pregnancy related problem requiring emergency care. Most women in the region do not live near the Mawingu Regional Hospital and must navigate the government referral chain before their arrival at the hospital.

I visited a random sample of eleven government dispensaries and three health centers throughout the Rukwa region, roughly equally distributed between the three non-urban districts- Kalambo, Nkasi, and Sumbawanga Rural (details on sampling below). At the selected dispensaries and health centers, I interviewed healthcare providers at each site, generally all that were present and not less than two in each location, about what they did if a woman developed an emergency condition during pregnancy, birth, or the postpartum period. Questions were related to the normal sequences of events that led up to a woman being referred out of the

facility. I asked the providers to recall a recent case that demonstrated what ordinarily transpired and asked them to describe the clinical management of the case as well as anything they were able to recall related to interpersonal actions (e.g., communication) and institutional factors, especially those related to the overall government healthcare system (e.g., availability of supplies and equipment, sufficient number of staff members, referral support). I also asked the providers more general questions concerning the resources available at the facility, difficulties facing the staff, and their perceptions of difficulties facing the communities they were serving (see Appendix A for interview schedule). Using purposive sampling, I identified local midwives/birth attendants in three of the eleven villages for a total of approximately fifteen participants in small group discussions related to the roles, knowledge, and responsibility of these local midwives (Appendix B). I interviewed them about their practice, home versus hospital births, their experiences with obstetric emergencies, the worse cases they had managed, and when they might refer a woman to the biomedical healthcare sector. We also discussed past traditions and taboos related to pregnancy, birth, and maternal death and they described what a normal, uncomplicated home birth tended to include in their communities.

In order to select villages that were suitable for both questions related to the referral chain and community life (i.e. with a healthcare facility, as well as the potential for community conversations and participant observation), I used random sampling to select three or four villages in each non-urban district. The sampling frame was composed of all villages in the non-urban districts that have a health facility, either a dispensary or a health center, obtained from the district government offices. These methods have provided insight into care during birth outside the biomedical system, the norm for nearly 70% of women in the region (NBS and ICF Macro 2011). This valuable background information helps to contextualize emergency cases that

reached the hospital from outlying villages. I originally estimated sample sizes based on my first-hand knowledge of the sites with consideration for feasibility and following purposive sample size guidelines for achieving theoretical saturation (Guest, Bunce, and Johnson 2006).

I collected lists of all villages with health facilities from the district medical offices. Those without dispensaries or health centers were excluded from the study because each village visit included a visit to the community's health facility. Therefore, this study cannot speak to the challenges faced by those communities which do not yet have a dispensary, though it is a government policy now that all communities should have a dispensary by 2015. However, it is unlikely all villages were successful in meeting this goal due to a number of the challenges raised in the community focus group discussions. As a note, my research assistant and I did briefly stop in a community in the Kalambo district, Kifone, that had an unregistered, relatively new dispensary which provided some insight into the challenges faced by those communities without any health facility. There were also a number of communities that were served by dispensaries in nearby villages and we did speak with community member representatives from these sub-villages while in certain locations including, for example, Mkamba village.

After I procured the list of all health facilities in each district, I used an online random number generator to choose a random sample of villages from each district. Each district list was treated independently. Villages with privately funded health facilities were also excluded in order to try to limit the number of variables when making qualitative comparisons between the villages and their healthcare facilities. After this initial selection, which resulted in a list of approximately 20 potential communities, the number of villages in each district was further culled by eliminating those villages that were immediately adjacent to each other and those with impassible roads. Then I checked the list against district and regional maps to ensure good

geographic diversity and in order to ensure there was at least one village from each of the main geographic zones in the region, which I classified as bordering Lake Tanganyika (Namansi, Kirando, Ngorotwa), bordering Lake Rukwa (Kalumbaleza, Mkamba), interior (Kizi, Mao, Ilambila, Kifone), and highlands (Songambebe, Laela, Lowe). Maps can be found in Appendix D.

Table 2.1 Villages, including types of focus groups conducted in each location

District Name	Kalambo				Nkasi			Sumbawanga DC					
Village	Mao	Ngorotwa*	Ilambila	Kifone	Kirando*	Kizi	Namansi	Laela*	Lowe	Kalumbaleza	Mkamba	Songambebe	
FGD	Women	X	X	X	X		X	X		X	X	X	X
	Men	X	X	X			X			X	X	X	X
	HCWs	X	X	X	X	X	X	X	X	X	X	X	X
	Leaders	X	X	X			X	X		X	X	X	X
	Disp. Kamati	X	X	X			X	X		X	X	X	X
	TBAs	X								X			X

FGD= Focus group discussion type

*indicates communities with a health center, all others had a dispensary

Disp. Kamati indicates a meeting with the dispensary committee, citizens who oversee the administration of facility in partnership with the healthcare workers and village leaders

I then used the selected villages as sites for learning about the referral chain, non-biomedical personnel (including local midwives), and the community setting more generally. Due to time constraints, road conditions, and availability of transportation, I decided to also use these villages for recruitment of those women self-identifying as *wakunga wa jadi* (local birth attendants/midwives), instead of conducting a probability proportionate to size sample to choose other villages for this exercise. In each village, I, together with my research assistant, interviewed the healthcare providers, then observed their care and routines, as available based on the number of patients present or seeking their care. In one instance we were able to directly observe an obstetric emergency and even follow up with the outcome of the case at the designated district hospital in Namanyere after the dispensary providers referred her there for surgical intervention following an arm prolapse and prolonged labor (see chapter 4). Otherwise, we elicited most of the information related to care of pregnant women through semi structured interviews, which involved a standard set of questions with others being added for clarification, follow up, and elicitation of community-specific issues of interest.

In each village, I conducted focus group discussions with community leaders, men, and women. Each focus group with women and men had, on average, between 10 and 20 participants. People were allowed to come and go as they pleased so, often, in the beginning, the room would be full of people and we would level out after half an hour or so with approximately 15 participants. The village leader discussion groups included as many village and neighborhood leaders as were available, generally between 5 and 10, sometimes as many as 15 were present. The FGDs with the *wakunga wa jadi* included, on average, 5 to 10 women plus usually a younger woman who offered to help translate from the local language of Kifipa, which was more comfortable for the older women. We recorded all these conversations and my research assistant

transcribed them, with assistance as needed. We also interviewed members of the community's dispensary committee and/or community health committee, as available, which usually included between 3 and 5 members.

We interviewed all healthcare workers who were present when we arrived in the community, usually at least one and generally more not more than three. In one village, Lowe, there were, at the time of our visit, no biomedical health professionals in the community but we did speak with a well-known healer and one of his sons. In one village, we were unable to hold the formal group discussions with the men and women due to weather conditions and subsequent work because it was a fishing village. In two communities, we spent time only in the healthcare centers and did not organize community discussions though we did informally speak with community members. The purpose of these trips to health centers was to build a picture of the different levels of care in the region. In Sumbawanga rural district, I chose the health center for the sample based on the high patient load, recent reports of two maternal deaths in January 2015 in the space of one 24-hour period, and the lack of a district hospital in the district. In the other districts, I selected the health centers via purposive sampling, one for geographic location near another sample village, in Nkasi district with a long-standing history of providing C-sections and serving the more remote communities along Lake Tanganyika, and one for its more remote location, in Kalambo district.

In some cases, particularly in Nkasi district, I contacted village leaders three or four months in advance of my return to the village to inform them that their village may be selected to be part of a research study. On these introductory visits, I explained the purpose of my research, the potential risks and benefits, and asked the community leaders if they and their communities would be willing to participate. They responded overwhelmingly positively and contact was then

re-established at the commencement of the community portion of this study, in February 2015. Other villages with which I'd had no previous contact were notified by the District Medical Officer, in the case of some of the villages in Sumbawanga Rural district, or were approached with no previous contact and the same recruitment and explanation process took place, asking for their participation in the study. While some communities were more openly welcoming, all but one participated with a great deal of enthusiasm and cooperation, with village leaders actively helping to recruit focus group participants from their respective sections of the village and spreading the word about the meetings. Only one community, Namansi, failed to gather participants for the organized focus group discussions and this was in large part due to rain that then meant the entire community was either out fishing or engaged in preparing the early morning catch for drying, freezing, and transportation to market. However, we were able to speak with the healthcare providers, the dispensary committee, and the village leaders in this community, which provided us with a picture of many of the community's challenges and needs. We also had an abbreviated version of a focus group with a mixed group of men and women who were waiting for care at the village dispensary. Extremely poor road conditions and continuing rain made it impossible to extend our stay, as did the lack of a place for us to sleep.

2.3.2 Data Analysis

My research assistant and I transcribed the interview and focus group discussion recordings. I then coded the transcripts and field notes in order to qualitatively analyze interpersonal interactions, sequences of events (particularly any delays), and the ways and extent to which care or referral procedures tended to deviate from guidelines. I added these codes to the master codebook and checked for interrater reliability by having a key informant code a random sample of transcripts (Krippendorff 2013:277). Using participants' own words, I identified themes

related to the referral system, obstetric emergencies, and other issues that arose in the interviews, particularly those related to education in the community, gender roles, and suspicions and allegations of corruption related to the availability of medical supplies. The data from this sub-objective has been woven into the overall analysis as a means of contextualizing obstetric emergencies before the woman arrives at the hospital.

2.4 Communities

Women do not arrive at the regional hospital from a vacuum which meant it was important to also understand the ways in which communities shaped women's experiences related to care during pregnancy and childbirth but, more generally, how women fit into their communities. Women's health when they arrive at any biomedical facility is shaped by prior life experience and broader structural factors. I traveled to communities throughout the Rukwa region in order to gain more insight into the ways in which women's everyday lives and social relations intersected with biobureaucracies and how women's broader experiences could serve to place them at risk for obstetric emergencies and death in biomedical institutions.

2.4.1 Sampling and Data Collection

To gather ethnographic background information on women's daily lives and community-level contributors to maternal death, I collected cross-sectional data through interviews and focus group discussions with non-medical personnel (biomedical personnel and local midwives are included in the methods related to the referral system). I selected a random sample of villages throughout the three non-municipal districts of the Rukwa region, as described previously, as sites for this ethnography. Interviews and focus group discussion questions pertained to men's and women's experiences with maternal health and death, including decision making during pregnancy and obstetric emergencies, and healthcare seeking (non-biomedical and biomedical). I also inquired about women's household responsibilities, educational opportunities, and any other

themes arising from the participants themselves, which they felt were relevant to the overall health of women and gender issues in their setting (see Appendix B for focus group discussion questions). I used participant observation in these communities to collect further data on these topics.

2.4.2 Data Analysis

Similar to the analysis of data collected about the referral chain, my research assistant and I transcribed and then I inductively coded the interviews, field notes, and focus group discussions to qualitatively analyze the ways in which women's lives, community events, men's participation in reproductive health, infrastructure and other factors contributed to maternal health outcomes. I have integrated these data into the overall analysis to contextualize obstetric emergencies, the status of women in communities, and how these factors may contribute to maternal health and death.

2.5 History

I was also interested in the ways in which the history of biomedicine in Tanzania and the Rukwa region continued to influence healthcare provision in the present day. I took a more deductive approach to the historical data and was specifically interested in the ways in which colonialism, socialism, structural adjustment programs, and attributes of the Rukwa region (e.g. geographic isolation) created the present system, including institutional environments that limited innovation and improved care provision.

2.5.1 Sampling and Data Collection

To address the historical influences on current maternal healthcare and hospital functioning, I collected archival data (Hill 1993) in the Tanzania National Archives over the course of approximately three months. I also conducted oral history interviews (White, Miescher, and Cohen 2001) with healthcare workers and administrators who had worked in the Rukwa

region for approximately twenty years or more and those who had retired. The Tanzania National Archives house a significant collection of documents well catalogued and dating back to the German occupation period in the late 1800s (TNA 2011). Looking at archival records from the colonial and post-colonial period provided insight into the bureaucratic and administrative goals of the changing governments in regards to healthcare planning, provision, and biobureaucratic expansion. Records from colonial offices and the post-independence Ministry of Health and Social Welfare allowed me to begin tracing the development of the structures of the government healthcare system, including providing some insight into financial and policy goals and difficulties, such as pressure to meet targets like the Millennium Development Goals or other, broad global goals throughout history.

Using the archives' finding aids, I sought out any and all documents related to the expansion of healthcare services in rural areas, to the establishment and functioning of district and regional hospitals, and to decisions to decentralize health administration (in order to help understand financial and efficiency issues) from all periods of Tanzania's history, as well as all materials directly related to Ufipa, midwifery care and training, and health facility data related to childbirth and related complications. The German period records are exclusively in German and no English or Swahili translations were currently available. Therefore, I was forced to begin my work with records that commenced after England was granted Tanganyika as a protectorate after the German colonial losses post-World War I. This limits the time period of what documents were available but, for the purposes of my study, this was not a significant limitation. The present day Tanzanian healthcare system is still largely based upon the British model instituted after WWI.

I supplemented the archival work with oral history interviews with long-time and retired healthcare providers and administrators (n=6), as well as older community members (n=10) who were able to provide additional descriptions of the development of biomedical healthcare in the region, as well as telling me about changes in healthcare provider training, salaries, their perceptions of the availability of necessary supplies and equipment, and their memories related to quality of life in different periods of Tanzania's history. I identified the oral history interview participants through purposive and respondent-driven sampling because this sample was relatively small and more difficult to locate. These interviews often picked up where the archival records left off because many records from the post-independence era have yet to be made available to the public. The oral histories helped to provide insight into the policy recommendations and changes documented in the historical record. The ramifications and modes of implementation of these policies cannot be fully understood without the experiences of healthcare providers who witnessed these changes and were meant to implement them. The oral histories also served to illuminate personal experiences with the changing structure of healthcare and the biomedical institutional environment in the Rukwa region.

I primarily asked participants questions related to their memories of ways in which healthcare has changed in the Rukwa region by asking them to compare their experiences during the different presidencies from Julius Nyerere through the then-current president, Jakaya Kikwete. The different presidencies have been characterized by distinct shifts in economic policies, ranging from socialism to structural adjustment to liberal policies and a significant increase in foreign NGO activity and outside donor involvement in the country. This made asking about people's experiences under different presidencies an easily understandable way to

get people to think about shifting economics and health infrastructure on both a local and national scale.

2.5.2 Data Analysis

I primarily relied on an interpretive, broadly qualitative analysis of the historical data which I collected from the above mentioned sources. I deductively coded for *a priori* themes of interest, such as infrastructure and references to Rukwa regional identity, as well as political perspectives on the region and mentions of healthcare infrastructure, organization, and management. In addition to these *a priori* themes, I added some themes which arose during the other phases of data collection and analysis. I also coded the transcripts from the oral history interviews. I used the archival records and oral history interviews as a way to connect the ethnographic data to broader historical trends and to explain the hospital's institutional characteristics and functioning. These data also helped to connect the hospital to regional, national, and global trends in maternal health policy and administration, as well as maternity care and midwifery training on a national level in Tanganyika.

2.6 Data Collection Summary

In table 2.2 below I outline the various phases in which I collected data to address each of the realms of study. Based on access to particular locations and logistics, such as the availability of transportation, I moved between the different phases of the project and did not complete them in succession nor in chronological order. Instead, this process of alternating between the different research objectives resulted in a more iterative approach and made it possible for me to generate more questions for each set of data sources, whether people or archival documents. It is my belief that this order resulted in a more comprehensive, well-grounded, and richly contextualized data set than if I had collected the different types of data without being able to go back to the other sources.

Months	Research sub-objective	Location	Activities conducted	Additional notes
January 2014	-	Dar es Salaam	Obtained research clearance and residency permits	
February-May 2014	Regional hospital	Mawingu Hospital	Participant observation, informal interviews	Part of the trust-building phase; multiple deaths occurred in quick succession
June 2014	Referral chain	Kalambo District	Participant observation and informal interviews while accompanying a supportive supervision trip	
June-July 2014	Regional hospital	Mawingu Hospital	Participant observation, informal interviews	
July-August 2014	History	Dar es Salaam, Tanzania National Archives	Archival research with primary documents	
August-October 2014	Regional hospital	Mawingu Hospital	Participant observation, informal interviews	
November 2014	Referral chain	Nkasi District	Participant observation and informal interviews while accompanying a supportive supervision trip	Made contact with villages to which I returned in Feb-April
December 2014-February 2015	Regional hospital	Mawingu Hospital	Conditions of Work Effectiveness Questionnaire; leadership pile sorts; informal interviews	
February-April 2015	Referral chain and communities; history	Kalambo, Nkasi, and Swanga DC districts	Community level focus group discussions; formal interviews; oral histories	
May 2015	Regional hospital and history	Mawingu Hospital	Formal interviews and oral history interviews	
June-August 2015	History	Dar es Salaam, Tanzania National Archives	Archival research with primary documents	

Table 2.2 Summary of methods and sites

2.7 Ethical Considerations

Any research involving issues related to death and suffering comes with a variety of ethical concerns. In the case of this study, not only were there a number of issues related to sensitively dealing with the issue of death-of women and their babies- but, there were also additional concerns due to the nature of hospital settings and my presence in or observation of a number of ethically fraught clinical situations. There was also some level of potential risk involved for the healthcare providers in choosing to discuss maternal deaths and the inner workings of the hospital with me. Therefore, at every stage of the planning and conduct of the research I strove to ensure anonymity and to minimize any risk of harm to all those who chose to participate in my project. All names used in the dissertation are pseudonyms except in the instances of district and regional health administrators whose titles would be sufficient for identifying them. In those cases, I requested explicit permission to use their titles in reference to what they told me and received their permission after a full explanation of the implications of their consent. Therefore, this lack of anonymity in these cases may have influenced what they were prepared to tell me on the record because they knew their statements would be used in conjunction with their titles.

I received ethical clearance from the Washington University Institutional Review Board, as well as Tanzania's National Institute for Medical Research, and obtained research clearance from Tanzania's Commission on Science and Technology (copies of all these documents are available in Appendix E). For the purposes of research and ethical clearance in Tanzania, my local partner was Dr. Samwel Marwa from Mawingu Regional Hospital. The Regional Medical Officer, Dr. John Gurisha, was also aware of my project and approved my requests to have access to health facilities throughout the region. During the development of my project, I was in

contact with Dr. Marwa and when I arrived back at Mawingu in February 2014, I immediately made available copies of my full research proposal, including all the objectives and methods, in an effort to be as transparent as possible with the hospital and regional health administration.

Throughout the text I have tried to be as transparent as possible about my involvement in or knowledge of ethically challenging situations that transpired in both clinical and social settings regarding my presence at the hospital or the particularities of my research. In the clinical setting, hospital ethnography presents a variety of somewhat unique ethical challenges (Long, Hunter, and van der Geest 2008) including knowledge of medical negligence or malpractice, harm (generally, or almost always, unintentional) to women who were patients, violent interactions between administrators and ward staff that violated codified ethics (Tanzania Nurses and Midwives Council 2009), situations in which bureaucratic constraints limited aid to desperately ill mothers and babies, and myriad forms of-what I would, from my American perspective classify as- disrespect and abuse perpetrated by nurses towards women present on their ward during labor and while giving birth. In the next section I elaborate more in-depth about my particular position in the hospital and my personal background as a way of explaining how I came to access the types of information herein. Here, I will simply say that my extensive previous experience in Tanzania, particularly in hospital and clinic settings, prior to the dissertation research, taught me how to navigate these environments, as well as what staff considered to be acceptable roles for me, the foreign researcher. Out of respect for women and their family members, I also attempted to provide them with as much information as possible related to their conditions, hospital procedures, what they might expect in the hospital environment, and how they might maximize their interactions with the ward staff. Because I do not have medical training, beyond a bachelor's degree in biomedical science, I did not offer

clinical advice outside the bounds of my additional training related to birth control and basics such as personal and family hygiene. Despite repeated offers from midwives over the years to teach me how to conduct vaginal exams, I have never felt this procedure to be useful for my research and, due to its intimate and uncomfortable nature, have always abstained from doing this procedure. I do, however, deliver babies when the cases are uncomplicated. Tanzanian doctors have taught me how to correctly perform neonatal resuscitation. I only provide care that is uncomplicated and within the bounds of the instruction that I have received. If I was ever uncertain about any part of a procedure, I refused to perform it. Sometimes the nurses did not understand why I was refusing to assist them but it has always been my firm belief that, though I have had some instruction, it would be ethically inappropriate, and disrespectful of women, to engage in any clinical activities if I was at all uncertain of any aspect- including the suitability of the procedure, the steps involved, or any other aspect therein.

Out of respect for the hospital staff and administration, I always explicitly refrained from discussing any potential medical errors with the women who were on the ward, or their family members. More than once, relatives saw me on the ward and, once they realized I spoke Swahili, they would ask me questions about their relative's condition. Sometimes this took the form of them asking me to tell them the particulars of how the woman had been treated and, occasionally, these inquiries included questions related to suspicions they harbored about how care had not transpired in the way they had expected. I always referred them to the nurses on duty, the ward Nurse In Charge, or, in one case, the Medical Officer In Charge (chapter 8). I did not feel it was my place to answer their questions about any specifics of what might have gone wrong (or differently than expected). As I suspect happens in many clinical settings, in low and high resource environments, the medical personnel often closed ranks and sought to mediate any

complaints relatives or patients brought forward in order to minimize accusations of neglect, abuse, or malpractice. Oftentimes, patients and their families brought forth complaints that were a result of miscommunication with the hospital staff members. In other instances, I was offered money by women or their relatives in return either for services provided or as a bribe for looking after the woman more closely. I always refused to accept this money and tried to reassure women's families that I would follow-up with her case and make sure she was being treated well, while also explaining to them that hospital staff members were not supposed to take any money from either women or their relatives.

In recruiting Mawingu Hospital maternity ward staff members for in-depth interviews I offered small incentives. I had a collection of small gifts I brought from the United States and offered them on a first come, first served basis. The items included things such as sample size make-up, reusable bags, small mirrors, or earrings. Several members of the staff refused any form of compensation for their participation. I did not offer either hospital or district and regional health administrators any form of compensation for their participation in interviews and they generally seemed to conceive of their participation as part of their broader job requirements. I only had one person who did not agree to an interview and most likely it was due to miscommunication and my inability to sufficiently explain to her the goals I had for our interview.

In the community setting, particularly when we were conducting focus group discussions, community members asked my research assistant and I what we were going to do for *them* and/or for the village. In these instances, I was particularly careful to not make any promises I would not be able to uphold. Organizations, both local and foreign, as well as politicians and government officials, often made promises to communities for much needed services or

infrastructure and then never returned to fulfill them. This led to many of the stories community members told us about broken promises which had resulted in disillusionment and cynicism for many village leaders and their communities. In villages, I also offered only minor incentives for participation in the focus groups, generally limited to a small amount of money per person for refreshments (the equivalent of approximately 25 cents) or, in many cases, I took photographs of the individual participants and of the group. I printed out the pictures in Sumbawanga town and made sure to return the photos to the community so everyone received at least two photos as a souvenir of their participation. This generally was met with a great deal of enthusiasm from everyone involved.

2.8 Positionality

There are a number of aspects of my academic and personal trajectories that have made it possible for me to conduct this research and have facilitated the level of access and buy-in that I ultimately achieved in the Rukwa region. I have been traveling to and/or conducting research in Tanzania since 2007. After my initial trip, I returned to my undergraduate institution, The Ohio State University, and began studying Swahili. I took six quarters of Swahili in the classroom, the maximum number of courses offered at that time. I also returned to Tanzania in 2008 (for one month) and 2009 (three months) in order to continue to practice Swahili, establish contacts, and conduct research for my undergraduate honors thesis project. In 2008, I had my first experience in the Tanzanian government health system, spending one month shadowing doctors in a regional hospital. In 2009, I spent most of my time interviewing women I recruited from either the maternity ward or the maternal child health clinic at the Singida Regional Hospital. In 2009 I also went to several small villages in the Iramba district of Singida, my first exposure to village dispensaries in rural areas. From September 2010 through July 2011, I lived and conducted

research in Singida, Tanzania on a Fulbright IIE Student Research Fellowship. It was during this period that I reached fluency in Swahili. In brief, I spent the majority of that fieldwork in one small village, and on the maternity ward and in the maternal child health clinic (MCH) at the Singida Regional Hospital. I spent a great deal of time observing and interviewing women in village dispensaries (three different dispensaries located in close proximity to the village in which I was staying), as well as on the regional hospital's maternity ward. Due to my slightly less developed Swahili, there were certain limitations to my interviewing abilities and I had not yet, at that point, received much formal training in anthropological field methods but, during that year, I learned invaluable lessons about conducting research. Additionally, it was from this time that I first started thinking about the questions that eventually became this dissertation. I consistently have had excellent access to government health facilities and good rapport with healthcare providers. While I initially resisted the idea of conducting my research with this population, being still more interested in basing my research in communities and on women's perspectives, I came to see that maternity healthcare providers as a group face a number of unique challenges. Healthcare providers have proven to be very open with me in discussing these challenges, both in Singida-when I did not yet know the questions to ask- and from my first trip to the Rukwa region in 2012.

It is via this trajectory that I gained more knowledge of Tanzania, as well as Swahili. I had many of the most significant experiences of my young adult life in Tanzania and, because of this, often feel as though I spent time in the country during an important formative period. Despite my brief trips in the first couple years, I spent much of the intervening time in the United States pursuing a course of study that would allow me to learn from and understand more about the people of Tanzania. It was due to my time in Tanzania, and events I witnessed at the Singida

Regional Hospital, that I first enrolled in a medical anthropology course. I witnessed a tense interaction between a woman who wanted to take her small child out of the hospital and the hospital staff members who were insisting the child was not well enough to be discharged. The two parties were unable to come to an understanding due to a fundamental disagreement about the child's diagnosis- malaria versus plastic teeth (for a discussion of this, see Weiss 1992). It was during the same time as my encounter with plastic teeth that I moved away from a previous fascination with infectious diseases, particularly hemorrhagic fevers, to an interest in obstetrics and gynecology, and women's reproductive health in general. A doctor in Singida asked if I, and two other American undergraduate students, wanted to observe an autopsy he was going to perform. Not knowing what we might encounter, but eager to learn and see as much as possible, we agreed to watch. He performed the autopsy of a woman who had died during pregnancy, her full-term baby unborn. The incisions he performed were the same as those of a Cesarean section that would have saved the woman's life, and that of her child. The experience raised many questions for me about the global distribution of resources, the on-going causes of maternal deaths, and inequities that made the causes, and deaths, possible in the 21st century. That one experience in 2008 turned out to be the impetus for most of my subsequent research, as I sought to contribute another piece to our picture of the phenomenon of maternal death.

My undergraduate degree is a Bachelor of Science in Biomedical Sciences. The degree program itself is relatively unique and is administered through Ohio State's College of Medicine School of Allied Medical Professions and was closely tied to both biomedical research and medicine. I was able to choose a variety of different science courses to meet the major's requirements, building on my interest in the biological sciences that I had started to develop in high school, particularly through anatomy and physiology. A second unique component of the

program was that all of those pursuing the degree (only about 20 students per year) conducted research in a laboratory through the Ohio State Medical Center for at least two years.

Upon embarking on my bachelor's degree, I had wished to go to medical school and become a doctor. Largely due to my experiences in Tanzania, and courses I eventually took in medical anthropology, I decided, in the end, to pursue a Ph.D. in anthropology instead. I therefore have taken courses such as three years of chemistry (inorganic, organic, and biochemistry), as well as microbiology, neuroscience, graduate-level physiology, microbiology, and courses in molecular virology, immunology and molecular genetics. I also took courses in public health, including field epidemiology, and a course on emerging tropical diseases. Courses through my major program also included classes related to leadership in healthcare and an entire 10-week class about the organization and administration of the U.S. healthcare system. For my two years in a research lab, I worked in a lab that was, broadly, studying tuberculosis. In the lab, I reported to an immunologist and I assisted her on projects researching signaling pathways in the lung through examination of lung surfactant protein A (SP-A).

My education in the biological and physical sciences created a shared background and base of knowledge with the healthcare providers in Tanzania. This meant we were able to “speak the same language” in terms of some scientific or clinical jargon. They also tended to recognize me as having a certain level of credibility in the clinical setting because of my knowledge of physiological and biochemical processes to which they would periodically refer. It also meant that, with a foundation already in place, it was perhaps easier to teach me to conduct certain procedures than it would have been for someone with little to no education in the biological sciences.

With this shared background, I was able to build bridges with the healthcare providers, discussing the horrors of organic chemistry exams and sharing stories of our initial wonder when presented with the intricacies of bodies as encountered through dissection. We often compared the similarities and differences between healthcare in the United States and Tanzania. These shared experiences transcended cultural or language differences because, after all, molecules and the laws of physics tend to be treated in a universal way, taught to students as a shared language of science. This very same shared background of science was something I had been working to unlearn as an anthropologist. I no longer believe in positivism in the way I once might have and I am much more keenly aware of the implicit biases and cultural influences that operate on and within science. Sometimes, while immersed in the hospital's maternity ward, it could become difficult to not fall into the same patterns of thinking and behavior as the doctors or nurses. It was often easy for me to forget my role as anthropologist and slide into the role of medical professional, what I had aspired to be for well over six years of my life. With several overlapping systems of power, thought, and expertise, I was both insider and outsider in various registers. I have tried to be aware of and attuned to the ways in which these fuzzy borders and boundaries may have influenced my views, interpretation, and writing of events that occurred during my time in Tanzania.

While I have written some in the previous section about ethical entanglements, it bears repeating again. Due to the nature of the work in which I was engaged, and my long-term presence, the nurses often entirely forgot I was present, acting as if I were not around or was simply another of their colleagues. It took me almost an entire year to develop a level of trust and rapport with the nurses that allowed frank discussions about ethics, interactions, mistakes, and potential wrongdoing. For this reason, I conducted nearly all my formal interviews in the last two

months. More than once, I was in a position in which I knew there had been some form of medical misconduct or neglect. Never did I report the actions of the nurses to their superiors but I did give my opinion or account of events when directly questioned, as when I had been directly involved with the care of a patient who later developed complications (see chapter 8 on stillbirth). I did sometimes vent to close friends who were not medical professionals, never naming names or disclosing medical details or case particulars. I am fortunate to be close personal friends with the man who was, at the time of my fieldwork, the Medical Officer In Charge of the Regional Hospital. We were a mutual source of support when we encountered respective frustrations and I believe we became close friends because he was unflinching in his commitment to unseating the status quo at the hospital in a quest to improve patient care and outcomes. Sometimes, in this quest, he encountered opposition that was particularly entrenched. Some of our conversations about these challenges inform this dissertation, which would not be nearly as rich without his candor and participation.

I would be remiss if I did not also write something about my position as a white woman working in Tanzania. Due to a history of NGO projects and aid in the country, the color of my skin often prompted requests for money or other gifts, or led people to believe I was there in order to provide services for the community. In other cases, many people misinterpreted my presence at the hospital and believed I was either a nurse (due to my gender) or a doctor (due to my skin color). I tried not to take advantage of these misreadings of my role but there were times when I did use my white, foreigner privilege, such as when I did not tell the regional hospital lab personnel that I was not a doctor because, when they thought I was, they fast-tracked any requests for blood or lab tests that I brought them from the maternity ward. In this context, I gained a reputation on the maternity ward as the best person to send to the lab in an emergency

because I almost always came back with what we needed. In terms of interviews or conversations with community members outside the hospital, I tried to be aware of the ways in which my skin color and foreignness could influence the responses I received. Often, my past experience and my Swahili language ability, made it possible for me to eventually work around any untruths or canned responses people gave me, which were the answers they thought I would want to hear. However, I do have to consider how people's answers to my questions or their portrayals of themselves and their communities might have been different had I been Tanzanian. This issue could have been more prominent in villages when I went only for a few short days to conduct group discussions because the community did not know me. A colleague suggested that perhaps villagers would try to make the state of their community sound worse in the hopes that I would provide them with some form of aid, because many people in East Africa have become so used to NGO culture. In the Rukwa region, there has been significantly less NGO activity due to the region's remoteness. However, this is still an issue which I have taken into consideration in my interpretation of the data. Additionally, my observations and conversations with other Tanzanians about the communities in question generally verified the answers the community members had given me. In the hospital, I am confident that the amount of time I spent there significantly decreased the bias of any answers people gave me.

Not infrequently, I felt a sense of despair when I walked into the maternity ward on yet another morning to find a line of small, bundled corpses awaiting paperwork and their relatives. The lack of supplies, the sometimes harsh manner of the nurses, the grinding, exhausting work of delivering baby after baby to women who have sometimes faced a lifetime of discrimination based on their gender and/or socioeconomic position, was occasionally enough to make me question if there is any way the system can ever change. However, in addition to describing and

interpreting the system and its historical antecedents, I hope, herein, to also present a picture of the ingenuity and courage of those who daily struggle within it to make lives for themselves, while also being in service to the women who go to the hospital to give birth. During visits to communities, village health facilities, and meetings across various levels, I encountered the anger, resentment, and dissatisfaction of community members, average Tanzanians, men and women both, who often felt deeply wounded by their lack of adequate healthcare services. But here, too, I saw the ways in which communities organized themselves to build new facilities or chase out negligent providers. So much has happened within the Rukwa region's healthcare sector just in the last five years that I am certain, as Tanzanians would say, they will continue *kupambana*, to encounter the system, clashing with it, to make the system better. While committed to the academic and theoretical projects of anthropology, I am also deeply committed to remaining grounded in the reality that even as we talk, or as you read this, women and their babies continue to die and healthcare providers continue to work in structurally violent environments from which it is nearly impossible to escape.