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# *The Best of Both Worlds for Newborn Survival*

*THE RELATIONSHIP BETWEEN NEONATAL HEALTH  
BEHAVIOR AND BELIEFS ACCORDING TO MOTHERS*

*A CASE STUDY IN THE SOUTHERN PROVINCE OF ZAMBIA*

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*“A long time ago, when cutting the umbilical cord, ... the one delivering would hold onto the baby’s side after tying the cord, and start cutting the cord slowly while singing this song:*

*“Mutenda nzi?” (What are you cutting?)*

*“Tenda muzovhu.” (We are cutting an elephant.)”*

*“What does this mean?”*

*“This is in respect to the one conducting the delivery, we relate the newborn baby to the size of an elephant, the biggest animal in the bush, wishing the child to be somebody big in the society.”*

*- Discussion with Grandmothers,  
Choma District, Zambia*

## Acknowledgements

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I couldn’t have done it without you!

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## Abstract

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In the context of a global surge in attention towards reducing neonatal mortality in developing countries, this study explores how mothers in the Southern Province of Zambia describe their behavior to prevent and care for neonatal illnesses, and how this behavior is related to their beliefs on neonatal illness causation. Using an anthropological approach that is based on Kleinman's (1980) *local Health Care Systems* model, this study has found that mothers' illness etiology concepts strongly inform their health behavior when it occurs in the popular and folk sectors.

Within this framework of strong traditional beliefs, however, common utilization of the professional sector is argued to imply that, through a process of rationalism that is informed by empirical effectiveness, mothers have reconciled their way of understanding illness in order to accept new systems of care and to adapt to their changing environment.

These findings have important implications for public health specialists, because they suggest that in this context, new health practices to improve neonatal survival can be accepted by local populations and accommodated to the current belief system, as long as they are considered to be effective – a judgment that is to be made by local populations themselves, in relation to their health values and priorities.

**Keywords:** neonatal period, health behavior, preventive behavior, curative behavior, illness, folk illness, etiology, beliefs on illness causation, local Health Care Systems model, popular sector, folk sector, professional sector, Southern Province of Zambia.

**Wordcount:** 14 994 words

## Abbreviations

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ACCESS	Access to Clinical and Community Maternal, Neonatal and Women's Health Services
ARVs	Anti-retroviral drugs
BCG	Bacillus Calmette-Guérin
CGHD	Center for Global Health and Development
DHMT	District Management Health Team
FGD	Focus Group Discussion
HIV/Aids	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
IRB	Institutional Review Board
MDG	Millennium Development Goal
MOH	Ministry of Health
NMR	Neonatal Mortality Rate
PEPFAR	President's Emergency Fund for AIDS Relief
PMTCT	Prevention of Mother to Child Transmission of HIV/Aids
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
UNIP	United National Independence Party
UNZA	University of Zambia
WHO	World Health Organization
ZamCAT	Zambia Chlorhexidine Application Trial

## 1. Introduction

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Neonatal mortality<sup>1</sup> is one of the world's most neglected health problems (Parlato et al. 2004:3). Every year, 4 million newborns die worldwide before reaching 1 month of age, and ninety-nine percent of neonatal deaths occur in low- and middle-income countries (Lawn et al. 2005:891). Of these, most neonatal deaths occur in south-Asian countries; however, highest rates are found in sub-Saharan Africa.

As a global public health problem, neonatal mortality has, until recently, persisted in silence; perhaps this relates to the nature of the problem itself. In most developing countries, childbirth and the early life period are experienced in the home setting, where most newborn deaths also occur. These cases remain unrecorded and outside of the formal health system; as such, most newborn deaths remain invisible to all but the families and communities who grieve their loss.

Though it isn't a new problem, neonatal mortality has only recently appeared on the global health agenda, in the context of the global push towards achieving *Millennium Development Goal 4: Reduce Child Mortality (MDG4)*<sup>2</sup>. Because approximately 36% of deaths that occur in children under the age of 5 years occur in newborns, significant attention is being placed on addressing causes of mortality particular to this earlier period of life (Darmstadt et al. 2003:224).

### 1.1 Challenges of addressing neonatal mortality

The newborn period is one of great vulnerability, and the way in which health problems are avoided, recognized and responded to during this period significantly affects the health, and even survival, of the baby. A list of evidence-based interventions, many of which pertain to healthy behaviors, has been compiled which, if implemented globally, could save over two thirds of the newborn lives lost every year (Darmstadt et al. 2005:19).

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<sup>1</sup> Mortality occurring during the first 28 days of life.

<sup>2</sup> MDG4: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate (MDG Monitor 2010).

The challenge for the global community, then, is the implementation of these practices to reduce global gaps in neonatal mortality (Hahn 1999:4-5). One characteristic that is inherent in the challenge of implementing public health interventions cross-culturally is aptly represented by Steven Polgar's 'fallacy of empty vessels' (Polgar 1963 cited in Brown & Barrett 2010:261):

The fallacy of empty vessels is that people in other societies ... do not have any health knowledge or beliefs. Rather, they are "empty vessels", waiting to be filled with the knowledge of scientific medicine developed in modern, rich countries. The fallacy implies that as soon as people are educated about new scientific knowledge for prevention and treatment, they will change their behaviors or accept the medical innovations. In reality, however, all peoples already have their own ethno-medical beliefs and practices, and the preexisting beliefs influence how new ideas are accepted.

## 1.2 Purpose and general approach of this study

It is implied by the 'fallacy of empty vessels' that "people receive health messages within the context of their own beliefs" (Brown & Barrett 2010:261). For cross-cultural public health interventions to be successful in changing behaviors and achieving enhanced health outcomes, it is thus of crucial value that they be based on an understanding of current health behaviors, as well as underlying beliefs surrounding health in target communities (Kaushal 2005:366).

This study aims to develop such an understanding in the Southern Province of Zambia, where a large-scale trial is about to be conducted to improve neonatal survival rates<sup>3</sup>. More specifically, the purpose of this study is to explore how mothers in the Southern Province of Zambia describe their neonatal health behavior, and how it is related to their beliefs on neonatal illness causation.

### **Box 1. Health Behavior**

*Preventive behavior:* behavior occurring in the absence of sickness, undertaken with the aim of maintaining health in view of a potential health risk.

*Curative behavior:* behavior occurring in response to sickness, undertaken with the aim of restoring health.

In this study, neonatal health behavior encompasses both preventive behavior and curative

<sup>3</sup> ZamCAT (Zambia Chlorhexidine Application Trial) is a randomized-controlled trial that will test the effectiveness of a new intervention for preventing infection and mortality in newborns. It is being run by Boston University's Center for Global Health and Development in collaboration with Zambia's Ministry of Health between 2010-2013.

behavior that is accomplished by the baby's caretaker for ensuring the health of the baby (see Box 1).

Health behavior is a very complex phenomenon, which can be studied and understood from a variety of perspectives. This study adopts an anthropological perspective, according to which health behavior can only be understood when it is situated in the context of individuals' beliefs on health (Young 1980:102).

### 1.3 Research questions

To fulfill its purpose, this study will explore the following research questions according to the perspectives of mothers<sup>4</sup> in the Southern Province of Zambia:

1. *What are beliefs on illness causation during the neonatal period?*
2. *How are neonatal illnesses prevented and responded to?*
3. *What is the nature of the relationship between neonatal health behavior and beliefs on neonatal illness causation?*

### 1.4 Approach to the study of sickness

The central phenomenon of interest in this study is health behavior during the neonatal period, and preventive and curative behaviors are defined above as behavior surrounding 'sickness'. To clarify this study's focus, it is important to discuss its approach to understanding sickness, and its reasons for this choice.

#### Box 2. Illness vs. Disease

*Disease*: "The outward, clinical manifestations of altered physical function or infection. It is a clinical phenomenon, defined by the patho-physiology of certain tissues within the human organism" (Brown & Barrett 2010:5).

*Illness*: "Encompasses the human experience and perceptions of alterations in health, as informed by its broader social and cultural dimensions" (Brown & Barrett 2010:5).

"*Sickness* is an inclusive term that includes all unwanted variations in the physical, social, and psychological dimensions of health" (Brown & Barrett 2010:5). There are two main approaches to conceptualizing sickness: sickness as *disease*, and sickness as *illness* (defined in Box 2).

<sup>4</sup>Women who have had a baby in the last year.

While the former concept views sickness in terms of objective criteria anchored in western biomedicine, the latter concept is a subjective state of being; it is an individuals' perspective of being unwell. In effect, what constitutes an ill state of being in one society can be interpreted as having an entirely different meaning in another (Brown & Barrett 2010:5). When a society or group shares a view on how an illness is patterned, interpreted and treated, this illness is termed a 'folk illness'. Folk illnesses are thus bound by culture, in that they are unique disorders that are recognized only by members of a common group (Helman 2007:130).

To serve its purpose, this study chooses to approach the study of health behavior surrounding illness, or what individuals' understand as constituting sickness.

## **1.5 Demarcations**

The scope of this study is primarily demarcated by the anthropological approach it adopts towards understanding neonatal health behavior. The use of this particular methodological approach instead of another will necessarily shape the understanding of neonatal health behavior that is produced by this study (Young 1981:506). It is thus important that this study's approach is situated amongst others, and that it clearly states what it does and does not purport to achieve.

The anthropological approach and the socio-medical approach are the two main approaches that have traditionally been used to study health behavior. Both of these are very different in their nature and in what they can contribute to understanding health behavior: while the former focuses primarily on world views and etiological concepts – or beliefs on disease causation, the latter focuses on service factors such as accessibility and costs for explaining health behavior. (Kroeger 1983:147)

Various authors have criticized studies that take on a purely anthropological approach to understanding health behavior, and advocate for a combination of these two approaches in order to provide a more complete understanding of the phenomenon (Young 1981). A combination of approaches would also allow for an assessment of the relative importance of different factors in

informing health behavior (Kroeger 1983:147). However, this study does not aim to produce a complete understanding of influences on health behavior; rather, it seeks only to gain a contextual understanding of neonatal health behavior in relation to etiological concepts and understandings.

Also, this study does not claim to uncover patterns in actual behaviors of respondents, but rather understandings of said behavior, or behavioral intentions (Sutton 1997 cited in Munro 2007:7). The relationship between behavioral intentions and actual behavior is ambiguous and subject to contextually specific research. For example, while one major health behavior model, called the Theory of Reasoned Action, is premised on the assumption that “a person's intention to perform a particular behavior is both the immediate determinant and the single best predictor of that behavior” (Sutton 1997 cited in Munro 2007:7), some authors have found that there is often a significant difference between “cultural ‘ideals’ – what people say they do – and ‘real’ behavior of observable action” (Brown & Barrett 2010:10). While this serves as a demarcation of this study, it does not limit the validity of its findings, because to determine patterns of actual behavior would yield little understanding on the meaning behind those patterns, which is the primary ambition of this study.

## **1.6 Disposition**

This Chapter introduced the reader to this study’s purpose and approach by placing it in context and discussing its relationship to the central problem it addresses. The following Chapter provides essential background information on the study topic, as well as detailed information on the particular context of this study. Chapter 3 discusses Methodology, or how this study’s research ambitions are translated into operational terms, and Chapter 4 presents the framework constructed to analyze data in this study. Chapter 5 presents and analyzes this study’s findings, and Chapter 6 provides a summary of main conclusions, and a discussion on their larger implications in the context of the global response to neonatal mortality.

## 2. Background and literature review

### 2.1 Neonatal mortality

Figure 1 illustrates the global distribution of neonatal mortality. On average, neonatal mortality rates (NMR) are highest in sub-Saharan Africa, where 41 out of every 1000 babies born alive die within the first month of life (UNICEF 2009:10).

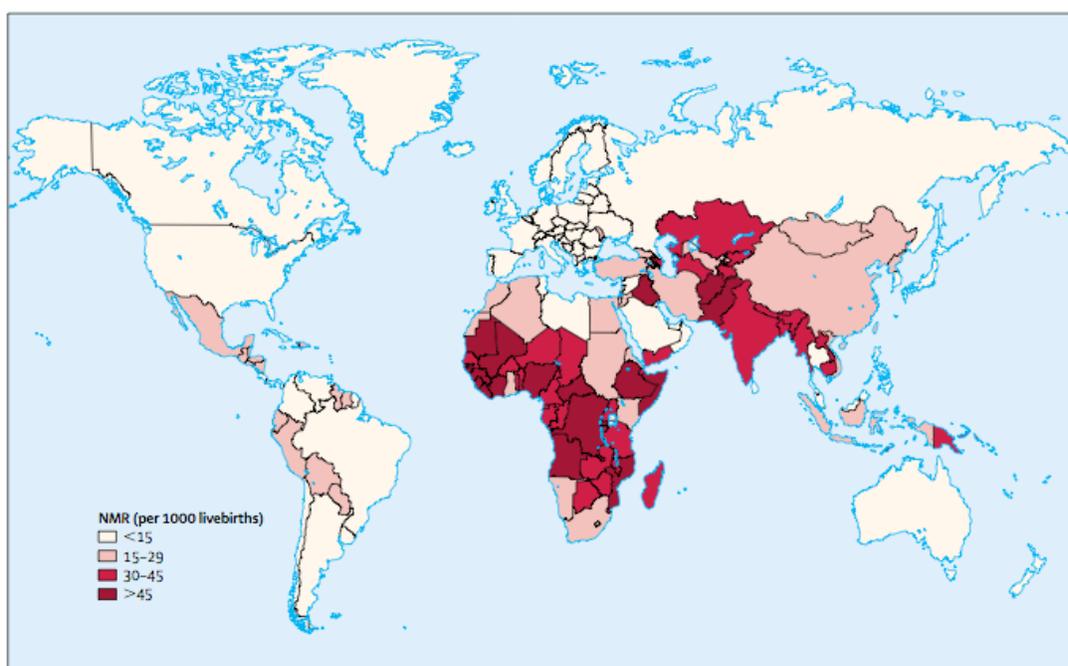


Figure 2: Variation between countries in NMRs<sup>1</sup>

**Figure 1.** Global distribution of neonatal mortality (Lawn et al. 2005:894)

Neonatal mortality rates in Zambia are generally lower than the sub-Saharan African average. As is shown in Table 1, NMR in rural Zambia is higher than in urban areas, and at 37 neonatal deaths per 1000 live births, the Southern Province of Zambia has the 4<sup>th</sup> highest rates out the country's 9 provinces.

Background characteristic	Neonatal mortality (NN)
<b>Residence</b>	
Urban	34
Rural	37
<b>Province</b>	
Central	33
Copperbelt	30
Eastern	44
Luapula	33
Lusaka	39
Northern	34
North-Western	28
Southern	37
Western	48

**Table 1.** Neonatal mortality rates in Zambia (CSO 2007:121)

Several new programs and global partnerships<sup>5</sup> have been created to promote research, advocacy, and the implementation of evidence-based interventions for improved neonatal survival. The importance of this issue on the global scene is reflected in its centrality in many recent global reports, including the World Health Organization's *World Health Report 2005: Make Every Mother and Child Count*, the Partnership for Maternal, Newborn, and Child Health's *Opportunities for Newborns in Africa 2006*, and United Nations Children's Fund's *State of the World's Children: Maternal and Newborn Health 2009*.

## 2.2 Review of the literature

A review of the literature can serve to situate this study's contribution to research on neonatal health behavior, and to research on health behavior in general, in developing countries.

### 2.2.1 Studies on neonatal health behavior

Many studies have been carried out in relation to neonatal health behavior in the last decade, and are mostly conducted in Asia and Africa, where neonatal mortality rates are the highest. A large portion of these studies are reviewed in Save the Children's *Newborn Research eUpdates* (Save the Children 2008) and in a review compiled by Zulfiqar et al. (2005). Of these, various studies are community-based effectiveness trials, which test the extent to which the implementation of evidence-based practices in different community settings contributed to reducing neonatal mortality (for example, in Bangladesh: Baqui et al. 2008; Sloan et al. 2008; in Pakistan: Zulfiqar et al. 2008).

Qualitative research is also being promoted as a tool to inform behavioral change communication strategies. In 2004, Save the Children's *Saving Newborn Lives* program published a report entitled '*Qualitative Research to Improve Newborn Care Practices*' (Parlato et al. 2004). This report provides guidelines for conducting qualitative research with the purpose of ascertaining current newborn care practices and to assess the acceptability of implementing new evidence-based practices. One such study was recently conducted in Uganda (Waiswa et al. 2008).

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<sup>5</sup> Including Save the Children's *Saving Newborn Lives* program, the Global Partnership for Maternal, Newborn, and Child Health, USAID-funded Access to Clinical and Community Maternal, Neonatal and Women's Health Services (ACCESS) Program, the World Health Organization (WHO), United Nations Children's Fund (UNICEF).

Because of their applied purpose to directly serve public health interventions, these studies all explore the topic of neonatal health behavior through the lens of the ‘disease’ concept. That is, they explore behavior surrounding those diseases that are most dangerous to neonatal health, as they are defined in western biomedicine. Thus, to the study of neonatal health behavior, this study offers a complimentary approach to applied social and medical studies, by instead providing an understanding of how the target population understands neonatal illness, and acts in relation to that understanding.

### **2.2.2 Studies on health behavior in developing countries**

While not specific to behavior during the neonatal period, various studies have been conducted around the world with the purpose of understanding health behavior. A particular interest in the study of health behavior in developing countries took shape during and after colonialism, in light of the introduction of western systems medicine.

According to Young’s (1981) review of the literature, research on health behavior in developing countries has undergone a shift in approaches. In the early stages of the introduction of western medicine, studies on health behavior adopted an anthropological approach that focused on cultural beliefs and their influence on informing health behavior, and consistently found a strong relationship between the two, for example in Kenya (Kranksein 1975), Chad (Buck et al. 1970), and North Cameroon (Schönmeier 1979) (all cited in Kroeger 1983:151). (Young 1981:499)

As years went on, individuals in developing countries began to commonly utilize modern health services alongside traditional systems of medicine. This new phenomena was termed ‘medical pluralism’, whereby individuals concurrently or serially used different healing systems now available in their environment. According to Young (1981:499), when western medicine became familiar in these environments, and individuals started to exhibit ‘medical pluralism’, research to understand health behavior shifted its focus because “the phenomenon of study (had) changed.” Indeed, the context in which individuals exercised their health behavior was modified, as well as individuals’ apparent familiarity with new systems of medicine. As such, the research community found new approaches to understand health behavior, based on the assumption that

health behavior could now better be understood in terms of individual determinants (an individuals' age, sex, education) or accessibility-related factors (cost, distance to health facility). (Young 1981)

Indeed, the 'phenomenon under study has changed', and individuals in developing countries today use various different health services. However, this study argues that in this context, it is of particular interest to study the relationship between individuals' health behavior and their beliefs on illness causation, and contributes such an understanding to research on health behavior. Also, it offers a focus that is specific to the neonatal period.

## 2.3 The case in context

In order to understand neonatal health behavior, it is crucial to understand the context in which this phenomenon is unfolding. The following section provides background information on Zambia and its Southern Province, where this case study is set.

### 2.3.1 Zambia

Zambia is a landlocked country bordering 8 countries in the Southern African region (see Figure 2). It is divided in 9 Provinces and 72 districts. The Fourth Republican President Rupiah Banda is current head of state in a multi-party democratic system of governance.

Zambia is the most urbanized country in sub-Saharan Africa, with only one third of its 12.9 million inhabitants living in rural areas, and 3 million people living its capital city, Lusaka

(AVERT 2010a) (DESAPD 2009:5). Also, Zambia's economic, human and social development indicators are among the worst in the world. Currently, over 80% of Zambians live on less than 1USD per day, and the country is ranked 164<sup>th</sup> out of 182 countries worldwide on the United



Figure 2. Map of Zambia (Goway 2010; Pickatrail 2010).

Nations Development Program's Human Development Index (UNDP 2009:161).

Zambia is extremely culturally diverse. It is home to 72 ethnic groups, speaking an estimated 85 languages, and the predominant religion is a blend of traditional beliefs and Christianity. While tribal traditions are maintained mostly in the rural areas, Zambia's urban centers are increasingly homogeneous. (CSO 2000:41)

### 2.3.2 HIV/Aids in Zambia

More than one in seven adults in Zambia lives with HIV (AVERT 2010a). The HIV/Aids epidemic is one of the worst in the world, and has a tremendous impact on all facets of life in Zambia. The first Zambian case of HIV/Aids was reported in 1984, and by the early 1990s, one in five adults were infected with the virus. State provision of Anti-retroviral drugs (ARVs) was introduced in 2002, and subsidized by various global health funds<sup>6</sup> in 2004; today, more than 65% of those who need them access ARVs. Certain groups have easier access to ARVs, including expectant mothers and newborn infants through interventions to Prevent Mother to Child Transmission of HIV/Aids (PMTCT)<sup>7</sup>. (AVERT 2010a)

### 2.3.3 The Southern Province of Zambia

The Southern Province is one of Zambia's 9 provinces, consisting of 11 districts. Its 1.2 million inhabitants belong to different ethnic groups: while the Tonga tribe is the majority group, constituting 69.7% of the population, other tribes include the Lozi (5.5%), Nyanja (5.5%), Ila (3.8%), and Bemba (2.8%). Rural areas are almost exclusively populated by the Tonga, while cities, such as the capital city, Livingstone, are increasingly diverse (CSO 2000:43). The Tonga are mainly agriculturalists, and commonly raise maize as a cash crop



**Figure 3.** Cattle blocking the main road in Choma District - Not an uncommon occurrence in Southern Province!  
(photo by the Author)



**Figure 4.** Choma town, built around the main road from Lusaka to Livingstone  
(Photo by the Author)

<sup>6</sup> For example, the Global Fund and the President's Emergency Plan for AIDS Relief (PEPFAR). (AVERT 2010a)

<sup>7</sup> Prevention of Mother to Child Transmission of HIV/Aids (PMTCT) is a treatment course that effectively prevents the transmission of HIV from HIV+ mothers to their babies. (AVERT 2010b)

and breed cattle (Gausset 1998:A-43-44) (see Figure 3).

A line of rail and a major road from Lusaka to Livingstone form the principal transport axis of the Province, along which main towns are located (see Figure 4). Commercial agriculture is the principal economic activity in Southern Province, which is host to the largest area of commercial farmland in all of Zambia, producing most of its maize crop. (Foster 1993:247)

### **2.3.4 Health service provision in Zambia**

Two health care systems co-exist today in Zambia: a traditional health system, or ‘folk sector’ of the health care system, and a health care system based on western, modern medicine, or the ‘professional sector’ of the health care system (Stekelenburg et al. 2005:68). The professional sector in Zambia includes both public providers and private providers. There are considerable differences between rural and urban areas in terms of access to health facilities (Berman 1995:16); in general, public facilities as well as for-profit facilities and private clinics are concentrated in urban areas, while mission facilities are located in poorer, rural areas. Though widely available in both urban and rural areas, traditional healers are often the most accessible source of health care for the rural population (Berman 1995:18, 20).

Traditional healers who practice various forms of indigenous medicine are the oldest type of health care providers in Zambia. Though there are two government-recognized associations of traditional healers in Zambia<sup>8</sup> (Berman 1995:19), in general, the various traditional providers are unregulated, with little contact with the official health services (Berman 1995:13).

The current landscape of health service provision in Zambia is a product of significant change over time. The following section shows how health service provision has developed to its current state. This is presented in the context of Zambia’s cultural, economic, and political history.

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<sup>8</sup> The Traditional Healers Association of Zambia and the National Council of Ng’angas.

### 2.3.5 History of health care in Zambia

*“Any society’s health-care system cannot be studied in isolation from other aspects of that society, especially its social, religious, political and economic organization” (Helman 2007:81).*

#### Pre-colonial and colonial periods

Europeans first set foot in the territory of present-day Zambia in the late 18<sup>th</sup> century with the coming of explorers and missionaries. Missionaries brought along Christianity but also western curative health services, largely to rural areas, and were among the first to establish modern health services in Zambia (Berman 1995:27). It wasn’t until the late 19<sup>th</sup> century, with the discovery of significant copper deposits in an area today known as the ‘Copperbelt’, that the British sphere of influence in Zambia increased, first through the creation of the British South Africa Company, and subsequently, with its transfer to the British Colonial Office.

Under British rule, development in Zambia centered on the copper industry, which created employment and stimulated the flow of migration from rural to urban areas. The colonial administration established modern health facilities in the area of the copper mines and along the line of rail, staffed by expatriates and meant to provide health services to individuals involved in the mining industry. At the same time, indigenous medical traditions were stigmatized through measures that penalized the practice of witchcraft, such as the Witchcraft Act of 1914, leading many traditional healers to practice in secret for fear of prosecution (Freund 1986:880-881).

#### Independence and post-colonial period

Zambia gained independence from British colonial rule on October 24<sup>th</sup>, 1964, and was governed as a one-party state under President Kenneth Kaunda’s socialist United National Independence Party (UNIP) until 1991. At the time of independence, while Zambia possessed significant mineral wealth, health indicators were poor. Modern health infrastructure was under-developed and heavily biased towards mining towns, with the exception of sparsely distributed mission hospitals in rural areas. (Berman 1995:5)

Guided by a socialist ideology, Kaunda launched a vast social program that was to improve the accessibility of modern health facilities across Zambia (Berman 1995:5). Investments in health

were financed by copper earnings and prioritized infrastructure development: thus, the number of facilities in the country increased significantly from 1964. At the same time, Kaunda's administration made an amendment to the Witchcraft Act of 1914, making it clear that traditional healers were "free to practice their profession" (Freund 1986:881) (Sugishita 2009:437). Also, significant efforts were launched to bring traditional medicine and modern medicine closer together (Freund 1986:881).

In the 1970s, the sharp decline in global copper prices, in combination with various external and internal factors<sup>9</sup>, brought about severe fiscal strain in Zambia and the related incapacity to maintain, let alone increase, financing for the health sector. As external debt rose, Zambia borrowed money from the IMF and World Bank, and its dependence on external aid for financing various sectors of society, including the health sector, has not ceased to increase.

Popular dissatisfaction and pressure for democratic elections brought about a change in government towards a multi-party system of governance, which first occurred under Frederick Chiluba (1991-2001), and continued under Levy Mwanawasa (2001-2008), and Rupiah Banda (2008-). Chiluba liberalized the economy and led a major decentralization reform of the health system. (Berman 1995:16)

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<sup>9</sup>Including, among others, lack of trained and educated Zambians post-independence to manage the country, independence struggles and conflict in neighboring countries, and increasing domestic population and urbanization.

### 3. Methodology

Data informing this study is a subset of the data collected for another study called the *ZamCAT Qualitative Study*, with which I was involved as an intern between January 27<sup>th</sup> and March 23<sup>rd</sup> 2010. (see Figure 5) (see Appendix 1 for information on this study and my role within it)



**Figure 5.** *ZamCAT Qualitative Study* research team

Individual interviews and focus group discussions (FGDs) with various populations were conducted through the *ZamCAT Qualitative Study*<sup>10</sup>; however, this thesis only includes transcripts from FGDs with mothers. This choice was made in relation to this study's topic and purpose. Because the mother is the main caretaker of a newborn baby, as well as the key decision maker and implementer of health behavior<sup>11</sup>, and because the mothers included in this study had given birth in the last year, I felt that they would provide the most credible and relevant understanding of health behavior and beliefs.

#### 3.1 General approach to research

This study's overarching interpretive epistemology and constructive ontology are reflected in its ambition to gather the voices of mothers themselves, with regards to their health behavior and beliefs, according to their own understanding of sickness. Because no previous studies have been conducted surrounding neonatal health in this particular context, this thesis adopts an exploratory, qualitative approach (Stebbins 2001:6). Qualitative research allows for open-ended interactions, whereby respondents can share information that is most meaningful to them and, following this, the researcher can explore those influences more deeply (Bryman 2008:21-23).

<sup>10</sup>Data collection included: 36 FGDs (13 with mothers, 12 with grandmothers, 11 with traditional birth attendants) and 40 In-depth Interviews (with traditional healers, health workers, community leaders, church leaders, etc.).

<sup>11</sup> This assessment was made from looking through all the transcripts of the *ZamCAT Qualitative Study*.

### 3.2 Case study research design

An embedded, single case study design was chosen as the strategy guiding the exploration of neonatal health behavior. This design was chosen because of the emphasis it places on context, and because it is the ambition of this study to provide an in-depth understanding of a complex, social, contemporary phenomenon in relation to its context (Yin 2003:13).

The unit of analysis, or ‘case’, in this study is neonatal health behavior in the Southern Province of Zambia. The case is bound both geographically, by including only districts in the Southern Province of Zambia, as well as thematically, by focusing on neonatal health behavior and neonatal health beliefs. It is an exemplifying case, or one with the objective to “capture the circumstances and conditions of an everyday or commonplace situation”, and what is learned is assumed to be informative of the experiences of the average person (Yin 2003: 41).

The embedded units of analysis are the 4 districts in which the study was conducted (Yin 2003:42-43). Although data collection only occurred in 4 out of 11 districts in the Province, I argue that this study holds ‘representational generalization’– or that its findings can be applied to the study population from which the sample was selected (see 3.6 *Research Quality Considerations*).

One limitation of this design is that it does not compare the phenomenon of study between urban and rural settings; however, this is not the ambition of this study. Because of its exploratory nature, this study seeks only to decipher general norms and understandings, which future studies can examine more deeply. In the Analysis section, a brief comment will be made on what appear to be some general similarities and differences in findings between urban and rural areas; however, this study does not claim to analyze or explain these similarities and differences.

### 3.3 Methods

This study uses FGDs as its data collection method. Mothers were selected on the basis of having delivered in the last year, and the final sample of participants ranged between the ages of 16 and 45, with an average age of 25 years. FGDs allow for the dynamic interaction of participants,

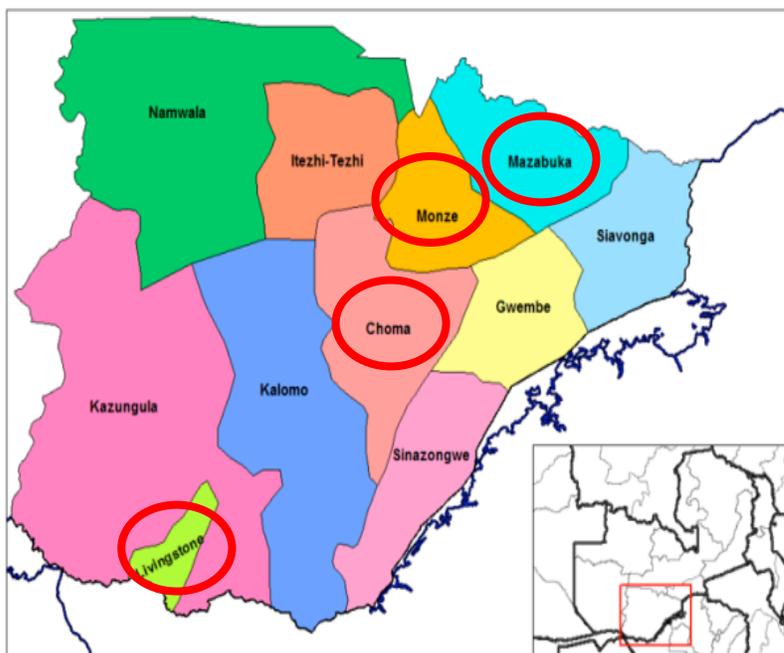
whereby participants oppose or build off each other's responses. This method was deemed appropriate in fulfilling the purpose of this study, to gain a general idea of group norms in relation to neonatal health behavior and beliefs, as well as the differences in opinions among mothers. (Mack et al. 2005:51) (Ritchie & Lewis 2003:56)

Because it gathers what groups of people *say* they do, this method is perhaps limited because it was at times difficult to ascertain whether mothers were discussing their current beliefs and practices, or if they were agreeing on traditional beliefs and practices that they knew of or had heard of. Perhaps the design of methods could thus have been improved by including individual interviews with some mothers in each setting to confirm statements from group discussions.

### 3.4 Data Collection

Data collection took place between February 11<sup>th</sup> and March 18<sup>th</sup> 2010 in 4 Districts of the Southern Province of Zambia, shown in Figure 3: Mazabuka, Monze, Choma, and Livingstone.

In total, this study uses data from 13 FGDs taking place in 4 Districts of the Southern Province of Zambia, including a total of 117 respondents (see Table 1 for a summary of data collection, and Appendix 2 for information on respondents).



**Figure 6.** Districts of the Southern Province of Zambia  
Circled in red are the Districts where data collection took place.  
(Wikipedia 2010)

Setting	District	# FGDs (# respondents/FGD)	Total (# respondents)	Tribal affiliation
Rural	Choma	3 FGDs - #4 (8 respondents) - #5 (9 respondents) - #6 (11 respondents)	28	20 Tonga (100%)*
	Monze	4 FGDs - #20 (9 respondents) - #22 (7 respondents) - #23 (7 respondents) - #27 (10 respondents)	33	26 Tonga (100%)*
Urban	Mazabuka	3 FGDs - #11 (10 respondents) - #14 (9 respondents) - #17 (10 respondents)	29	18 Tonga (62%), 3 Bemba (10%) 3 Nyanja (10%) 2 Lozi (7%) 1 ila (3%) 1 Kaonde (3%) 1 Chewa (3%)
	Livingstone	3 FGDs - #30 (8 respondents) - #29 (10 respondents) - #28 (9 respondents)	27	7 Lozi (26%) 6 Tonga (22%) 6 Bemba (22%) 3 Tokaleya (11%) 1 Kalunda (4%) 1 Mambwe (4%) 1 Nkoya (4%) 1 Senga (4%) 1 Soli (4%)
<b>Total</b>		13 FGDs	117	**70 Tonga (69%) 9 Lozi (9%) 9 Bemba (9%) 3 Nyanja (3%) 8 Others (each 1%)

**Table 2.** Summary of data collection

\*In both rural areas, one FGD did not register the tribal affiliation of participants. Thus, this percentage refers to those participants who did register their tribal affiliation.

\*\*Percentages in this section are calculated in relation to the number of mothers who registered their tribal affiliation (102), and not in relation to the total number of respondents (117).

### 3.4.1 Selection methods

Four districts were selected in which to conduct the *ZamCAT Qualitative Study*, because they are along the main road from Lusaka to Livingstone. Of the four districts, 2 are rural sites and 2 are urban sites. While any of the 4 districts could have served as rural sites because of their vast rural areas, Choma and Monze were chosen by default because Livingstone and Mazabuka are the districts with the largest urban centers.

One Health Center per district was selected as the central point from which to recruit participants for this study (see Figure 7). In a given district, the selection of a Health Center was done in conjunction with a member of the District Health Management Team (DHMT). Selection of a Health Center depended on its setting (i.e. urban or rural) and on the size of its catchment population<sup>12</sup> (see Table 3 for the names of selected Health Centers).

Each Health Center was approached a few days before starting data collection to gain permission from the Health Center In-Charge and from the Traditional Chief who customarily owns the land on which the Health Center operates. Once this approval was obtained, Health Center staff arranged for the help of traditional birth attendants to recruit mothers for FGDs.

The participation of both traditional birth attendants as well as Health Center staff in the recruitment of mothers allowed for a balanced sample of mothers who had delivered in an institutional setting, i.e. in the Health Center, and mothers who had delivered in a community setting, i.e. in their own homes<sup>13</sup>. By including mothers who utilized different sources of care for childbirth, this selection strategy may improve the symbolic representativeness of the sample (Ritchie & Lewis 2003: 272).



**Figure 7.** Two of the selected Health Centers (Top: Monze's Njola Mwanza Rural Health Center; Bottom: Mazabuka's Nakambala Urban Health Center) (Photos by the Author)

<sup>12</sup> Selected Health Centers had a large catchment population and high community and institutional delivery rates.

<sup>13</sup> 38% of women in Southern Province deliver in a health facility and 62% deliver at home. Traditional Birth Attendants in the community conduct 16% of all deliveries, while untrained family or community members attend the majority of the remaining home deliveries (CSO 2007:134, 136).

While some Health Centers planned in advance for the balanced recruitment of mothers, others, perhaps because of their busy schedules, appeared to have recruited participants at the last minute. For example, at one of the Urban Health Centers, some mothers who were waiting outside the clinic for their post-natal care visit were asked to participate in the study on the same day as the FGDs. The recruitment of a large number of participants directly from the Health Center could affect the representativeness of this sample. However, this method of recruitment may also have been utilized because there are much less traditional birth attendants in urban areas, and because in this setting, fewer mothers deliver in their homes than in rural areas.

### 3.4.2 Data collection process

Data collection was done by four retired Zambian nurses who had previous experience with quantitative survey research and who underwent 3 days of training on qualitative methods in preparation for this study. As much as possible, FGDs were conducted in locations that were quiet, comfortable and neutral in order for respondents to feel free to express themselves (see Table 3 for a list of FGD locations). For example, while participants were recruited from Health Centers' catchment areas, settings away from the health facility were favored for interviews (i.e. community school grounds). The assumption underlying this choice is that participants may feel judged in expressing their traditional health beliefs and behaviors if interviews were held at the health facility. This worked well in most districts; however, due to a last minute change in plans, FGDs in Livingstone were conducted in a new wing of the Health Center. This area was quite detached from the rest of the Health Center and its staff, however.

Setting	District	Health Center	Location of interview
Rural	Choma	Sikalongo Rural Health Center	Chief Singani's Palace Grounds
	Monze	Njola Mwanza Rural Health Center	Kasaka Basic School; free classrooms or outside
Urban	Mazabuka	Nakambala Urban Health Center	Ndeke Basic School; free classrooms or outside
	Livingstone	Dambwa (Mahatma Ghandi) Urban Health Center	New MCH Wing of the Health Center (under construction)

**Table 3.** Information about data collection sites

FGDs utilized a semi-structured discussion guide to allow for open-ended responses (see Appendix 3), and lasted between 60-90 minutes. FGDs were conducted by 2 data collectors: one responsible for facilitating the discussion and the other taking notes. Each FGD was comprised of 7-11 participants: enough to stimulate conversation, yet manageable and small enough to allow meaningful contributions by each participant. (ZamCAT 2009:9) (see Figure 8)



**Figure 8.** A focus group discussion with mothers at Chief Singani's Palace, Choma District (Photo by Author)

### 3.4.3 Interview transcription and data analysis

Transcription from Tonga to English was mostly done in teams of two, including one data collector who participated in the FGD, and one experienced typist. Data collectors were trained to translate what they heard on the recording word for word so that the typed transcripts reflect the discussions as accurately as possible. No one on the research team had previous experience with transcription, thus, transcripts greatly improved as data collection evolved, meaning that earlier transcripts could be less thorough than later transcripts.

On average, transcription occurred within 48 hours of the FGD taking place. However, because of an intensive schedule and frequent electrical black-outs, some transcriptions were only completed a few days after FGDs. Tapes and recorders at times malfunctioned, and some interviews were difficult to hear because of babies crying and strong rains in the background; to remedy for these limitations, transcription was done as soon as possible after the FGDs, and the FGD notes were used to confirm what was heard on the tape.

To analyze data in this study, interview transcripts were organized and interpreted using a combination of Graneheim & Lundman's Content Analysis (2004:107-109) and Ritchie & Lewis' Thematic Framework (2003:221) data analysis strategies.

### 3.5 Ethical considerations

The *ZamCAT Qualitative Study* Protocol received ethical clearance from Boston University's Institutional Review Board (IRB), as well as the University of Zambia (UNZA) and the Zambian Ministry of Health (MOH). Data collectors were trained in research ethics during a 2-day training session; in addition to this, I have obtained certification from the U.S. National Institute for Health Office of Extramural Research for the Protection of Human Research Participants.

All participants in this study were made aware of the details of the study, of the potential risks and benefits of participating, and had the right to withdraw at any point. Consent forms were either read and explained to participants in their language of preference, or read by participants themselves. Participants then signed a consent forms or marked it with their thumbprint to indicate consent. As a token of appreciation for their participation and for having displaced themselves, mothers were each given a drink, cookies, a 'chitenge' (traditional cloth) and soap after having participated.

### 3.6 Research quality considerations

*“There is no single correct meaning or universal application of research findings, but only the most probable meaning from a particular perspective.”*  
(Graneheim & Lundman 2003:110)

According to Graneheim & Lundman (2003), “every research study must be evaluated in relation to the procedures used to generate the findings” (Graneheim & Lundman 2003:109). Quality measures are important means to gauge the extent to which a reader can trust that the author's is the most likely 'version of reality' (Graneheim & Lundman 2003:110). In the following section, I argue that my study is a trustworthy version of reality.

#### 3.6.1 Generalization and transferability

Generalization is an important criterion through which qualitative research is often assessed, because it is an indicator of whether, and how, a study's findings can be used beyond the specific

context in which they occurred. It is difficult to ascertain the conditions under which a study can be generalized; however, various criteria can help to guide a researcher and a reader to assess the robustness of a study's findings (Ritchie & Lewis 2003:264).

Firstly, the rich description of the context and of the study's process and limitations increase transferability – so the reader can judge the extent to which other cases or contexts might have commonalities with this one. (Bryman 2008:378) (Ritchie & Lewis 2003:271)

It is not the aim of this study to generalize findings to other contexts and populations, which would, in fact, be incompatible to the constructivist ontology in which it is grounded, as well as the case study design, which emphasizes the importance of context for understanding a phenomenon. This study instead derives quality in its capacity to generate, or contribute to, theory out of the findings (Bryman 2008:57); thus achieving 'theoretical' or 'analytical' generalization (Ritchie & Lewis 2003:264) (Yin 2003:32). Data from the study will be used to refine theory, which can then be applied more generally to other environments and contexts (Ritchie & Lewis 2003:264).

Also, this study claims to hold representational generalization, in that the findings obtained from the sample in the study can be said to be true for the population from which the sample is drawn, the Southern Province of Zambia (Ritchie & Lewis 2003:264). This can be shown through discussing the validity and reliability, which are important criteria for assessing the quality of research findings.

### **3.6.2 Reliability**

Reliability of the findings depends on “the likely recurrence of the original data and the way they are interpreted” (Ritchie & Lewis 2003:271). I argue that the data from this study would likely recur if conducted within the same study population, because fieldwork was carried out consistently, using the same interview guides, data collectors and transcribers throughout. Also, data analysis was carried out systematically so that another researcher would likely arrive at similar findings from the data.

### 3.6.3 Internal validity

Internal validity of the findings relates to the extent to which data that is generated reflects the central focus of the study (Yin 2009:34), or the extent to which “we [are] accurately reflecting the phenomena under study as perceived by the study population” (Ritchie & Lewis 2003:274). In this study, various mechanisms sought to provide an appropriate environment to hear credible perspectives on neonatal health behavior and beliefs.

First of all, to gain the most valid understanding of the study topic, this study focuses only on data from mothers, using FGDs, which are an appropriate method to explore general group norms. Also, the process of data collection was done in a way that would produce an environment and quality of questioning that would be effective to allow participants to fully express and explore their views (Ritchie & Lewis 2003:274). For example, FGDs were held in mothers’ language of preference, and were conducted by other Zambian women. Also, FGDs were conducted in comfortable, non-threatening settings, as much as possible away from Health Centers in order to obtain true, uninhibited responses on group norms.

## 4. Analytical Framework

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This section constructs a framework to guide the exploration and analysis of neonatal health behavior that is based on what Wellin (cited in Landy 1977:48) calls the three ‘generalizations’ underlying the field of medical anthropology.

First of all, sickness is understood as a universal fact of human life, occurring in all known times, places and societies. Moreover, all known human groups develop some set of beliefs, cognitions, and perceptions consistent with their cultural matrices, for defining or cognizing sickness. In relation to this, all known human groups develop methods and allocate roles congruent with their resources and structures for coping with, or responding to, sickness.

Behavior to cope with, or respond to, sickness in a given society thus cannot be studied or understood on its own. Rather, it can only be understood as a single component of a larger

cultural system in which it is engrained, and of which it is reflective, which Kleinman (1980:24-60) calls the *local Health Care System*.

## 4.1 The local Health Care System

*“In every culture, illness, the responses to it, individuals experiencing it and treating it, and the social institutions relating to it are all systematically interconnected. The totality of these interrelationships is the Health Care System” (Kleinman 1980:24).*

Kleinman’s (1980) model offers a way of conceptualizing the inter-relationships of all health-related components within a society as a dynamic, holistic system. This model forms the core of the framework used in this study, along with certain specifications from other authors.

The local Health Care System is a special cultural system that is the representation of a society’s response towards disease. It is formed by the combination of relationships between all health-related activities, behaviors, actors and institutions within a society. It is inclusive of all local beliefs, roles, and norms surrounding health, illness and healing, which shape the interaction between its constitutive components. (Kleinman 1980:24)

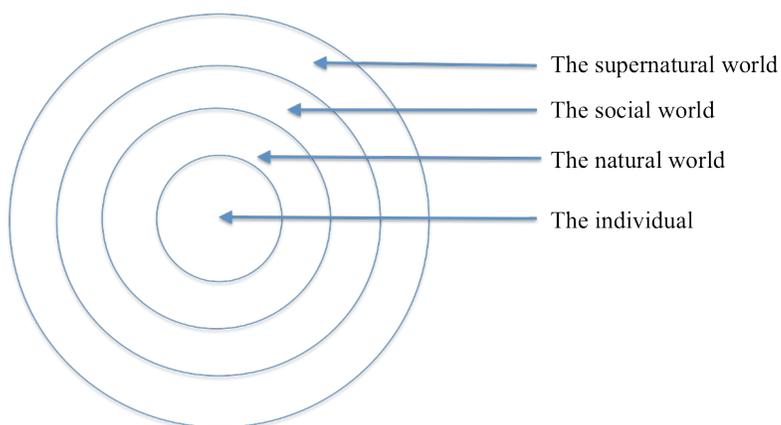
According to Landy (1977 cited in Helman 2007:81), a society’s Health Care System is constituted of two interrelated aspects, the cultural aspect and the social aspect. While the cultural aspect deals with shared modes of perception of illness and illness causation within a group, the social aspect refers to the organization of the local Health Care System into healing institutions and curing roles. The following sections look more closely at these two aspects of the health care system, as they relate to health behavior.

### 4.1.1 The Cultural aspect and health behavior

A cultural group’s shared understanding on what causes illness is what Helman (2007:134) calls its “lay theory of illness causation”. Because it helps the victim of illness ‘make sense’ of what has happened and why, it forms the cultural basis of the local Health Care System.

The study of various societies’ and cultural groups’ understanding of illness etiology has shown

that certain categories, or sites of illness etiology, are consistently applied cross-culturally either as sole explanations of illness causality, or in combination with each other. These sites of illness etiology are shown in Figure 9, and include etiology coming from within the individual, from the natural world, from the social world, and from the supernatural world.



**Figure 9.** Sites of illness etiology (Helman 2007:134)

While causes belonging to the supernatural world ascribe illness to the direct actions of supernatural entities, such as gods, spirits, or ancestors, those belonging to the social world blame ill health on other people. Causes belonging to the natural world blame illness on aspects of the natural environment, both living and inanimate, while on the individual level, causes of illness are related to malfunctions within the body. (Helman 2007:135-138)

The connection between beliefs on illness causation and health behavior is seen to be “rational and logical, in that curing techniques are functions of, or stem from, a distinctive conceptual organization of ideas about causes” (Foster & Anderson 1978:37). The understanding of a group’s lay theory of illness causation is important in the study of its health behavior, because “people’s behavior is intelligible to the analyst only when he can situate it in the context of what they believe they are doing” (Young 1980:102).

#### **4.1.2 The Social aspect and health behavior**

The social aspect of the local Health Care System is the way a group socially organizes itself to cope with, and respond to, illness. It is the combination of methods, roles, and spaces developed where health activities and interactions occur within a society. It is the social manifestation of cultural beliefs on health and illness. (Foster & Anderson 1978 cited in Brown & Barrett 2010:105)

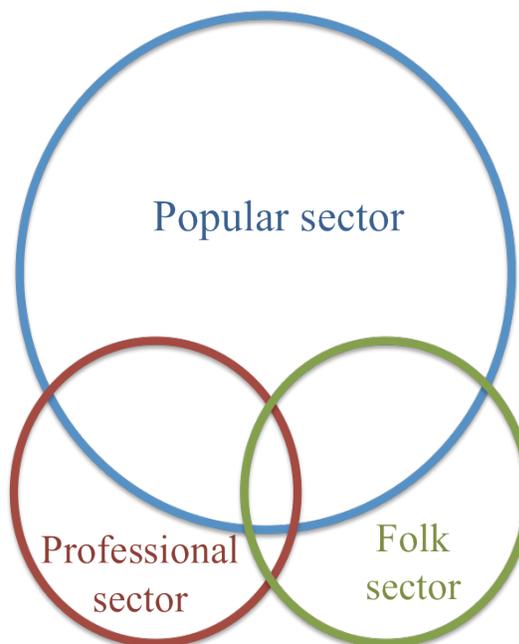
According to Kleinman (1980:49), the social aspect of the local Health Care System also forms its ‘inner structure’. This inner structure is made up of 3 overlapping and interconnected parts, which he calls the ‘sectors of health care’, including the popular sector, the folk sector, and professional sector (see Figure 10).

These three sectors each represent their own ‘sub-culture’ within the local Health Care System, because “each sector has its own way of explaining and treating ill health, defining who is the healer and who is the patient, and specifying how patient and healer should interact in their therapeutic encounter” (Helman 2007:82) (Kleinman 1980:49-50). Following is a brief discussion on each sector, and their general characteristics across cultural settings.

### The Popular Sector

The popular sector is the largest part of any Health Care System – it is the lay, non-professional, popular culture arena in society. The popular sector is the space where individuals first encounter disease in the family, where illness is recognized, interpreted, and where health-care decisions are made and activities are initiated. (Kleinman 1980:51) (Helman 2007:82)

The popular sector interacts with the two other sectors, and is the locus of decision-making for encountering other sectors. As such, “when people resort to folk or professional practitioners, their choices are anchored in the cognitive and value orientations of the popular culture” (Kleinman 1980:50).



**Figure 10.** The inner structure of the local Health Care System (simplified from Kleinman 1980:50)

### *The Folk Sector*

This sector is especially large in non-industrialized countries, and is composed of individuals who specialize in certain types of healing that is either sacred (including spiritual healers, clairvoyants and shamans), secular (including herbalists, bone-setters, midwives, tooth extractors), or a mixture of the two (Helman 2007:84) (Kleinman 1980:59). Although they are not part of the official medical system, folk healers are sometimes organized into associations of healers (Helman 2007:84).

Folk healers are well suited to define and treat illness in a way that is acceptable and understandable for their clients because they share the basic cultural values and worldview of the communities that they serve. They provide a service that is culturally familiar to their clients, and compatible with their society's definition of health and illness. (Helman 2007:85-87).

### *The Professional Sector*

The professional sector comprises organized, legally sanctioned healing professions. In the last century, modern Western scientific medicine has come to form the basis for developing countries' professional sector of health care. As a cultural system, biomedicine expresses some of the basic cultural premises of western society. (Helman 2007:94)

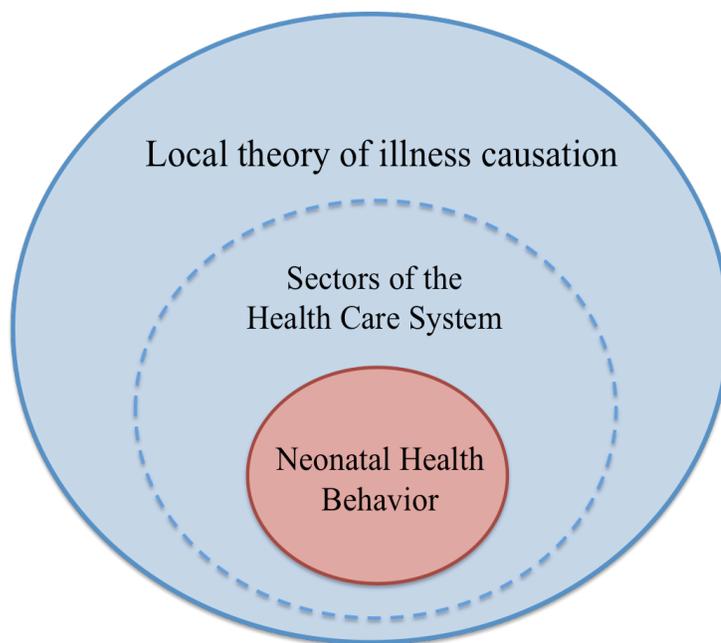
## **4.2 Conclusion: The local Health Care System**

A society's local Health Care System is not a static entity, but rather a dynamic concept that is continuously changing and being re-shaped by its internal components, as well political, environmental, economic and historical factors that are part of the society within which it is engrained (Kleinman 1980:45) (Helman 2007:81). As such, inasmuch as societies and cultures are dynamic and ever-changing adaptive systems, so too is the local Health Care System that is anchored within them (Foster & Anderson 1978:33).

### 4.3 Operationalization of the Analytical Framework

*“To understand any single component in health care, one must locate it structurally within its social context and show how it functions within that setting. The interrelationships between component parts form the system and guide the activities of its components” (Freidson 1970 in Kleinman 1980:34).*

Neonatal health behavior is but one type of interaction occurring within the local Health Care System, and thus cannot be understood as a phenomenon on its own, but only in relation to other components within the System. Figure 11 situates neonatal health behavior within the local Health Care System, as a phenomenon occurring within its sectors, and grounded in a local theory of illness causation.



**Figure 11.** The local Health Care System –  
A framework for the analysis of neonatal health behavior

To answer this study’s research questions, the analysis of data will be done in three sequential steps, using this illustration of the local Health Care System as its Framework. The

first step of data analysis will ascertain and qualify mothers’ Theory of neonatal illness causation. The second step will qualify the nature of neonatal health behavior, as well as the relationship between health behavior and mothers’ Theory of neonatal illness causation. These steps will serve as necessary precursors to the third step, which will analyze this relationship. Following is a description of the methods used for accomplishing these steps in relation with this study’s research questions.

### 4.3.1 Step 1 – Mothers’ Theory of neonatal illness causation

*Research Question 1:*

*What are beliefs on illness causation during the neonatal period?*

This step will be accomplished by compiling mothers’ understandings of the causes of neonatal illness, and structuring them in relation to the Sites of illness etiology presented in Figure 9 (p.33). These categories will subsequently be compared to those of a study conducted by the anthropologist Quentin Gausset. In his study, Gausset (1998) established traditional categories of disease classification among the Tonga ethnic group of the Southern Province of Zambia.

Of course, Gausset’s (1998) study and this study differ in their focus, which means that the comparison of data from mothers in this study to Gausset’s (1998) traditional disease classification needs to be undertaken critically. For example, while Gausset’s (1998) study produces a general disease classification, this study focuses solely on mother’s perspectives, and solely on the neonatal period, to generate a tailored understanding of beliefs illness causation. Also, while Gausset’s (1998) study’s focus is demarcated by an ethnic group- the Tonga tribe, this study’s focus is delineated by a geographic area- the Southern Province of Zambia. However, the Tonga are by far the majority ethnic group in the Southern Province of Zambia, as well as the majority ethnic group in this study<sup>14</sup>.

In spite of these differences, Gausset’s (1998) study is still deemed relevant as a comparative to this study’s findings. At the same time, because of these differences, this comparison will serve only to further detail mothers’ theory of illness causation, in areas where commonalities are found between mother’s beliefs and Gausset’s (1998) categories.

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<sup>14</sup> 69% of this study’s respondents are of Tonga tribal affiliation. In rural areas, 100% of respondents are of Tonga tribal affiliation. In urban areas, 43% of respondents are of Tonga tribal affiliation; still the majority group in comparison to Lozi (16%) and Bemba (16%) mothers, who were the next biggest groups.

### 4.3.2 Step 2 - Behavior and its relationship with beliefs

*Research Question 2:*

*How are neonatal illnesses prevented and responded to?*

*Research Question 3:*

*What is the nature of the relationship between neonatal health behavior and beliefs on neonatal illness causation?*

This step describes mothers' preventive and curative behavior, in a way that is structured around Kleinman's (1980) Sectors of the local Health Care System (Figure 10, p.34). It will also relate these behaviors to mothers' Theory of illness causation, as it is elaborated in Step 1.

### 4.3.3 Step 3 - Analyzing the relationship between behavior and beliefs

*Research Question 3:*

*What is the nature of the relationship between neonatal health behavior and beliefs on neonatal illness causation?*

This step builds on the first steps of the analysis, as well as on the Analytical Framework and other authors, to ascertain the nature of the relationship between neonatal health behavior and mothers' theory of illness causation.

## 5. Analysis

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### 5.1 Step 1 - Mothers' Theory of neonatal illness causation

This section accomplishes the first step of the Analysis, and seeks to arrive at mothers' Theory of neonatal illness causation. When discussing illness in newborns, mothers mentioned causes belonging to the natural world, the social world, and the supernatural world. Of these, most commonly mentioned were causes of newborn illness that were brought about by certain other people; these are causes belonging to the social world.

### 5.1.1 Causes within the social world

Within the social world, mothers mentioned that neonatal illness mostly came about when particular individuals were in some form of contact with, or proximity to, the newborn baby or even the mother. The quote below illustrates the most common belief among mothers, that pregnant women are dangerous to the baby, especially those who are early in their pregnancy.

*B: A pregnant woman is not allowed to come to visit the baby.*

*FAC: Why?*

*B: Because of their pregnancy, they will give that sickness to the child.*

(FGD4, Rural: respondent B, 40)

Similarly, mothers mentioned that women who are having their monthly period are dangerous and could cause sickness to the baby, as well as men or women who had sex the night before, or who have been unfaithful in their marriage.

*E1: If the baby is crying a lot maybe it can be 'masoto'. It comes if the father or the mother are going out with another partner, are unfaithful, the baby will be sick of 'masoto'.*

(FGD6, Rural: respondent E, 29, Tonga)

Mothers are generally fearful of visitors or any passerby who is not a relative. This is because it is impossible to know whether these individuals have performed any behavior that could be dangerous for the baby, or even to know if a woman is in her early stages of pregnancy.

*J: ...The people who come, we don't know where they are coming from. Some come from 'kuhula' [being unfaithful], some are having their monthly period, some are pregnant. If they come, the baby will be affected, things will go wrong.*

(FGD6, Rural: respondent J, 23, Tonga)

According to mothers, within the social world, newborn sickness does not only come from contact between the baby and certain threatening individuals. Sickness can also be passed on from the mother to the baby, for example if the mother is in the presence of the same individuals as those mentioned above.

*E: If you [the mother] answer the greeting [of a passerby], the baby will cry continuously. Even if they greet you, keep quiet because they could be ladies with their menses. There are also people who are not OK.*

*FAC: Can you explain that?*

*E: Maybe, she had sex, and that will affect the baby.*

(FGD20, Rural: respondent E, 20, Tonga)

Finally, within the social world, sorcery can also bring about sickness in a newborn baby. Mothers believe that certain people possess mystical powers, and can use them on a newborn's placenta or umbilical cord to bring about harm to the baby's health (Helman 2007:137).

*D: If you just throw anyhow [the umbilical cord that has fallen off], bad people can take it and your baby can die. Some people will use it for their business to prosper.*

(FGD 30, Urban: respondent D, 26, Lozi)

### 5.1.2 Causes within the supernatural and natural worlds

Mothers placed more emphasis on social causes of illness than causes belonging to the supernatural or natural worlds, although these were discussed by some.

For example, in the context of a discussion on continuous crying in the newborn baby, the following excerpt shows that mothers agree on an understanding of illness causation that is rooted in the supernatural world:

*B: We are told that it is the grandmother.*

*FAC: What can a grandmother do?*

*G: Maybe she wants to be named. [She wants the baby to be named after her]*

*FAC: Is that grandmother alive?*

*G: The most problem is those dead grandmothers -- they pinch the children.*

*FAC: So the dead can pinch so that they are named?*

*(All mothers agree)*

(FGD 4, Rural: respondents B, 40 and G, 30)

Also, some mothers mentioned that illness in the baby can come from natural causes, or causes related to inanimate aspects of the natural environment (Helman 2007:136).

*A: ... Some people are just coming from touching dirt, especially from being in the field and when they come they hold the baby and so the baby can get some*

*infection easily.*

*FAC: What sort of diseases?*

*A: This is like diarrhea, and the baby will just start crying.*

*FAC: Maybe that diarrhea has got a special name or meaning?*

*A: No, just diarrhea that is caused by dirt.*

(FGD22, Rural: respondent A, 20, Tonga)

In summary, mothers understand causes of illness as mostly belonging to the social world, but also, to a lesser extent, to the supernatural and natural worlds. This is compatible with Helman (2007), who mentions that social and supernatural etiologies tend to be a feature of communities in the non-industrialized world, especially in rural areas (Helman 2007:134).

### **5.1.3 Gausset's (1998) traditional disease categories**

According to Gausset (1998), among the Tonga, disease is classified in two main categories: the 'diseases of black people' and the 'diseases of white people'. This is an example of what Foster (1978:228) calls a 'cognitive dichotomy', which is found in many other studies on illness causation and classification. For example, in his study among the Zulu of South Africa, Barker (1959) found that his participants believed that theirs were African diseases, which were "hidden from foreign eyes" (Barker 1959 in Foster & Anderson 1978:229).

According to Gausset (1998), the 'disease of white people' are believed to come from God, they are 'natural diseases' with unknown origins, and they do not have a moral aspect. They can be explained by western medicine in terms of germs, viruses and hygiene, and can only be managed in the professional sector. Also, according to Gausset (1998:A-47), this category of diseases has expanded as a result of modern medicine's claim to cure all kinds of diseases. On the other hand, the 'diseases of black people' are believed not to affect white people, and thus cannot be managed in the professional sector. These are diseases that are not contracted by chance and that always have a moral aspect.

Gausset (1998) further elaborates that 'diseases of black people' fall into two categories: those that come from sorcery and those that come from pollution. While sorcerers usually kill people out of jealousy or to become rich through magical means, causes coming from pollution can

occur from contact with individuals who have transgressed well-known social rules (Gausset 1998: A44-A45). The latter understanding of illness, as a penalty for socially unacceptable conduct, appears common across cultures, whereby the threat of illness plays a major role in maintaining social moral order (Foster 1978:43).

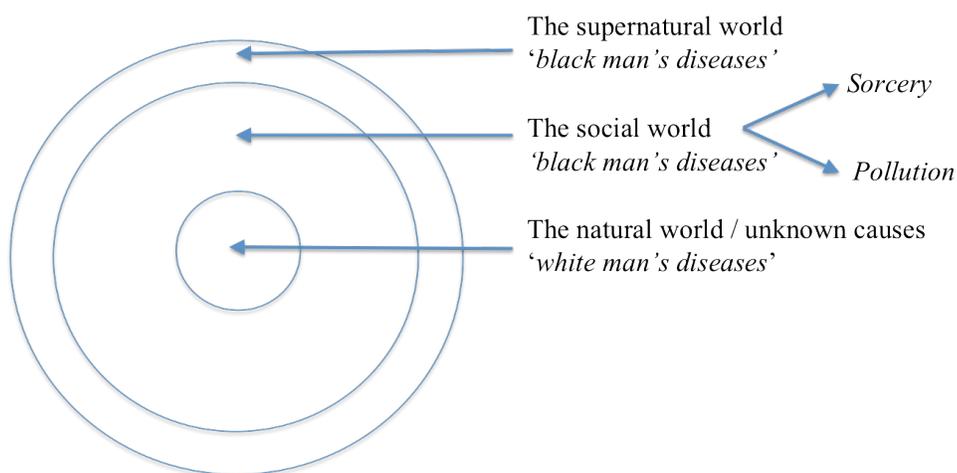
Diseases of pollution can also come from contact with individuals that exist ‘between two social categories’, or who are seen as undergoing a certain ‘rite of passage’. Such individuals are, for example, newborn babies, pregnant women and widows. By virtue of their transitory state, they are considered weak, vulnerable, and thus generally susceptible to disease. (Gausset 1998:A-45)

#### 5.1.4 Mothers’ Theory of neonatal illness causation

Main similarities between Gausset’s (1998) study and this study’s findings were used to tailor the Analytical Framework’s ‘Sites of illness etiology’ model, to produce mother’s Theory of neonatal illness causation (see Figure 12).

The main similarity in mothers’ views and Gausset’s (1998) disease classification is that illness causation mostly lies within the social world. Within this world, mothers most often discussed causes related to pollution; for example contact with individuals who have had sex or were unfaithful, or with individuals between two social categories, such as pregnant woman, or women having their monthly period.

There are also certain variations between mothers’ and Gausset’s (1998) accounts. For example, mothers never used the terminology ‘white man’s diseases’ or ‘black man’s diseases’ when discussing neonatal



**Figure 12.** Mothers’ Theory of neonatal illness causation  
Causes belonging to the social world are most commonly mentioned.  
(Adapted from Helman (2007:134) in accordance with mothers’ perspectives, and Gausset’s (1998) study amongst the Tonga of the Southern Province of Zambia. Specifications from Gausset’s (1998) study are italicized).

illness. However, it is argued that Gausset's (1998) 'black man's diseases' relate to what mothers described as social and supernatural causes of illness, because of many similarities between them, as discussed above. It is also argued that those illnesses that mothers describe as having 'natural causes', as well as those whose etiology mothers could not explain, relate to what Gausset (1998) calls 'white man's diseases'. Mothers described 'natural illnesses' as stemming from 'germs' or 'dirt', similarly to Gausset (1998).

This theory, tailored to mothers' understandings of neonatal illness causation, is used as the basis to explore its relationship with neonatal health behavior.

## **5.2 Step 2 - Behavior and its relationship with beliefs**

This section accomplishes Step 2 of the Analysis and qualifies neonatal health behavior and its relationship with mothers' beliefs on illness causation.

### **5.2.1 Preventive Behavior**

Mothers discussed many different practices that are carried out in the absence of illness in the baby, with the purpose of protecting the baby from illness. Mothers explained that they are most often the ones responsible for deciding on these preventive measures, while the father, the grandmother, or both parents together can also at times take on this role. Preventive behavior occurs mostly in the popular sector, but also in the professional sector.

#### *Preventive behavior in the popular sector*

##### *Period of isolation*

A common protective practice in the popular sector is for the mother and baby to stay indoors for a certain period during which they are not to see or greet any visitors. This practice is important to mothers because the baby is vulnerable and susceptible to illness. The mother is also included in this period of isolation because illness can be brought on to the baby through her.

According to mothers, isolation allows the baby to "be protected and grow into a healthy baby"

(FGD28, Urban: respondent E, 33, Lozi), and at the end of this period, “it means that at least your child is big enough not to catch illnesses” (FGD28, Urban: respondent C, 28, Lozi). Mothers varied in their qualification of the length of this period; while some described it as lasting until the umbilical cord drops, most mentioned that it should last between 1 and 3 months.

#### *Practices surrounding visitors*

Various practices aim at stopping any visitors from being in proximity to the baby and the mother. To alert passers-by that there is a newborn baby in the house, households commonly put thorn branches on their door, or tie a rope from the house to a tree. These are recognized symbols that a newborn is in the house and that those strangers who are dangerous to the baby should stay away, for example, those who have misbehaved or who are pregnant.

Other practices aim to prevent neonatal illness in the event of an unwanted visit, or if somebody passes near to the house who could be of danger to the baby. For example, in the event of a visit from a woman who is pregnant, this woman will be asked to retrieve certain herbs, soil or roots from nearby, mix them in water, and give this mixture to the baby to drink. Also, the pregnant woman can rub the baby on her abdomen, draw a cross with ash on the baby’s umbilicus, or tie a piece of cotton from her ‘*chitenge*’ (traditional cloth) to the baby’s wrist to prevent illness.

#### *Other preventive practices*

Mothers are very careful in disposing of their baby’s placenta and umbilical stump. These are usually buried within the house or around the house, to prevent their abduction by a sorcerer, who could use them to cause harm to the baby.

Many other practices aim at generally protecting the baby. For example, some newborns are bathed in ‘*nsambilo*’, which is water and a mixture of herbs and traditional medicines, and others are passed over smoke from a fire made with elephant dung for this same purpose. Some mothers pray to protect the newborn baby, mostly as an alternative to traditional practices.

*Preventive behavior in the professional sector*

Most mothers emphasized the importance of going to the clinic after delivery, for the baby and mother to undergo a general post-natal check-up. While some mothers go to the clinic within a day or two of birth, most go at least within the first week, or within 3 weeks of the baby's birth.

Most mothers go to the clinic to receive the Bacillus Calmette-Guérin (BCG)<sup>15</sup> vaccination, and also to receive vitamin A supplements, to check the baby's weight, to check the baby's umbilical stump, and to examine the baby's blood for malaria. Some mothers take their baby to the clinic to take an HIV test, or to receive PMTCT medicine if the mother is HIV+.

*Preventive behavior in relation to beliefs about neonatal illness causation*

The relationship between mothers' neonatal health behavior and mothers' theory of illness causation is most explicitly compatible in the popular sector, because it can be directly linked to their understandings of threats to their baby. This relationship fits Foster & Anderson's (1978:41) description:

Among most non-Western peoples' preventive medicine consists of ... personal behavior that follows logically from disease causation concepts, which, by explaining why a person falls ill, simultaneously teach what must be done to avoid illness.

For example, to prevent causes stemming from the 'social world', which are mostly 'illnesses of pollution', mothers disallow visitors because certain individuals cause illness, for example, pregnant women are believed to cause the folk illness '*luhumwe*', and individuals who had sex are believed to cause the folk illness '*masoto*' (see Appendix 4 for mothers' descriptions of these and other folk illnesses). To prevent 'illnesses of sorcery', mothers are careful in disposing of their baby's placenta and umbilical stump.

It is more ambiguous, however, to qualify the relationship between mothers' preventive behavior and beliefs on illness causation in the professional sector. While mothers know which services they seek out at the clinic, many do not know why these services are important. Of all the

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<sup>15</sup> Bacillus Calmette-Guérin, a vaccine against tuberculosis

respondents, only one mother spoke in express terms of prevention when asked why she would take her baby to the clinic in the absence of illness. This is quite different than the popular sector, where mothers' behavior is very logically justified in relation to their beliefs on illness causation.

In light of mothers' beliefs on illness causation, the fact that so many mothers bring their newborns to the clinic will be interesting to analyze further. While mothers strongly believe in social causes of illness, and most adhere to a period of isolation to protect their newborn from these causes of illness, the same mothers express the importance of going to the clinic during the first days of a baby's life. Mothers' behavior seems contradictory, because according to their Theory of illness causation, this visit to the clinic could put the baby in danger of exposure to social causes of illness. This behavior is further analyzed in Section 5.3, because it suggests a different relationship between behavior and beliefs than the one suggested by Foster & Anderson (1978:41), above.

### 5.2.2 Curative behavior

Curative behavior is any behavior that takes place in response to illness, with the purpose to restore a healthy state of being. According to mothers, curative behavior occurs in all three sectors, and for a given illness episode, consultations between sectors often occur as well.

#### *Curative behavior in the popular sector*

##### *Recognition and decision-making*

The recognition of neonatal illness, as well as decision-making on an appropriate response to neonatal illness, occurs in the home setting. Both of these roles are most often accomplished by the baby's mother or grandmother, but also can be accomplished by the father or by both parents. If it is a mother's first child, the grandmother is more involved in decision-making. Some mothers seek the advice of traditional birth attendants before deciding on how to respond to neonatal illness.

### *Response to neonatal illness*

Certain illness episodes appear to be typically cared for within the popular sector, most of which are folk illnesses such as ‘*chamutwe*’, ‘*kakoto*’ and ‘*luhumwe*’; but also ‘*bulongo-longo*’, ‘*luwo*’, and ‘*masoto*’ (see Appendix 4). To treat these folk illnesses, a variety of traditional medicines are typically prepared by relatives, mostly elder women. Aside from folk illnesses, some mothers mentioned certain symptoms that they would care for in the popular sector, such as continuous crying, or diarrhea.

### *Curative behavior in the folk sector*

Mothers typically seek care for particular ailments with traditional healers, such as the folk illnesses ‘*kakoto*’, ‘*chamutwe*’ and ‘*masoto*’, and also certain isolated symptoms, such as continuous crying and difficulty breathing.

### *Curative behavior in the professional sector*

Mothers discussed various symptoms that they take to the clinic. Most commonly mentioned was ‘body hotness’, but also mentioned were continuous crying, coughing, slimming or not growing, abdominal pains, sneezing, abnormal diarrhea, ear discharge, constipation, not passing urine, vomiting, and pus coming from the umbilical cord.

### *Curative behavior between sectors*

Many mothers explained that they would go to more than one place for care, either serially or sequentially. In these cases, mothers generally seem to consult the clinic first, and change providers when one does not offer a sufficient response to the newborn’s illness episode.

*“First of all we take the baby to the clinic, but when we see that the baby is not responding and still losing weight, that’s when they take them now to the traditional healers.”*

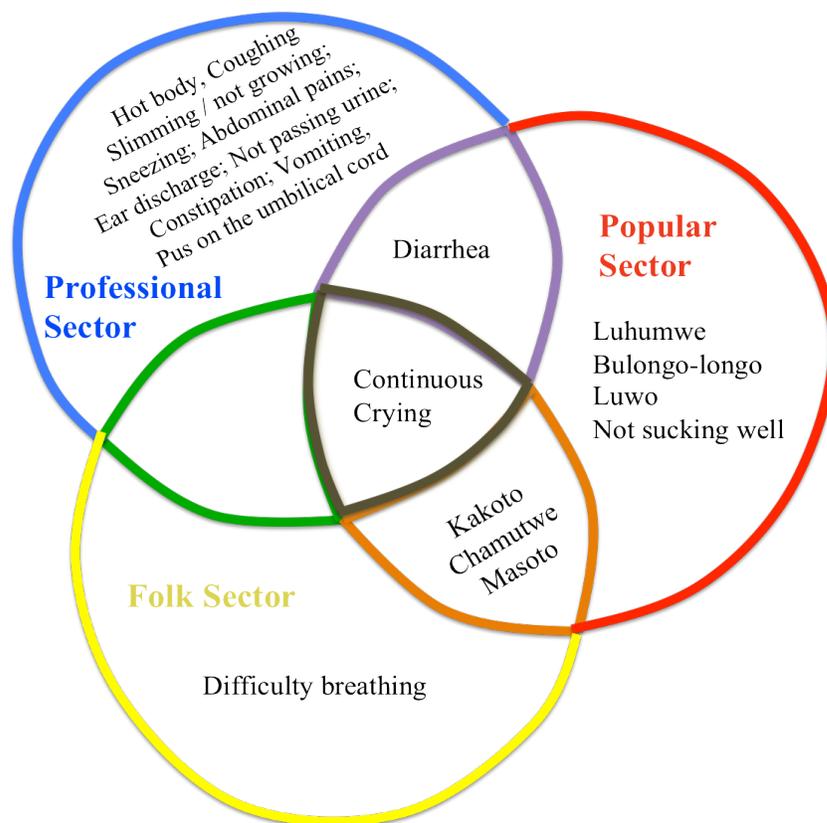
(FGD22, Rural: respondent F, 29)

*“I had a baby who was sick and I took him to the clinic, they couldn’t help so the baby was taken to the traditional healers.”*

(FGD30, Urban: respondent G, 16, Bemba)

Curative behavior in relation to beliefs about neonatal illness causation

According to mothers, the response to a newborn's illness relates to the illness itself; depending on what the baby has, the mother will decide whether to care for her newborn within the home, or to seek care in the professional or folk sectors. Many mothers expressed that certain illnesses can only be managed by certain sectors of the health care system. Figure 13 shows the different illnesses that mothers notice in their newborn babies and the sectors where they would take these illnesses. In this Figure, there indeed appears to be a pattern, in that certain illnesses are only mentioned in certain sectors.



**Figure 13.** Curative behavior by sector  
Areas of overlap between: the professional sector and popular sector are outlined in purple; all sectors are outlined in brown.

Most apparent is that there is a distinction between illnesses that are taken to the professional sector on the one hand, and illnesses that are taken to the popular and folk sectors on the other hand. This finding is compatible to Gausset's (1998) classification of 'white man's diseases' and 'black man's diseases', in that "the distinction between 'white man's diseases' and 'black man's diseases' roughly corresponds to the 'modern' and the 'traditional' medical systems" (Gausset 1998:A-46). Folk illnesses are likely seen as the latter, which can only be treated using traditional methods in the popular or folk sectors, and which modern medicine cannot cure

(Gausset 1998:A-46). Indeed, there is most overlap between what is taken to the folk and popular sectors, and most of the illnesses taken to these sectors are folk illnesses.

This pattern implies that mothers' beliefs on neonatal illness causation inform their response to illness. However, this may not be the case in those areas of overlap between the professional sector and the popular and folk sectors, which are outlined in purple or in brown in Figure 13 (p.48). Firstly, while some mothers mentioned that they would take a newborn with diarrhea to the clinic, others mentioned they would care for this symptom within the home setting. However, further description showed that mothers would only care for diarrhea within the home setting if they thought that it was linked to, or a symptom of, the folk illness '*chamutwe*' (FGD30, Urban: respondent B, 38, Kalunda). On the other hand, if diarrhea is an isolated symptom that mothers could not explain in terms of a folk illness, it is taken to the clinic.

Secondly, some mothers take a baby that is crying continuously to the clinic, while others take a crying baby to the traditional healer and some care for a crying baby in the home. Most described continuous crying as a symptom of another problem, however, and it is the nature of that other problem that informs their choice of care. For example, mothers remain in the popular sector if they think that the baby is crying because of the folk illness '*chamutwe*' (FGD29 Urban: respondent G, 20, Toyakeya), and they seek care in the professional sector if they think that the baby is crying because of ear discharge (FGD4, Rural: respondent B, 40) or abdominal pains (FGD27, Rural: respondent I, 29, Tonga).

On the other hand, mothers seek care for continuous crying in the folk sector if they think that it is related to a folk illness, such as '*chamutwe*', '*masoto*', or '*kakoto*', or if they think that it is caused by an ancestral spirit, and needs the traditional healer to identify the supernatural source of the problem (FGD4, Rural: respondent E, 22) (FGD23, Rural: respondent F, 18, Tonga).

The careful analysis of Figure 13 thus shows that beliefs do appear to inform curative behavior; however, curative behavior ultimately rests on mothers' interpretation of the newborn's symptoms. This is compatible to Gausset's (1998:A-46) finding that "the classification of diseases into a category or another is not based on symptoms, as the symptoms may have

different causes ... (and) the cure will depend on the suspected cause.” One mother makes this clear, when she discusses her response to ‘abdominal pains’, which she likely understands as a ‘white man’s disease’, and ‘a growth on the upper palate’, which she likely understands as a ‘black man’s disease’.

*“It depends on the symptoms the baby has ... If you suspect that the cry is due to abdominal pains, we take to the clinic, if the cry is due to the growth on the upper palate, we take to the traditional healers.”*  
(FGD27, Rural: respondent I, 29, Tonga)

Finally, this section has not yet considered the phenomenon of ‘medical pluralism’, and what it implies for the relationship between curative behavior and mothers’ beliefs on neonatal illness causation. For a given illness episode, if mothers interpret a baby’s illness as stemming from a particular cause and respond to it accordingly, how can they justify concurrently consulting other sectors of the health care system, which they deem incapable of managing this particular illness etiology? This behavior is further analyzed in Section 5.3 to better understand how it relates to mothers’ beliefs on illness causation.

### **5.2.3 Similarities and differences between urban and rural areas**

Mothers in rural and urban areas appear to hold similar beliefs on neonatal illness causation. However, some mothers in urban areas appear to resist traditional practices and prefer prayer as a preventive strategy in the popular sector: *“these days we don’t follow our traditions, we just put everything in God’s hands”* (FGD28, Urban: Respondent I, 22, Tonga). Also, some mothers in urban areas hold very negative views on traditional medicine, and describe them as: *“not good because they bring demons’ spirits to babies”* (FGD30, Urban: respondent B, 38, Kalunda). This could be related to one of Gausset’s (1998:A-48) findings, that some churches condemn the work of traditional healers, and associate it with the work of Satan.

Across rural and urban settings, the practices discussed by those mothers who use traditional preventive and curative strategies in the popular sector serve similar purposes. The major difference between their practices, however, is that they utilize different substances and herbs as traditional medicine. This is likely due to the differences in the natural environment of these two settings; for example, mothers in Livingstone were alone in mentioning that they protect their

baby by passing it over a fire of elephant dung, because they live in a National Park where elephants are quite common.

### **5.3 Step 3 - Analyzing the relationship between behavior and beliefs**

This section accomplishes Step 3 of the Analysis, by further exploring the relationship between neonatal health behavior and mothers' beliefs on illness causation, as qualified in the previous section.

The previous section showed that both preventive and curative behavior appear to stem logically from beliefs on illness causation, when occurring in the popular and folk sectors. This is likely because they are interpreted as 'black man's diseases', which are firmly grounded in the traditional system of belief and which are associated with precise preventive and curative practices.

Mothers often utilize the professional sector for preventive and curative purposes; however, behavior occurring within this sector at times appears contradictory to mothers' system of belief. For example, mothers interrupt newborns' protective period of isolation to bring them to the clinic in the first days of life despite harboring strong beliefs that strangers and other individuals can bring about serious illness, and even death, to the baby. Also, for a given illness in their newborn, it is not uncommon for mothers to consult both traditional and modern sources of care despite having interpreted their newborns' illness as either a 'black man's disease' or a 'white man's disease'. Finally, in general, mothers appear to consult the professional sector more frequently than other sectors for curative purposes, despite the fact that the majority of their etiological concepts relate to illnesses that, according to them, can only be responded to in the popular and folk sectors.

These behaviors suggest that neonatal health behavior is not always guided by mothers' beliefs on neonatal illness causation, and that the nature of the relationship between the two requires further investigation. This section provides such an analysis, based on contributions from other authors.

### 5.3.1 Behavior and change in the material world

Local beliefs on illness causation would likely be a part of what Djurfeldt & Lindberg (1975:29-31) call the ‘meaningful’ dimension of action, or that determinant of behavior that relates to an individuals’ way of perceiving his or her situation, and assessing the feasibility and desirability of different courses of action. According to these authors, the ‘meaningful’ dimension of action cannot be understood separately from the ‘material’ dimension of action, which shapes it. Here, the material world is understood as the combination of objectively observable features of an environment and relates to what Kleinman (1980:45) calls the “external influences acting on health care systems.” Djurfeldt & Lindberg (1975:29-31) stress the importance of studying this determinant of action because it “restrictively determines” the ‘meaningful’ dimension of action, and dictates what is objectively possible to achieve in a given context.

In the case of the Southern Province of Zambia, the ‘material world’ is characterized by a rapidly changing medical landscape, whereby a completely new system of medicine was introduced during colonization, creating more health service options for local populations. Rapid change has also occurred in the form of new illnesses; since its first case in 1984, HIV/Aids has had devastating effects in Zambia and has represented a new, incurable illness that was difficult to explain using traditional understandings of illness.

### 5.3.2 Behavior and empirical rationality

Whilst considering these changes in the Zambian ‘material world’, we can explore the arguments of other authors for understanding why, when faced with the choice among different health practices, people in a given society choose a particular course of action rather than another.

Various authors converge in their interpretation of health behavior on the individual level, as a product of the universal human characteristic of rationality. According to Young (1980:102),

People in all societies are predominantly rational, that is, they are inclined to choose among alternative courses of action in a self-interested way according to what they believe are the relative accessibility and effectiveness of each alternative and its costs relative to their priorities of goals and values.

Young (1980:103) further argues that in developing countries, medical rationality is primarily judged through empirical standards, or with real-life observation or personal experience of effectiveness with a particular health behavior (Young 1980:103). These experiences of empirical effectiveness will lead people to choose among health practices in relation to what they perceive to be likely to bring about a desirable result (Foster & Anderson 1978:250-251), or what one “ ‘thinks’ or ‘knows’ is the best” (Djurfeldt & Lindberg 1975:166).

In their study in South India, Djurfeldt & Lindberg’s (1975) reach the same conclusion to make sense of patients’ persisting consultation of indigenous health practitioners alongside a seemingly more effective allopathic system of care. Indeed, what they find is that patients “use their intellect in order to make the most out of the medical situation in which they are placed” (Djurfeldt & Lindberg 1975: 171).

*Rationality, the material world, and mothers in the Southern Province of Zambia*

The introduction of western medicine in Zambia necessarily altered Zambians’ sole reliance on indigenous medicine. Mothers’ frequent utilization of the professional sector implies that they have experienced success and effective care, and have developed trust in this system of care: “*the reason why we take to the clinic is because those people putting on white, the nurses, we think they are the best*” (FGD5, Rural: respondent H, 36, Tonga).

Certainly, the public health system’s response to HIV/Aids must have contributed to winning individuals’ trust and allegiance to the professional sector in Zambia. Since the initiation of their distribution in 2002, ARVs have been shown to work in bringing noticeably sick people back to looking healthy, and increasing HIV+ peoples’ life expectancy. With regards to neonatal health, the PMTCT initiative has been expanded around the country and in 2009, reached 61% of HIV+ pregnant women. As such, this mysterious, new illness that neither of the sectors of the local Health Care System could cure has at least been effectively appeased by the professional sector.

Change in the material conditions of reality has both expanded the options where mothers can exercise their health behavior, and created new obstacles for mothers to face in tending to their newborn’s health. Mothers face this change by making those health decisions that make the most

sense to them, in terms of what they have experienced to work. The view presented here to explain neonatal health behavior necessarily has implications for its relationship with mothers' beliefs on illness causation. To identify those implications, in the next section we ask the question: what is the role of mothers' traditional systems of belief when mothers exercise health behavior in the professional sector?

### **5.3.3 A new role for traditional systems of belief?**

#### *New practices can occur alongside traditional belief systems*

According to Young (1980:103), “even though empirical proofs are used as standards of rational behavior, sometimes they are underwritten by contradictory beliefs.” Indeed, it appears that individual behavior can change without an individual's underlying belief system changing. This means that, when mothers consult the professional sector, it isn't because they have understood the underlying scientific rationale of western medicine, but rather that they have experienced its effectiveness in relation to similar ailments (Foster & Anderson 1978:250-251).

Foster (1978) found this to be the case in various studies that he discusses. For example, in a study conducted in Colombia, Browner (1976 cited in Foster & Anderson 1978:245) found that although women strongly held traditional or folk beliefs on fertility, pregnancy, and abortion, most still delivered in health centers or government hospitals. Also, in his study with traditional populations in Mexico, Wagner (1978:4-5 cited in Foster & Anderson 1978:245) found that participants showed “open-mindedness and pragmatism in trying out new practices, despite beliefs that say the contrary.”

With the introduction and adoption of new health practices, groups do not change their traditional way of understanding illness; rather, they widen their initial frame of reference to include new categories for classifying “those things that cause the illnesses that scientific medicine can cure” (Foster & Anderson 1978:251), such as Gausset's (1998) ‘white man's diseases’. These new categories do not threaten traditional categories, because they exist alongside of them, and because they include new illnesses that the traditional system cannot respond to (Gausset 1998).

*New practices can strengthen traditional belief systems*

When traditional populations adopt new practices, Foster & Anderson (1978:251) found that belief systems could actually be strengthened by this change. In a study conducted in Mexico, Foster & Anderson (1978:251) found that while many respondents routinely consulted physicians, “their belief in the correctness of their own system’s etiology and treatment [was] almost as strong as ever”. This could be the case in this study, whereby mothers held strong traditional beliefs on illness causation while, at the same time, frequently utilizing the professional sector.

If viewed in this angle, we can imagine that mothers’ tendency to consult various sources of care for a given neonatal illness episode is not indicative of a weakened faith in their own traditional system of belief. Rather, failure in one sector is likely attributed to their own individual misinterpretation of the newborn’s symptoms and underlying illness. For example, a mother may interpret her newborn’s symptoms as needing home treatment. After administering traditional medicines, if the baby’s symptoms persist, the mother is might assume that her initial interpretation of the illness was wrong, and that this is why home treatment was not effective. Thus, she is likely to re-shape her interpretation of the baby’s symptoms in congruence with what can be treated by the professional sector. By then taking her baby to the clinic, the mother’s faith in traditional medicines will not be shaken, rather she will know that the problem at hand is not a traditional problem.

*Traditional belief systems as an overarching framework*

Each society holds its own particular health priorities and “hierarchies of medical goals” (Young 1980:102), which are anchored in its cultural context, worldview and beliefs on health and illness (Kleinman 1980). According to Djurfeldt & Lindberg’s (1975:29-31), the ‘meaningful’ dimension of health behavior is the one which includes a group’s health priorities and values. In determining what is valued by a society, beliefs on illness causation are part of the context that guides health behavior.

This can be demonstrated by elaborating on an earlier discussion, which showed that mothers accommodate their interpretation of neonatal illness to seek a wide possibility of opinions and advice. In this case, according to Foster & Anderson (1978:250), mothers are likely to “select from this advice the elements that most nearly fit their perception of how to deal with a particular illness episode.” Thus, although mothers’ empirical assessment of what is effective may inform decision-making, it is their belief systems and the cultural reality in which it is located that form the frame of reference shaping what they value, and what are the desirable health goals towards which rational decisions will gravitate. Finally, belief systems also form the framework within which new practices are judged, and deemed acceptable or not. According to Foster & Anderson (1978), new, effective practices can only be accepted in a group if they are compatible with its framework of belief and cultural system.

*Traditional belief systems as tools to accommodate new practices*

Once new practices are deemed desirable by virtue of their effectiveness, and are deemed acceptable in relation to a cultural context and worldview, local populations show great ingenuity in reconciling these new practices in relation to their own etiological systems (Foster & Anderson 1978:251). This is something that Gausset (1998:A-50) found in his study with the Tonga, whereby “they adopt and transform new elements to the existing rituals and practices in a complex and dynamic process” (Gausset 1998: A-50).

An example of this was also detected within mothers’ discussions, and offers an explanation for their seemingly contradictory preventive behavior, whereby they take their newborns to the clinic while holding strong beliefs that strangers are dangerous to the baby. Indeed, this belief is what stops some mothers from going to the clinic altogether; however, the following quote shows that some mothers have used old beliefs and behaviors to reconcile the exercising of a new, effective practice:

*“E: Me what I have heard is that if your child has ‘chibele’ and you take your baby to the clinic and you breast feed, if there are other children around with no medicine to protect from ‘chibele’, they will end up with ‘chibele’.*

*FAC: So what treatment is there?*

*E: Some take necklace charms, feces for dogs, add medicine, used charcoal and breast milk and tie to a ‘chitenge’, then you can go to the clinic.”*

(FGD14, Urban: respondent E, 30, Kaonde)

As such, mothers have found new means to prevent against social causes of illness, whilst also reaping the perceived preventive benefits of the professional sector.

## 6. Conclusion

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### 6.1 Summary and return to research questions

This study has explored how mothers in the Southern Province of Zambia describe and relate their neonatal health behavior to their beliefs on neonatal illness causation. It has analyzed the following research questions through the framework of Kleinman's (1980) local Health Care Systems Model:

According to the perspectives of mothers in the Southern Province of Zambia,

1. *What are beliefs on illness causation during the neonatal period?*
2. *How are neonatal illnesses prevented and responded to?*
3. *What is the nature of the relationship between neonatal health behavior and beliefs on neonatal illness causation?*

To answer this study's two first research question, this study has found that mothers tend to place neonatal illness causation in the 'social world', believing most illnesses to be caused by other individuals in their social environment. Also, it has shown that mothers exercise a variety of practices in all sectors of the local Health Care System to prevent and care for illnesses in their newborns. In relation to this study's third research question, this study shows that the relationship between mothers' neonatal health behavior and mothers' beliefs on illness causation is dynamic and bidirectional, in that while mothers' system of belief informs their behavior, their behavior also shapes their system of belief.

Preventive and curative health behavior occurring in the popular and folk sectors of the local Health Care System appear to stem logically from mothers' Theory of neonatal illness causation. Illnesses that are cared for in these sectors form the local category of 'black man's diseases', which the professional sector is not equipped to prevent or cure.

The introduction of western medicine ended Zambians' exclusive dependence on traditional strategies of care, and this new system's perceived effectiveness is reflected in its common utilization by mothers. The acceptance of modern medicine, however, has not brought about the demise of traditional systems of belief; rather, new medical systems were given a 'special place' within them (Gausset 1998:A-43), which allows local populations to make sense of those diseases that the professional sector is especially effective at managing. This study has shown that traditional beliefs may even be strengthened by this change because they are called upon to shape new health behaviors that serve to reconcile the use of modern medicine. Finally, belief systems are part of the cultural framework that guides what is valued and acceptable in a society, and allows people to better understand new illnesses on their own terms (Gausset 1998: A-50).

Neonatal health behavior can thus be understood by viewing all humans as rational, adaptive actors that respond to changes in their environment to maximize the benefits of the material world. Empirical rationality is subjective, however, and thus an understanding of one group's rational choice of health behavior cannot be divorced from an understanding of its system of belief, which is an integral part of its culture and identity.

Faith in the correctness of one's own medical and health beliefs probably characterizes all people. It is one of the most important symbols around which the group organizes its perception of its ethos, its uniqueness, its vital essence. Therefore to abandon traditional health beliefs is a far greater step than to accept a new mode of therapy; it means relinquishing a major support to a group's sense of identity and view of itself. Hence, all kinds of accommodations are made and all manner of rationalizations appear, to justify continuing faith in the old system while simultaneously accepting the new.  
(Foster & Anderson 1978:251)

## 6.2 Future research

Various areas of future research could complement this study's demarcations. For example, by investigating mothers' *actual* health behavior, further research can indicate which barriers and facilitators influence the actualization of mothers' *said* behavior. Also, a holistic study that considers various influences on health behavior could assess the relative importance of both anthropological and socio-medical factors in determining health behavior.

A comparative study between health behavior in urban and rural areas could further examine the similarities and differences found in this study, and provide insight on the effects of urbanization on health behavior and health beliefs in this context. Finally, additional studies on health behavior surrounding ‘disease’ will be important in order to understand the specific behaviors that are limiting neonatal survival, in order to guide contextually effective interventions.

### 6.3 Implications

The nature of the relationship between neonatal health behavior and beliefs has important implications for medical anthropologists and public health specialists alike. On the one hand, anthropologists concerned with cultural preservation in light of modernization will recognize that the introduction of modern medical practices does not necessarily equate to an erosion of local cultural practices, and that rather, novelty can be incorporated within traditional ways of life.

This study holds a particularly relevant message for public health specialists currently working in developing countries to implement interventions for reducing neonatal mortality. In exercising their health behavior, target populations of these interventions are not ‘empty vessels’, but rather purposive actors who can adopt new interventions within their current systems of belief, as long as they are aligned with local values and worldviews and are effective in responding to local health priorities.

Mothers in the Southern Province of Zambia tend to the health of their newborns by using those practices that they know to work. At the same time, millions of newborns continue to die every year unnecessarily, while simple practices are known to significantly reduce deaths. In this current global push towards reducing neonatal mortality, cross-cultural partnerships can save newborn lives, and contribute to achieving such wishes as those of Choma’s grandmothers:

*“...We relate the newborn baby to the size of an elephant, the biggest animal in the bush, wishing the child to be somebody big in the society.”*

*- Discussion with Grandmothers,  
Choma District, Zambia  
(Full quotation on p.2 of this Study)*

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## **Appendix 1: ZamCAT study and author's role**

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I was an intern with the ZamCAT (Zambia Chlorhexidine Application Trial) Qualitative Study between the 27<sup>th</sup> of January and 23<sup>rd</sup> of March 2010. The purpose of this internship was to assist in accomplishing data collection and transcription for the Study, and my tasks included: transcription of interviews, data entry, logistics and planning for data collection, assistance in training data collectors and in crude data analysis of the data.

I am using a subset of the ZamCAT Qualitative Study data for this Master's Thesis. Though I did not participate in designing the ZamCAT Study protocol, I had an active role in implementing it in the field. Following is some background information about the ZamCAT Study and the team that accomplished the data collection and transcription for the ZamCAT Qualitative Study.

### **Zambia Chlorhexidine Application Trial**

ZamCAT is a project being implemented by Boston University's Center for Global Health and Development (CGHD) in collaboration with the Zambian Ministry of Health. The aim of the ZamCAT project is "to conduct a randomized, controlled study designed to reduce neonatal mortality in a sub-Saharan African country in order to provide evidence for decision making in designing neonatal health interventions in low- and middle-income countries." (Hamer 2009:2).

There are two main objectives to this project:

- 1) An initial qualitative study to "explore current knowledge, attitudes, practices and beliefs in neonatal post-partum care, with a focus on care of the umbilical cord [in the Southern Province of Zambia]." (ZamCAT 2009:3)
- 2) A cluster-randomized controlled trial (RCT) to determine whether 4% chlorhexidine cord cleansing is more effective than dry cord care for the prevention of neonatal deaths and omphalitis. (Hamer 2009: 2)

The ZamCAT RCT (Objective 2) is to take place over a period of 3 years in 5 districts in the Southern Province of Zambia: Mazabuka, Monze, Choma, Kalomo and Livingstone. The ZamCAT Qualitative Study took place in 4 of these 5 districts: Mazabuka, Monze, Choma and Livingstone.

### **ZamCAT Qualitative Study Data Collection Team**

Data collection for the ZamCAT Qualitative Study took place between February 11<sup>th</sup> and March 18<sup>th</sup> 2010, and was implemented by a team of eight, including: 1 Pediatrician from Boston University's CGHD (Study Leader and Supervisor), 1 Data Manager for the Ministry of Health (Site Selection and Logistics), 4 retired nurses and midwives (Data Collectors), 1 nurse and health manager (Data Collection Supervisor), and 1 student intern (Transcription and General Support).

## Appendix 2: Index of respondents

**Table 4.** List of Respondents by FGD and location, including their ages and tribal affiliation

District and Location	FGD#	Letter	Age	Tribe
<b>CHOMA - SIKALONGO RURAL HEALTH CENTER (#4, 5, 6)</b>	4	A	18	(not obtained)
		B	40	(not obtained)
		C	19	(not obtained)
		D	36	(not obtained)
		E	22	(not obtained)
		F	32	(not obtained)
		G	30	(not obtained)
		H	19	(not obtained)
	FGD#	Letter	Age	Tribe
	5	A	18	Tonga
		B	40	Tonga
		C	38	Tonga
		D	18	Tonga
		E	16	Tonga
		F	26	Tonga
		G	19	Tonga
		H	36	Tonga
		I	39	Tonga
	FGD#	Letter	Age	Tribe
	6	A	19	Tonga
		B	18	Tonga
		C	20	Tonga
		D	19	Tonga
		E	29	Tonga
		F	19	Tonga
		G	29	Tonga
		H	30	Tonga
		I	32	Tonga
J		23	Tonga	
E2		20	Tonga	
FGD#		Letter	Age	Tribe
<b>MAZABUKA: NAKAMBALA URBAN HEALTH CENTER (#11, 14, 17)</b>	11	A	25	Tonga
		B	22	Tonga
		C	16	Tonga
		D	28	Tonga
		E	33	Tonga
		F	29	Tonga
		G	29	Bemba
		H	18	Bemba
		I	24	Ila
		J	24	Tonga
	FGD#	Letter	Age	Tribe

**MONZE: NJOLA MWANZA  
RURAL HEALTH CENTER  
(#20, 22, 23, 27)**

14	A	20	Tonga
	B	19	Tonga
	C	35	Nyanja
	D	27	Lozi
	E	30	Kaonde
	F	34	Chewa
	G	34	Tonga
	H	22	Tonga
	I	22	Nyanja
<i>FGD#</i>	<i>Letter</i>	<i>Age</i>	<i>Tribe</i>
17	A	18	Tonga
	B	25	Tonga
	C	17	Tonga
	D	26	Tonga
	E	18	Bemba
	F	29	Lozi
	G	18	Nyanja
	H	38	Tonga
	I	16	Tonga
	J	18	Tonga
<i>FGD#</i>	<i>Letter</i>	<i>Age</i>	<i>Tribe</i>
20	A	20	Tonga
	B	24	Tonga
	C	17	Tonga
	D	25	Tonga
	E	20	Tonga
	F	22	Tonga
	G	20	Tonga
	H	19	Tonga
	I	26	Tonga
<i>FGD#</i>	<i>Letter</i>	<i>Age</i>	<i>Tribe</i>
22	A	45	(not obtained)
	B	32	(not obtained)
	C	31	(not obtained)
	D	18	(not obtained)
	E	18	(not obtained)
	F	29	(not obtained)
	G	40	(not obtained)
<i>FGD#</i>	<i>Letter</i>	<i>Age</i>	<i>Tribe</i>
23	A	27	Tonga
	B	17	Tonga
	C	27	Tonga
	D	18	Tonga
	E	18	Tonga
	F	18	Tonga
	G	24	Tonga
<i>FGD#</i>	<i>Letter</i>	<i>Age</i>	<i>Tribe</i>
27	A	24	Tonga
	B	24	Tonga
	C	31	Tonga

**LIVINGSTONE: DAMBWA /  
MAHATMA GHANDI  
URBAN HEALTH CENTER  
(#28, 29, 30)**

	<i>D</i>	33	Tonga
	<i>E</i>	30	Tonga
	<i>F</i>	25	Tonga
	<i>G</i>	37	Tonga
	<i>H</i>	38	Tonga
	<i>I</i>	29	Tonga
	<i>J</i>	20	Tonga
<i>FGD#</i>	<i>Letter</i>	<i>Age</i>	<i>Tribe</i>
28	<i>A</i>	37	Mambwe
	<i>B</i>	27	Lozi
	<i>C</i>	28	Lozi
	<i>D</i>	20	Bemba
	<i>E</i>	33	Lozi
	<i>F</i>	25	Nkoya
	<i>G</i>	22	Tonga
	<i>H</i>	18	Lozi
	<i>I</i>	22	Tonga
<i>FGD#</i>	<i>Letter</i>	<i>Age</i>	<i>Tribe</i>
29	<i>A</i>	30	Tonga
	<i>B</i>	29	Lozi
	<i>C</i>	26	Tonga
	<i>D</i>	16	Senga
	<i>E</i>	18	Tonga
	<i>F</i>	21	Soli
	<i>G</i>	20	Tokaleya
	<i>H</i>	33	Tokaleya
	<i>I</i>	27	Tonga
	<i>J</i>	18	Bemba
<i>FGD#</i>	<i>Letter</i>	<i>Age</i>	<i>Tribe</i>
30	<i>A</i>	20	Bemba
	<i>B</i>	38	Kalunda
	<i>C</i>	22	Bemba
	<i>D</i>	26	Lozi
	<i>E</i>	31	Lozi
	<i>F</i>	25	Bemba
	<i>G</i>	16	Bemba
	<i>H</i>	20	Tokaleya

## Appendix 3: Field guides for FGDs

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*\*Note: This is the interview guide that was used for the ZamCAT Qualitative Study. This study uses a subset of the data stemming from some of these questions.*

### **THEME ONE: General neonatal care and post-delivery practices**

#### **1.1 What is the most common setting for delivery?**

**Probe Questions:**

- a. Who decides where the delivery will take place?
- b. Do some deliveries take place at TBA house?
- c. If at home, where in the home does the delivery take place?
- d. What type of surface does the delivery take place on? (dirt, ground, cement, blanket, straw, plastic sheet, etc)
- e. Where is the newborn placed before and after delivery of the placenta?
- f. When is the decision about where to deliver made?

#### **1.2 Who is typically present at the delivery? What are their roles/responsibilities?**

**Probe Questions:**

- a. Who attends to the newborn after birth?
- b. Is there a different person to tend to the newborn than the person tending to the mother?
- c. Is there one person responsible for cutting the cord? If so, who and why?
- d. Who decides who performs each task?

#### **1.3 What are common practices done to the newborn immediately after birth? Who does each task?**

**Probe Questions:**

- a. Is the newborn dried after delivery? Is the newborn wrapped in a new chitenge or the same one used for drying?
- b. When is the newborn first bathed?
- c. Is anything topical applied to the newborn's skin, hair, head, or umbilical cord? If so, when? What is typically applied?
- d. Who decides what substances are applied?
- e. Are some substances seen as beneficial or harmful?
- f. When is the newborn first fed and with what food or liquid?

#### **1.4 What kind of post-natal care is given to the baby with respect to clinic visits/attendance?**

**Probe Questions:**

- a. Are there traditions surrounding length of time until leaving the home or visitors to the home after a baby is born?
- b. When and why would a newborn baby seek medical care after he/she is born?
- c. Where would one go for medical care? (clinic, TBA, traditional healer, etc)?

- d. Who decides when and where a newborn is taken for medical care?

## **THEME TWO: Umbilical cord care in neonates**

**2.1** What are the community beliefs about the umbilical cord? (its function during pregnancy and after birth)

### **Probe Questions:**

- a. What happens to the umbilical cord during and after birth?
- b. Does the length of the umbilical cord have any special meaning?
- c. After birth, what happens to the cord that has been cut and the placenta? (is it stored, buried, thrown away, burned?)

**2.2** Please describe in detail when and how the umbilical cord is cut.

### **Probe Questions:**

- a. What materials are used to tie the umbilical cord?
- b. When is the umbilical cord cut with respect to placental delivery? Who is responsible for doing this?
- c. What things are used to cut the umbilical cord?
- d. Where do these things come from?
- e. Are the instruments sterilized prior to delivery? How?
- f. Is something done to the instruments (washing, cleaning, heating) before they are used to cut the cord?
- g. How is the position of the cutting/length of the umbilical cord determined?

**2.3** What topical agents or substances are applied to the cord, if any?

### **Probe Questions:**

- a. How often are these agents applied and when?
- b. Are these always used or only in certain circumstances?
- c. Who is responsible for their application?
- d. Who decides what topical agents to apply?
- e. How are the topical agents applied?

**2.4** What is the role of the umbilical cord after it has separated from the baby?

### **Probe Questions:**

- a. Are there traditions regarding disposal, preservation or burial of the umbilical cord once it has separated from the baby?
- b. Does the length of time for the umbilicus to separate from the newborn have significance?
- c. What is the usual length of time from birth to cord separation? Is shorter vs. longer time seen as more favorable?

- d. Are there any treatments applied to the umbilical stump after cord separation? If so, what is applied and for how long?

**2.5** When and why would someone seek medical attention for a newborn's health?

**Probe Questions:**

- a. What signs or symptoms would a baby have that would cause someone to seek help?
- b. Where would one go first for assistance? Are there different sources of care depending on what types of symptoms the baby has?
- c. What makes it difficult to seek help (distance, cost, etc.)?
- d. Who decides when and where to go? What are some of the barriers to seeking care?

**2.6** What does one do if the skin surrounding the baby's umbilical cord was red?

**Probe Questions:**

- a. What would a caregiver do if the skin near the umbilical cord was red?
- b. What would a caregiver do if the umbilical stump had discharge?
- c. Are there any local medications or solutions that would be applied to the umbilical cord in this case?
- d. What would cause you to seek care for problems with the umbilical cord? Where would you take the baby for help?
- e. Are there other cord applications that are used when infection is suspected?

**THEME THREE: Preferred formulation of chlorhexidine acceptability study**

**3.1** What is the acceptability of applying an antiseptic to the umbilical cord within the first 24 hours of life?

**Probe Questions:**

- a. Who is the best candidate to apply the antiseptic?
- b. Who should not apply the antiseptic?
- c. When is application of the antiseptic considered unacceptable? Why?

**3.2** Would chlorhexidine replace traditional cord applications or be viewed as an addition?

**Probe Questions:**

- a. Would it be acceptable to apply chlorhexidine to all newborn's cords rather than only those in whom infection is suspected?
- b. What conditions of the newborn or mother would make the family feel that applying an antiseptic wash to the cord stump would be inappropriate?

**3.3** What is the best method of distributing the chlorhexidine?

**Probe Questions:**

- a. Should it be sold in stores?
- b. Available at clinics?
- c. Part of clean delivery kits?

## Appendix 4: Folk illnesses

**Table 5.** Mothers' description of certain folk illnesses

Folk illnesses	Description
Bulongo-longo; also called tungele-ngele	An umbilical cord with 'black bumps' that look like goats' droppings. If not treated, the baby will have diarrhea, uncontrollable crying and a hot body. A baby with bulongo-longo should not be taken outdoors.
Chamutwe	A bulging or sunken fontanel, often combined with continuous diarrhea, with a growth in the mouth, or with 'chibele'. Can be treated at the traditional healers', who gives the baby 'nsimbo' (tattoos) on the front and back of the head. An example of home treatment is a mixture of a bubble fish head, leaves from 'impwa', and banana peel that is applied on the fontanel.
Kakoto, also called kalukunga	A line, or growth, on the upper palate that causes the baby to be crying. This is treated by rubbing powder from burnt roots of 'imatwelane' (wild okra found in the bush) on the upper palate.
Luhumwe	A shiny, distended abdomen with visible, green veins. Causes the baby to cry continuously, and can even bring about death. Comes from contact with, or proximity to, a pregnant woman or a woman having her menses. Can be prevented or treated if a branch of 'kachechete' (tree) is put on the entrance, or if the pregnant woman ties a cotton from her 'chitenge' (traditional cloth) to the baby's wrist, rubs the baby on her belly, or gets ash and makes a cross on the baby's umbilicus. The pregnant woman can also give the baby a drink of roots of 'ntuntulwa' (tree), 'kapinga' (grass), or 'loma' (soil) mixed with water.
Luwo; also called 'bad air'	Is passed from the mother to the baby through breastfeeding, if the mother is in contact with another mother who has bathed her baby in protective traditional medicine. A baby that gets luwo will stop sucking, and get 'chibele' or 'chikupa', which is milky diarrhea and vomiting, will lose weight, and can even die. A mother should stay indoors to prevent her from getting luwo from another mother. For treating luwo, crush leaves of 'mukunku' (tree) and rub them on the breast of the mother to take away the 'bad air' that would be transmitted to the baby.
Masoto	Continuous crying, diarrhea, weight loss and an undernourished appearance. Comes from contact with, or proximity to, someone who has been unfaithful or promiscuous.