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Measuring Culture Change as an Evaluation Indicator: Applying Cultural Consensus Analysis to Cultural Models of Lymphatic Filariasis in Haiti

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by

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To my parents:

They have always encouraged me to seek out my passion and, upon finding it, stop at nothing to fulfill it.

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ABSTRACT

Introduction: This project explores the links between shared cultural beliefs in the illness domain, specific to lymphatic filariasis, and a support group program implemented in three Haitian towns. The purpose is to introduce an innovative approach to evaluation, the cultural model evaluation technique (CM Evaluation), as well as gain an understanding of the shifting cognitive belief structure around the cultural domain of lymphatic filariasis in the Haitian setting as associated with a support group intervention.

Method: The sample population was comprised of 241 women across three sites in Haiti: Archaie, Cabaret, and La Plaine. Data were collected from longitudinal surveys in 2003, baseline, and 2005, outcome. Descriptive statistics and CM Evaluation were utilized to assess the success of the support group program. CM evaluation is a two-pronged approach, comprised of cultural consensus analysis (CCA) and cultural consonance analysis (CC), that differs from standard evaluation tools in that it measures beliefs and behaviors at the shared community level and is culturally contextualized.

Results: At baseline, most participants were not single (59%), Catholic (49%), literate (57%), relatively poor (71%), and engaged in selling at home or the market (46%). In the reduced model longitudinal CM comparisons, intervention and control groups, the intervention group had the highest rate of consensus (ER=4.71), significant changes in the culturally correct answer key (chi-sq=5.1, df=1, $p<.02$) and cultural competence ($t=3.63$, $p<.0006$). Alternately, controls exhibited no significant differences in the culturally correct answer key (Fisher's Exact two-tailed $p<1.00$) or cultural competence ($t=.62$, $p<.5407$) from baseline to outcome.

Conclusion: Evidence suggests that support group participation does significantly impact the shared illness beliefs surrounding lymphatic filariasis, and that this format is appropriate for resource poor settings lacking clinical support. Also, this study suggests that the CM evaluation approach is an appropriate and effective evaluation indicator for assessing changes in shared belief, cultural consensus analysis, resulting from public health interventions while the behavioral piece, cultural consonance, requires further refinement.

Chapter 1: Statement of the Problem

Introduction

This project explores the links between shared cultural beliefs in the illness domain, specific to lymphatic filariasis, and a support group program implemented in three Haitian towns: Archaie, Cabaret, and La Plaine. The purpose is to introduce an innovative approach to evaluation, the cultural model evaluation technique (CM Evaluation), as well as to gain an understanding of the shifting cognitive belief structure around lymphatic filariasis in the Haitian setting as associated with a support group intervention. CM Evaluation is a two-pronged approach, comprised of cultural consensus analysis (CCA) and cultural consonance analysis (CC), that differs from standard evaluation tools in that it measures beliefs and behaviors at the shared community level and is culturally contextualized.

The Haitian setting and lymphatic filariasis were identified as appropriate areas of investigation as multiple illness belief systems exist in tandem in Haiti. Also, lymphatic filariasis, a parasitic condition, is an infectious disease that causes long-term, irreversible disability. Finally, this illness is prevalent on both the global and local stage.

Global Burden of Disability

As of 2002, it is estimated that 600 million people have a disability globally (WHO, 2005). Eighty percent of these individuals are living in low income countries (WHO, 2006a), and this number, 600 million, is probably underreported as many disabled individuals do not ever intersect with the formal health care system. The numbers of people experiencing disabilities worldwide is staggering, and much work must be done to improve the quality of life, standard of care, and human rights afforded this population.

Global Burden of Lymphatic Filariasis

In this project, Lymphatic Filariasis (LF) is the disabling condition examined. This disease is of great concern globally as the World Health Organization reports that more than a billion people are at risk for the condition worldwide (WHO, 2000). Of these, 120 million people are impacted by LF (WHO, 2000). This number is comprised of individuals who are positive for microfilaria only, positive for adult worms and no microfilaria, and positive for both adult worms and microfilaria (P. Lammie, personal communication, June 19, 2007). Approximately one third, or 40 million, of the people impacted by this disease have clinical manifestations of LF disease in the form of hydrocele (25 million people) or lymphoedema (15 million people) (WHO, 2007b; WHO, 2000). This disease is currently classified as “the second leading cause of permanent and long-term disability in the world” (Ahorlu et al., 1999, 252).

Lymphatic Filariasis

Lymphatic filariasis is a parasitic condition. Specifically, it is caused by nematodes, or roundworms, that live in the lymph system and subcutaneous tissues of afflicted individuals (Parker & Parker, 2002). People contract this condition through mosquito bites (Parker & Parker, 2002; CDC DPD, 2004); an infected individual is bitten by a mosquito, and the larvae from this person are ingested by the mosquito (Parker & Parker, 2002). At this point, the mosquito is now able to spread LF to others who are uninfected.

Once a person has contracted LF, the effects can be devastating. Symptoms include lymphedoema, or fluid retention and swelling, in the arms, breasts, legs, or male genital region (Parker & Parker, 2002; CDC DPD, 2004). Also, infected individuals may experience difficulty in warding off infections (Parker & Parker, 2002; CDC DPD, 2004). Multiple infections in the skin and lymph system can lead to elephantiasis, or hardening of the skin (Parker & Parker, 2002; CDC DPD, 2004). Other possible symptoms include lymphangitis, lymphadenitis, pulmonary tropical eosinophilia syndrome, pruritis, dermatitis, onchocercomata, lymphadenopathies, and ocular lesions (Parker & Parker, 2002). Finally, the filariae can cause internal damage to the kidneys and the lymphatic system (WHO, 2000).

An acute attack of adenolymphangitis is one secondary condition that often results in LF patients. These attacks are identified “with acute onset of fever and with localized pain and warmth, with or without swelling or redness, in the limb and/or genital region" (WHO, 2006c, 377). Multiple acute attacks contribute to worsening lymphedoema symptoms over time.

As LF progresses, the disabling effect on afflicted individuals is profound. In biomedical terms, these effects can take the form of "pain, disfigurement, and sexual disability" (Parker & Parker, 2002, 12; CDC DPD, 2004; Coreil, Mayard, Louis-Charles, & Addiss, 1998; Person et al., 2007). Social consequences of this diagnosis exist as well. These problems include stigma, social isolation, difficulty finding a marriage partner, and difficulty working (Parker & Parker, 2002; CDC DPD, 2004; WHO, 2000 LF Fact Sheet; Coreil et al., 1998; Person et al., 2007). Individuals infected with LF who are unable to find work, or are limited in their capacity to work, can also be impacted economically as a result.

Treatment for people with LF is multi-faceted. First, one should "take a yearly dose of medicine that kills the microscopic worms circulating in your blood" (Parker & Parker, 2002, 13). These medicines are diethylcarbamazine and ivermectin (Parker & Parker, 2002), and are "99% effective in removing microfilariae from the blood for a full year after treatment" (WHO, 2000 LF Fact Sheet). Drug treatment does not eradicate all the adult worms, but the medicine does prevent transmission of the disease from an infected individual to others (Parker & Parker, 2002; CDC DPD, 2004).

In addition to medication, other treatments that help mitigate symptoms of LF exist. These treatments include: washing swollen areas daily with soap and water, using anti-bacterial cream on existing wounds, elevating swollen areas, and exercising swollen arms or legs (Parker & Parker, 2002; CDC DPD, 2004). These efforts, in addition to using protective footwear, can reduce the number of bacterial infections, prevent additional swelling, and improve lymph flow (Parker & Parker, 2002). As infections are minimized through these self-care behaviors, the risk of acute attacks of adenolymphangitis, and, ultimately, worsening lymphedoema, is also reduced.

Response to the Lymphatic Filariasis Problem

As lymphatic filariasis is a serious condition and also a problem that is both preventable and eradicable, prevention is necessary on multiple levels. In 1997, the World Health Organization passed resolution WHA50.29 which called for the elimination of lymphatic filariasis, "one of only six 'potentially eradicable' infectious diseases" (WHO, 1997). Out of this resolution, the global program for the elimination of lymphatic filariasis was formed (GPELF).

GPELF calls for the eradication of lymphatic filariasis by the year 2020 (WHO, 2004), and the program aims to achieve this goal in two ways. These two approaches involve interrupting the transmission of LF and preventing disability (WHO, 2004). In order to achieve the first aim, mass drug administration (MDA) is endorsed (WHO, 2004). This MDA utilizes the same approach as drug treatment for individuals who already have LF. By administering a yearly dose of the appropriate medicines, any microscopic worms present in an individual are eradicated before the onset of LF. When this process is completed several years in a row, the transmission of MDA is effectively curtailed. Annually eliminating the microfilaraie prevents the development of adult worms within an individual who does not currently have LF. In an individual with LF, this treatment aids in preventing transmission to others.

To date, GPELF has successfully implemented MDA programs in 42 countries (WHO, 2007). In 2005 alone, 146 million people worldwide received drug treatment (WHO, 2006b). Of these treated individuals, 1,255,476 were Haitians (WHO, 2006b). Though MDA is much needed, it is not comprehensive enough in and of itself to address all the concerns related to LF. MDA has some impact on the quality of life (QOL) for people who are already living with lymphatic filariasis, but there are other measures that focus more exclusively on QOL dimensions of the LF experience.

With regard to the second goal, preventing increased disability and improving QOL for people already afflicted with lymphatic filariasis, GPELF focuses on community home-based self care and access to surgery for individuals with hydrocele (WHO, 2004). Hydrocele is one presentation that male LF patients can experience. This problem occurs when fluid accumulates in the scrotum of the affected individual (Ahorlu, Dunyo, Asamoah, & Simonsen, 2001). In addition, support groups and education are tertiary prevention measures that are aimed at improving morbidity control associated with an LF diagnosis. The self-care treatments outlined above are also included at this level of prevention.

Addressing GPELF Aims Through Research

In response to the aims of GPELF, interrupting transmission and the prevention of disability (WHO, 2004), recent research has focused on the dimension of support groups, and the impact these groups have on the prevention of disability in the LF-infected population. Particularly relevant to this project is the Leogane project, identified as such because it was conducted in Leogane, Haiti (Coreil, Mayard, & Addiss, 2003). This project worked to address the aims set out by GPELF and provides a solid foundation for the current project to build on.

Coreil et al. (2003) tested a tertiary preventive approach of a support group intervention in the community of Leogane between 1998 and 2002. Tertiary preventive efforts involve "those efforts to help sustain maximal functional and psychological capacity despite the presence of both the disease, such as hypertension, and its outcomes, heart disease, stroke, or kidney failure" (Mann, 1997, 7). In the case of LF and support groups, the focus is on the prevention of secondary conditions resulting from the primary diagnosis and quality of life concerns.

Coreil et al.'s study was conducted in partnership with Hôpital Ste. Croix LF program. This program commenced in the early 1990's and was a pioneer in the western hemisphere, after Brazil, in the development of physical therapy demonstration projects for LF. Currently, Hôpital Ste. Croix has become the Haiti's referral site for LF. The collaborative work aimed "to assess the applicability of the chronic disease support group model within a developing country setting" (Coreil, Mayard, & Addiss, 2002).

Specifically, the project was designed to discern influences on support group participation and to identify the impact of support group membership on individual management of LF (Coreil et al., 2003).

In Coreil et al.'s work (2003), a longitudinal, matched control group design was implemented, and data were analyzed both qualitatively and quantitatively. Bivariate and logistic regression analyses indicated that support group members experienced benefits from membership including increased and more accurate knowledge about LF, more regular involvement with home care practices for affected legs, and improved quality of life. Other principle findings include that the intervention was cost-effective, inspired enthusiasm, and had high rates of participation from individuals involved in the support group (Coreil et al., 2002).

Evaluating the Impact of the Public Health Programs Targeting Lymphatic Filriasis

As research endeavors work to combat the global LF problem, it is important to evaluate the impact of these efforts. Traditional evaluation measures target the following dimensions: "knowledge, attitudes, behaviors and physiological functioning" (McDermott & Sarvela, 1999). MDA programs and their outcomes can be measured directly, physiologically, by assessing whether or not microfilaria rates below 1% are achieved. This level of success is considered the threshold at which transmission of LF is effectively interrupted in a community (WHO, 2006d).

It is a more challenging task to achieve accurate measurements of knowledge, attitudes, and behaviors. In this project, changes in knowledge are of particular interest. Typically, knowledge is framed in terms of "knowledge gained as a result of participating in a health education program" (McDermott & Sarvela, 1999). This content knowledge is regularly assessed with selected-response and constructed-response items. McDermott and Sarvela (1999) explain that "constructed-response items require test takers to develop their own answers to questions" and "selected-response items ask test takers to choose from among an array of possible answers to questions."

These standard approaches were utilized in Coreil et al.'s (2003) study as changes in knowledge, attitudes, and behaviors were targeted. The current project takes evaluation a step further; it aims to broaden the evaluation toolkit by looking at changes in the cultural knowledge of a community, utilizing a grounded approach, in addition to changes in biomedical knowledge, identified a priori, that result from a public health intervention. In order to achieve this goal, a new health indicator is introduced to the evaluation regimen, the cultural model (CM). Cultural models of illness are collective understandings of an illness in a community shared within a social group. More formally, cultural models are "schemas about a domain that are shared by members of a group having shared problems, shared task solutions, and similar life experiences" (Bradway & Barg, 2006). Simply, the aim is to understand the extent to which a support group model intervention can influence shifts in the cultural models, and associated behaviors, embraced by a population around the illness lymphatic filariasis.

The Argument for Cultural Models

Cultural models are "schemas about a domain that are shared by members of a group having shared problems, shared task solutions, and similar life experiences" (Bradway & Barg, 2006); symbolic interactionism, as a theoretical framework, aids in understanding how cultural models are identified. This theory focuses on the acquisition and generation of meaning, and it puts forth that meanings are embedded and constructed in our interactions with other people and institutions (White & Klein, 2002). These meanings are often taken for-granted, and interpretation is important (White & Klein, 2002).

A clear way of thinking about this theory is that "what humans define as real has real consequences" (White & Klein, 2002, 60). Thus, if a sample population believes that deviant social behavior causes LF, then that belief yields real consequences in the form of understanding the condition, how it is contracted, what the symptoms are, how it is treated, and how it is transmitted. For example, individuals with lymphatic filariasis may receive social sanctions as a result of these understandings in the form of stigma or discrimination.

Symbolic interactionism informs an understanding of the importance of cultural models in assessing public health interventions. Cultural models are a product of ecological processes, interactions on multiple levels. These levels of interaction include intrapersonal, interpersonal, social groups, and societal institutional experiences. In each instance, there are judgments made regarding what is important to discuss about a topic, what is accurate information, and what are appropriate courses of action in a specific situation. The support group setting examined here provides a microcosm of these multi-level interactions as participants interact with other participants, facilitators, animators, the program director, the support group as a whole entity, the local community, and other support groups from surrounding areas.

These processes are dynamic in nature, and, as a result, so are the cultural models embraced by a community. As new information or ways of thinking are introduced into a community, or support group, ideas about what is real, important, or accurate information may shift. Norms adjust to incorporate the new information, and the overall cultural model may shift. What the community perceives as real has a real consequence; thus, it is argued that the community will adapt self-care behaviors and attitudes to accommodate this new way of thinking about a condition, in this case LF.

Assessment of Cultural Models

This research aims to understand how cultural models shift within a study population from the baseline to outcome points in a support group intervention; a pre-post design is implemented. A specialized statistical analysis was utilized in conjunction with commonly used statistical approaches to achieve this goal. Specifically, cultural consensus analysis was utilized. Romney (1999, S103) explains that "cultural consensus theory helps describe and measure the extent to which cultural beliefs are shared," and the central idea is to look at "the use of the pattern of agreement or consensus among informants to make inferences in their differential competence in knowledge of the shared information pool constituting culture" (Romney, Weller, & Batchelder, 1986, 316). Thus, examining cultural models is in line with cultural consensus theory.

This type of quantitative analysis, cultural consensus analysis, aims to deal with two problems: "first how can the 'cultural knowledge' of different informants be estimated, and, second, how can the 'correct' answers to specific questions be inferred and with what degree of confidence" (Romney et al, 1986, 88). In this case, the first aim is of interest as the goal is to better understand the "cultural knowledge" in the target population.

The Data for the Current Project

After Coreil et al. (2003) completed the initial support group study, Gladys Mayard, project director, replicated the project in another region of Haiti that had no exposure to LF educational or clinical programs. This application of the model, grant-funded by Presbyterian Church USA through the Women's Birthday Fund, was designed to evaluate the effectiveness of a community-based educational intervention both in an abbreviated format and in the absence of a clinical treatment program. A successful outcome would increase the feasibility of this support group model as a low cost and effective option for rural townships lacking a clinic affiliation.

In practice, the support groups more closely replicated the Leogane study conducted by Coreil et al. (2003) as it was not implemented in an abbreviated format.

However, there were four key differences. The project was conducted in three locales, La Plaine, Archaie, and Cabaret, and came to be known as the Archaie Project. Also, it was implemented without the support of a local medical clinic. In addition, vocational or skills training was not included in the support group format. Finally, the Archaie Project included both control and intervention groups that completed both a baseline and outcome survey.

The three sites identified in the Archaie project were chosen for several reasons. First, a national filariasis survey indicated each of these towns experience a high prevalence of LF disease (Beau de Rochars et al., 2004). In addition, each of these sites had no previous exposure to clinical LF treatment programs (J. Coreil, personal communication, April 10, 2008). Lastly, the national program was interested in expanding a clinical treatment program into Archaie and was interested in the baseline data produced as part of the Archaie project (J. Coreil, personal communication, April 10, 2008).

Preliminary Analyses

Kanda (2004, viii) conducted a preliminary analysis on the baseline data from the Archaie project. In these analyses, Kanda reported on "the issues of morbidity control and QOL [quality of life] among lymphedoema patients due to lymphatic filariasis in three rural Haiti towns." In his work, The Quality of Life among Lymphedema Patients Due to Lymphatic Filariasis in Three Rural Towns in Haiti, Kanda (2004) found that regional differences in the three towns sampled were significant. Particularly, the way in which the illness was understood varied among those respondents who regularly interacted with western ideas of medicine (more urban population) versus those who did not (more rural population) (Kanda, 2004). Areas that were more rural in nature tended towards understanding LF more along traditional cultural and spiritual dimensions and less along the lines of western medical thought (Kanda, 2004). These varying perceptions of LF influenced utilization of medical services, types of services sought after, the likelihood to engage in self-care practices, and levels of self-efficacy related to self-care practices (Kanda, 2004). Though this research yielded multiple findings, the outcome most relevant to the current project includes the regional differences in beliefs surrounding lymphatic filariasis.

Building on the Preliminary Analyses

Coreil et al. (2003) and Kanda (2004) both make important contributions to the study of lymphatic filariasis among Haitian women. This research builds on their work as both the questions and research design vary in important ways. The Leogane Project (Coreil et al., 2003) examines shifts in biomedical knowledge that result from support groups, is linked with hospital clinic services, was conducted in one geographic region (Leogane), and involved longitudinal monitoring and a case control study (matched controls). The Archaie Project employed a quasi-experimental, non-equivalent control group design, and these data differ in several ways from those data collected in Coreil's work. First, the data were collected from multiple locations (Archaie, Cabaret, La Plaine). Also, these support groups were implemented in areas that were not associated with local, specialized LF hospital clinic services. This wholly community-based approach utilizes lay health advisors, and, in educating and empowering community members to be leaders, builds community capacity. Finally, the research questions of interest in this secondary analysis focus on changes in cultural knowledge in contrast to biomedical knowledge.

This work also varies from Kanda's (2004) preliminary analyses of the Archaie Project baseline data. Kanda (2004) focuses on the intersection of quality of life and morbidity control issues in the LF population. He utilized a cross-sectional design, produced static findings, primarily focused on behavioral, physiological, and mental health measures (EuroQol and CES-D). The current project employs a pre-post design, identifies changes over time, and the primary research questions are distinctly different with an emphasis on cultural models, assessed both cognitively and behaviorally through cultural consensus and cultural consonance analyses, respectively.

These research and design differences offer some clear advantages. Firstly, the data from the Archaie Project research allows for increased generalizability of the findings to support groups in Haiti. As it involves multiple sites, it is less likely that overall findings are specific to the circumstances present in one locale and more likely to be representative of the Haitian population as a whole. Also, these findings have broader implications for the feasibility of implementing support groups in a wider range of geographic areas. As these support groups are wholly community-based, the number of sites that can be effectively impacted by the support group model increases as clinic affiliation is not an essential element for success. Finally, a focus on changes in cultural knowledge offers a new way to evaluate the success of a program.

Research Questions and Hypotheses

This research project is exploratory in nature as the use of cultural models as an evaluation measure is a new one. Thus, there are several key research questions that arise with regards to the data set (Table 1). They are as follows:

Table 1. Research Questions and Hypotheses

Research Question	Hypothesis
Does a cultural model exist in the sample population at baseline? * If so, does the CM meet the threshold for cultural consensus at baseline? * If so, what is the strength of the consensus?	It is expected that a shared cultural model of LF will exist at baseline.
Does a cultural model exist in the sample population at outcome? * If so, does the model meet the threshold for cultural consensus at outcome? * If so, what is the strength of the consensus?	It is expected that a shared cultural model of LF will exist at outcome.
Are there significant changes in levels of cultural competency existing at baseline and outcome?	It is expected that levels of cultural competency will be greater at outcome than baseline.
Are there significant differences in the elements included in the CMs from baseline and outcome points? Is the cultural model present at baseline different from the cultural model present at outcome?	* It is expected that the CM at outcome will be significantly different than the CM present at baseline. The outcome CM is expected to include more elements of western biomedical beliefs than the CM at baseline. * It is expected that a bicultural model will exist at outcome incorporating elements of traditional and western biomedical ideas about LF.
Is the strength of cultural consensus for the CM greater at outcome than baseline?	It is expected that the strength of consensus for the CM at outcome will be greater than the strength of consensus for the CM at baseline.
Does a significant link between belief (cultural model) and behavior (cultural consonance) exist in the sample population?	It is expected that greater consensus regarding cultural models will be linked to higher rates of self-care behaviors identified in the cultural model.

These research questions and hypotheses provide a framework for understanding whether or not cultural models related to lymphatic filariasis exist within the Haitian population, the strength of these shared models if they exist, and the degree to which these cognitive frameworks can be impacted by a public health intervention. Beyond the findings in aggregate, the results can also be examined along demographic measures. In this way, it is possible to determine differential changes among subgroups in the population.

As this work is completed, several specific aims will be accomplished. This project allows for an innovative demonstration of a new indicator, CM evaluation, for evaluating health outcomes. Also, levels of cultural consensus for cultural models and cultural consonance related to lymphatic filariasis will be examined. Finally, regardless of the findings in this project, this study introduces methodological advances in the areas of cultural consensus analysis, cultural consonance, and public health program evaluation.

The Relevance of the Data to the Research Questions

In order to address the research questions, hypotheses, and aims, it is important that the data are appropriate. These data are diachronic in nature and are able to capture changes over time. Utilizing both the baseline and outcome data, it is possible to examine the shifts in cultural knowledge central to the project. Also, the data include questions that capture the necessary content information required to examine cultural models. In addition, there is both an intervention and control group sample. Comparisons between the two groups over time are possible. This design also controls for historical biases or a natural evolution of CM's that could be present. Finally, these types of data are difficult to obtain in a resource poor setting. Thus, these data are appropriate for the current work.

The data were collected in three rural towns in Haiti: Archaie, Cabaret, and La Plaine. Data were gathered at baseline and post-intervention points to better understand illness knowledge, self-care practices, symptomology, and acute attacks. The baseline data were collected in September 2003, and the outcome data were obtained between May 2004 and May 2005. A total sample size of 241 participants was attained at baseline, after the exclusion of men and individuals indicating they were less than 18 years of age at baseline, and the sample sizes were 88, 50, and 103, for Archaie, Cabaret, and La Plaine, respectively.

In the outcome data, the design involved an n=100 for both the intervention and control groups, and 87 of these subjects were positively matched with their baseline counterparts: Archaie, 45, La Plaine, 22, and Cabaret, 20. The matching process was necessitated in order to appropriately examine changes in cultural models over time. Of the 100 participants originally in the intervention and control groups, 60 and 27 people, respectively, were positively matched for this portion of the analysis. In the matched intervention group, Archaie, Cabaret, and La Plaine samples were comprised of 39, 20, and 1 participants, respectively. Likewise, the matched control group was distributed across all three sites as Archaie included 6, Cabaret 2, and La Plaine 19 individuals.

In comparison to standard evaluation tools, the CM evaluation tool has important new information to convey. First, the currently accepted evaluation methods typically rely on individual outcome measures, not group culture change. This research addresses this gap and proposes CM evaluation as a measurement technique to assess for this group culture change. The CM evaluation examines shifts in ways of understanding an illness. Cultural models, examined through cultural consensus analysis and cultural consonance have yet to be used in an evaluation context and could provide useful insights as to how different cultural communities respond to public health interventions. Essentially, the CM evaluation allows for a quantitative examination of "cultural change" within a patient community.

Significance and Innovation

The findings of this project provide some insight as to the impact a public health program can have on the health-related cultural models embraced by a community. If significant changes in cultural models and consonance have taken place, the kinds of shifts that occur are of great import to understanding the link between cognitive models and behavioral outcomes. For instance, are cultural models resulting after the community support group intervention more in line with biomedical beliefs?

Cultural models are produced through social interaction. These ways of understanding illness have very real implications in how individuals perceive their condition and seek treatment for it. Insights related to the shift in understanding that result from an intervention yield multiple implications. For instance, if future research shows a link between cultural models that have shifted, as a result of public health programs, and outcomes such as more help-seeking behavior, more acceptance by the community, more adherence to treatment, fewer secondary conditions, and a better quality of life, it is possible that the CM evaluation could contribute in a highly meaningful way. This type of information could also aid in culturally tailoring future interventions for a specific population.

The proposed research offers an innovative approach to evaluating the impact of public health interventions. Traditionally, knowledge and behavior have been assessed to determine the success or failure of a public health program. This project works to introduce a new health indicator, the CM evaluation, to the battery of traditional evaluation measures.

The cultural model approach to evaluation allows for three key differences from traditional evaluation measures. The first of these differences is that the CM evaluation approach is sensitive to cross-cultural differences and can assess the impact of a public health approach on cultural beliefs. Stated differently, the cultural model evaluation can measure the cultural impact of a program.

Secondly, the cultural model evaluation allows for a more nuanced understanding of the success or failure of an intervention. For instance, significant changes may take place within the cultural consensus around LF models. However, if these changes do not immediately manifest into behavioral change, it is possible traditional impact evaluation instruments would miss these changes in its examination of biomedical knowledge and behavior. The project could be deemed a failure, when, in fact, important outcomes have been achieved in the community of interest. Also, although it is necessary to explore further in future research, it is expected that when a program exhibits strong shifts in behavior, biomedical knowledge, and shared cultural models there will also be a higher instance of sustainability for the program goals, or a link to positive outcome evaluation results.

Thirdly, this approach allows for a measure of collective knowledge within a group and makes a distinction between this type of knowledge and that present at the individual level. In traditional public health work, population change is indirectly measured through aggregate individual level data in a sample. This approach involves a group-level indicator and directly measures culture change that occurs in response to public health efforts.

Finally, in addition to providing an added dimension to evaluation, this project is also methodologically important. Examining cultural models as an evaluation tool is a new application for cultural consensus and cultural consonance modeling; this project expands cultural consensus and cultural consonance analyses beyond a purely descriptive method. Also, pre- and post- data have never been examined through the cultural consensus approach.

Chapter 2: Review of the Literature

Rationale

In order to inform this research project appropriately, it is important to review four key theoretical "frames": models of disability, symbolic interactionism, support groups, cultural consensus and consonance analysis. The two major perspectives in disability studies, biomedical and social, and literature addressing cross-cultural disability specifically will be reviewed. Next, the symbolic interactionism framework is discussed as it is the primary theoretical perspective utilized to understand cross-cultural disability. Support groups provide a particular context for examining the constructed reality of cross-cultural disability; thus, additional information on support groups is warranted. Finally, cultural consensus and consonance approaches provide an avenue for examining constructed ideas about LF, a disability, within the support group format, and, accordingly, will be described as part of the theoretical framing of this project.

Global Disability

Disability is clearly a widespread problem as it is estimated that, globally, 600 million people have a disability (National Council on Disability, 2002). In 1988, 9.5% of children between 2 and 9 years of age in Jamaica experienced a disability (Thorburn, 1999). Also, in Haiti, 800,000 of the total population experience a disabling condition; this rate indicates that approximately 1 out of every 10 people in Haiti claims a disability (Bigelow et al., 2004).

Models of Disability

In this research, the socially constructed cultural model of lymphatic filariasis is investigated. The way that disability in general is framed in a society impacts the negotiated social meanings of specific diseases. As cultural definitions of disability intersect with the construction of cultural models, it is important to review the literature on models of disability and the construction of definitions of disability.

Historically, two major models of disability have existed: the medical model and the social model. The United States and the United Kingdom have the richest history of disability research globally, and these countries initially embraced the medical model and social model, respectively. The United States utilized the medical model of disability to frame disability for over a hundred years (Scotch, 2000). In this model, disability is considered an individual problem as a person is labeled with a particular disability label (Jeon, 2001). The etiology of a disability is considered biochemical or biological in nature, and this model draws upon Cartesian duality (Marks, 1999). Thus, disability is considered a "chronic functional incapacity whose consequence was functional limitations assumed to result from physical or mental impairment" (Scotch, 2000, 214). Superstitious beliefs and holistic approaches to health are discounted in the medical model of disability (Marks, 1999). Treatment and action focus on terminating the biological basis or concern causing the disability, and, if these measures are successful, disabling conditions are eradicated (Marks, 1999). For example, in Ziegler's work, epilepsy is considered a medical condition (Ziegler, 1982). In this case, if the biochemical reactions that cause epileptic seizures are stymied with medication, the disability effectively ceases to exist.

In contrast, the focus of the social model of disability shifted from the individual to oppressive environments (Jeon, 2001). Included under this umbrella are social structures, attitudes, and other influences that create disabilities (Marks, 1999). Some other social influences on disability include class, racism, age, gender, and sexuality (Marks, 1999). Additionally, an emphasis exists on minority status and discrimination issues (Scotch, 2000). Within this framework, “an impairment only becomes disabling because of social structures and organization” (Marks, 1999, 77). A disability lies not within an individual but within society and is defined as “the loss or limitation of opportunities to take part in the normal life of the community on an equal level with others due to physical and social barriers” (Barnes, 1994, Cited in Marks, 1999, 80).

Social norms influence how people cope with impairments and effect when and where these impairments become disabling. An example of this concept in action includes the disabling environment created when there is a lack of ramps for wheelchair users (Marks, 1999). In this instance, wheelchair users were able to navigate independently as long as ramps existed; without the ramps the ability to fully function in society without aid was minimized.

The cultural model concept fits nicely within the social model of disability. Negotiated meanings around lymphatic filariasis, the disabling condition investigated in this work, are a reflection of the interplay between multiple levels of influence. These shared cultural ideas about lymphatic filariasis may impact the extent to which people are included or excluded from social participation, affect the development of legislation on disability issues, and ultimately have some bearing on the built environment as well. The degree to which manifestations of these cultural beliefs occur in one direction or other shapes the degree to which a lymphatic filariasis diagnosis is a disabling condition.

Defining Disability

The broad context of how a disability is conceptualized, either the medical or social model, exerts a force on the creation of disability definitions. For instance, in the US, the definition of a disability is as follows: "(A) A physical or mental impairment that substantially limits one or more of the major life activities of such individual; (B) A record of such an impairment; or (C) Being regarded as having such an impairment" (United States Department of Justice, 1992). Though this governmental definition of disability is clear-cut, the concept is a dynamic one.

Since the 1970's, many changes have taken place in this concept; it has moved from a biomedical arena to a sociopolitical one. The first major shift occurred with The Rehabilitation Act of 1973. In this act, "congress recognized that society's accumulated myths and fears about disability and disease are as handicapping as are the physical or mental limitations that flow from an actual impairment" (United States Department of Justice: Disability discrimination law applicable to federal employment), and ultimately provided more protection for disabled Americans against discrimination (Jeon, 2001).

These social and political influences impact the scope of disability definitions; new conditions are added as disability over time. For example, HIV/AIDS became protected under the Americans with Disabilities Act (ADA) as a physical impairment in the US Supreme Court Case Bragdon vs. Abbott in 1997 (Supreme Court of the United States, 1997). As such, categories of disability may vary over time and across cultural groups. These socially created definitions of disability influence how people cope with disabilities, when and where they access the formal healthcare system, and their status as a compliant or non-compliant patient.

In the present research, the aim is to understand lymphatic filariasis not in American terms, as outlined above, but, rather, in terms that are emic to the Haitian people. Cultural models offer an opportunity to understand how the Haitian people create meaning around lymphatic filariasis. Also, it is possible to examine how these meanings may be influenced by exposure to American ideas of disability via the social support group intervention.

Crosscultural Disability

As the concept of disability undergoes continuing debate and change in the United States, indigenous populations also develop their own ideas of disability. These emic definitions do not always adhere to the same cognitive concepts employed in the United States. The following excerpt exemplifies varied ideas about disability:

> In some cultures, it was acknowledged that disability represents such a shame that they have to hide the person, to such an extent that it appears that there are no people with disabilities in that community. In other cultures, everyone in the community has a "soft spot" for persons with disabilities, and the person with a disability is an active participant in family and community life.
> (McCallion, Janicki, & Grant-Griffin, 1997, 350)

Greeson et al. (2001) exemplify this idea through their work with Somali immigrant concepts of disability related to genetic counseling. Through structured interviews, these authors found that Somali concepts of disability followed six themes:

> (1) disability refers to both physical and mental conditions, with mental disability generally thought of first and as more severe; (2) in Somalia, the family cares for disabled family members, treating them as if they were "normal"; (3) there are major cultural differences between Somalia and the United States in how persons with disabilities are treated; (4) caring for a person with a disability is stressful for the family; (5) Allah determines whether or not a child will be disabled, and this cannot be predicted or altered; and (6) family is the primary life focus, and therefore, risk of disability does not affect reproductive decisions (Greeson, Veach, & LeRoy, 2001, 359).

In this study there are clear disconnects between the American and Somali concepts of disability that carry implications for genetic counseling approaches.

How a cultural group perceives and acts on a condition impacts the stigma associated with the diagnosis, social support, and family roles and responsibilities. With regards to public health, cross-cultural studies on disability provide crucial information towards understanding barriers to accessing western-style healthcare and noncompliance with biomedical treatment regimens.

In addition to the Somali study, Anne Fadiman's (1997) work with the Hmong, and Paul Farmer's (1990, 1992) work with Haitians are two of the most well known pieces of cross-cultural work in the area of disability. The following examples provide evidence for the intersection between cross-cultural concepts of disability and public health.

Epilepsy is one example of a disability that can be socially constructed in different ways. From a biomedical viewpoint, "epilepsy is actually a group of disorders –

the common feature is that there is a sudden paroxysmal or episodic discharges by some neurons within a particular section of the brain" (Ziegler, 1982, 435). Epilepsy is constructed as a strictly somatic disability, and this condition should be treated with drugs that will eliminate the attacks (Ziegler, 1982). Additionally, epilepsy is considered both an acute and chronic illness as the condition is not eradicated but only erupts in acute episodes occasionally (Ziegler, 1982).

The previous description is a mainstream understanding from a biomedical perspective. Cross-culturally, however, different constructions exist. Anne Fadiman (1997) worked among the Hmong population in California, and found concepts of disability to be quite different that those of western medicine. She followed the experience of a Hmong family who had an epileptic child.

Among the Hmong, epilepsy is considered an illness, but the cause of the illness and ramifications of the condition are much different than the American understanding. The Hmong believe that epilepsy is a condition contracted when a spirit steals your soul (Fadiman, 1997). Instead of thinking that epilepsy, or the spirit catches you and you fall down, is a detriment to a person, the Hmong frame the experience in alternate terms. Though this population does acknowledge that epilepsy is a serious condition, "the Hmong consider qaug dab peg to be an illness of some distinction… Hmong epileptics often become shamans. Their seizures are thought to be evidence that they have the power to perceive things other people cannot see" (Fadiman, 1997, 21).

Public health concerns such as treatment adherence or self-care are affected by these socially constructed meanings of disability. The way in which a condition is constructed culturally influences the treatments considered appropriate for curing or addressing the health concern. The Lees, Lia's family, did not strictly follow the suggested treatment regimen of anti-convulsants (Fadiman, 1997). They administered partial amounts of the medications, and quit making Lia take them when she was doing well (Fadiman, 1997). Thus, they were noncompliant in western terms. Fadiman suggests that, for the Lees, "the crisis was the treatment, not the epilepsy" (Fadiman, 1997, 53).

Though the treatment suggested by the biomedical system was problematic for the Lees, they augmented the anti-convulsant treatment with traditional medicine. The Lees believed that epilepsy was caused by soul loss, and they proceeded to utilize traditional healing methods to find Lia's soul. The Lees performed sacrifices, bought healing amulets, used massage, and tried changing Lia's name in order to heal their child of epilepsy (Fadiman, 1997). Thus, both choice of treatment and treatment adherence are greatly influenced by the cultural construction of disability and illness.

Another example of cross-cultural work on disability focuses on HIV/AIDS. Paul Farmer's work among Haitians provides another example of how concepts of illness and disability are framed. Haitians suggested two ways in which the disease spreads: by the mode of infectious disease and by the process of sorcery (Farmer, 1990, 21). When HIV/AIDS spread by infectious disease, it was considered "universally fatal" (Farmer, 1990). However, if the disease was sent through sorcery, "magical intervention is possible" (Farmer, 1990). Ultimately, the models proposed in Haiti link "sickness to moral concerns and social relations" (Farmer, 1990, 23). Each case of HIV/AIDS was determined to be a product of sorcery or infectious disease by examining the social relations of the seropositive individual. The cause of each case of HIV impacted the way treatment was received and utilized.

A case of an HIV/AIDS diagnosis as culturally constructed exists with Manno Surpris, a local teacher who first contracted AIDS in Do Kay (Farmer, 1990, 14). Manno was not a native of Do Kay, and he came to the village in the capacity of a teacher (Farmer, 1992, 61-62). Additionally, Manno held several paid positions within the community, and this situation caused resentment among some of the villagers (Farmer, 1992, 62). When Manno contracted AIDS, the community determined the cause of his problem was rooted in sorcery (Farmer, 1992, 67). If a man had enemies, then, at times, individuals would send a sickness to them (Farmer, 1992); this situation presumably occurred to Manno. Manno did adhere to the treatment regimens he was given by the doctor, but because his condition was constructed as an act of sorcery, he also sought the help of a traditional healer, or houngan (Farmer, 1990).

Currently, there are large bodies of research in the field of disability studies, but cross-cultural and transdisciplinary research on disability is still sparse in the literature. The proposed research suggests that disconnects in cognitive categories of disability exist between the Haitian population and mainstream biomedical categories, and that these disconnects have implications for help-seeking, treatment adherence, and myriad health care decision-making behaviors.

Symbolic Interactionism

Symbolic interactionism remains the primary theoretical approach used towards constructing and understanding cross-cultural beliefs about disability. Thus, this theoretical framework will guide the research design. This theory focuses on the acquisition and generation of meaning, and it puts forth that meanings are embedded and constructed in our interactions with other people and institutions (White & Klein, 2002; Ritzer, 2000; Charon, 2007, Forte, 2001). These meanings are often taken for-granted, and interpretation is important (White & Klein, 2002; Ritzer, 2000; Charon, 2007; Forte, 2001).

A clear way of thinking about this theory is that "what humans define as real has real consequences" (White & Klein, 2002, 60). Thus, if a sample population believes that deviant social behavior causes LF, then that belief yields real consequences in the form of understanding the condition, how it is contracted, what the symptoms are, how it is treated, and how it is transmitted. For example, individuals with lymphatic filariasis may receive social sanctions as a result of these understandings in the form of stigma or discrimination.

Symbolic interactionism is comprised of four assumptions, four concepts, and multiple propositions. In this context, an assumption is defined as "a statement about the phenomenon central to the discipline that represents the beliefs the theorist holds true" (J. Coreil, personal communication, class notes, 2003). Concepts are not things, but, rather, stand "for the abstract class of things, ideas, or entities" (White & Klein, 2002, 10).

Concepts help to organize experience, are generally stable, and are often measurable (White & Klein, 2002). Finally, propositions "exist when a concept is linked in a meaningful way by a relation to another concept" (White & Klein, 2002, 11). A theory must include a minimum of two propositions, and they often include more (White & Klein, 2002).

The assumptions included within the symbolic interactionism framework are as follows: human behavior must be understood by the meanings of the actor, actors define the meaning of context and situation, individuals have minds, and society precedes the individual (White & Klein, 2002; Forte, 2001; Ritzer, 2000). The first assumption, human behavior must be understood by the meanings of the actor, addresses the fact that it is important to understand what meaning an actor attaches to each behavior they undertake. If this assumption is not held, then each action taken by an actor can be interpreted myriad ways. Thus, it becomes impossible to interpret the meaning of an actor's behavior without this assumption.

The second assumption present within the symbolic interactionism perspective is actors define the meaning of context and situation. This assumption explains that "how we define the situation in which we find ourselves explains what problems we define and what actions and solutions we should undertake" (White & Klein, 2002, 64). White & Klein (2002) use the example that a drunken person may believe that a herd of pink elephants is coming towards him/her, and this person reacts as though elephants exist around him/her even in the absence of their true existence. The emphasis is on how an individual perceives a situation, ascribes meaning to it, and undertakes action in response to stimuli.

The third of the four assumptions associated with this theory is that individuals have minds (White & Klein, 2002; Ritzer, 2000; Charon, 2007). Symbolic interactionism assumes that "the human mind acquires, integrates, and processes information" (White & Klein, 2002, 64; Ritzer, 2000). As the mind processes information, the mind incorporates it into the identity role of both an actor and an object (White & Klein, 2002; Ritzer, 2000; Forte, 2001).

Finally, the last assumption included within the symbolic interactionism perspective is that society precedes the individual (White & Klein, 2002; Ritzer, 2000). The idea is that since "we cannot conceptualize without symbols, and symbols are shared, society in rudimentary form must precede the individual mind and self" (White & Klein, 2002, 64). In order to make sense of the world and share a view between individuals, there must be a basic level of common understandings as to what things mean. This last assumption has lead to the focus on socialization within symbolic interactionism (White & Klein, 2002). How people are socialized impacts how they acquire, integrate, and process information; in turn, this process directly influences interpretation.

In addition to the assumptions within the symbolic interactionism framework, four core concepts exist: self and mind, socialization, role, and definition of the situation. White and Klein (2002, 65) describe the self as "a symbolic representation of that which did an act (I) and that which was acted on (me)." In this context, the self can be viewed in two ways; in the first "I" status, the concept of self is related to how an individual perceives themselves as a subject. The second perspective focuses more on an objectified perception of self; how does the "other" perceive of the self, or "me." Thus, the self is "constructed by our consciousness from the two perspectives of I and me" (White & Klein, 2002, 65).

The second concept within this framework is socialization. Socialization is defined as "the process by which we acquire the symbols, beliefs, and attitudes of our culture" (White & Klein, 2002, 66). This concept includes two stages for acquisition of meanings: the play stage and the game stage. White and Klein (2002, 66) describe the play stage as learning to take the role of other, and the game stage as being able "to incorporate his or her self in an organized activity through the generalized other."

The third concept identified is role. Role is defined as "the given individual's ability to take the roles of, or 'put himself in the place of,' other individuals implicated with him in given social situations" (Mead, as quoted in White & Klein, 2002, 66). An individual takes on roles, and, in doing so, "put[s] oneself in the place of the actor, and it includes the rules that the actor is expected to follow."

This concept of the role is further explained along three dimensions: expectations, clarity, and role strain (White & Klein, 2002). Expectations refer to the things an individual is supposed to do when they are taking on a particular role, or the rules of the role (White & Klein, 2002). Clarity refers to the extent to which the expectations of a role are clear (White & Klein, 2002). Finally, role strain addresses situations "where the actor does not have sufficient resources to enact a role or roles" (White & Klein, 2002, 67).

The final concept in symbolic interactionism is definition of the situation. This concept embraces the idea that "what we define as real will have real consequences" (White & Klein, 2002, 67). This focus draws attention to the thought that perception influences behavior (White & Klein, 2002). Finally, these perceptions are created through interaction between an individual and the environment, and are not solely internal and individual (White & Klein, 2002).

In addition to the assumptions and concepts critical to this theoretical approach, symbolic interactionism encompasses multiple propositions as well. Propositions are often used interchangeably with hypothesis to mean any idea or hunch that is presented in the form of a scientific statement (Marriner-Tomey, 1998). Several examples of propositions that can come out of this theory are outlined below in table form (Table 2):

Table 2. Examples of Propositions in Symbolic Interactionism

Proposition	Explanation
The quality of ego's role enactment in a relationship positively affects ego's satisfaction with the relationship.	A person feels better about a relationship when they think they are doing a good job of enacting their role in a relationship.
The greater the perceived clarity of role expectations, the higher the quality of role enactment.	The clearer the expectations of the role, the easier it is to meet those expectations.
The more individuals perceive consensus in the expectation about a role they occupy, the less their role strain.	The more consensus there is on role expectation, the more a person knows the rules of their role, the less role strain a person experiences.
The greater the diversification of a person's roles, the less consensus the person will perceive in the expectations about those roles.	The more roles a person has, the more expectations they must meet, and the more likely that multiple expectations may become ambiguous or contradictory.
The greater the perceived role strain that results from performing a role, the less the ease in making a transition into the role and the greater the ease in making a transition out of the role.	The more stress a role produces, the more difficult it is to adjust to that role.

(White and Klein, 2002, 68-70)

In addition to the nuts and bolts of symbolic interactionism, this theory includes four major variations: structural approach, interactional approach, microinteractional approach, and phenomenology of the family approach (White & Klein, 2002). The first variation, the structural approach, is comprised of three basic notions: position, norm, and role (White & Klein, 2002). In this context, an individual can have more than one position, and these positions are "embedded in a social network of interrelated positions" (White & Klein, 2002, 72). Each one "has associated norms or expectations" (White & Klein, 2002, 72). Essentially, roles are a key focus in this variation, and the central metaphor is the idea of actors on a stage (White & Klein, 2002). The idea is that these actors are poured into pre-existing, inflexible molds, and the only variation lies in how well the actor performs his/her role. In this variation, the Iowa School of thought, oversocialization takes away freedom to adapt to or change the environment (White & Klein, 2002; Ritzer, 2000; Forte, 2001). Thus, the major criticism of this approach is that it is deterministic and views social change as very slow (White & Klein, 2002).

An alternate variation of symbolic interactionism is the interactional approach. This version of symbolic interactionism focuses on patterns that are developed through interaction (White & Klein, 2002; Ritzer, 2000). Culture and society are created through the interaction of individuals, and there is a clear focus on creativity and problem-solving (White & Klein, 2002) As such, the interactional approach is less deterministic as it recognizes that social structure and culture provide a broad outline for behavior; there are no specific rules (White & Klein, 2002; Ritzer, 2000). Due to its fluid and unstructured nature, however, there is one major criticism of this variation. This criticism is that interactionists minimize the role of structure too much and assume too much power for individuals to create their own roles (White & Klein, 2002, pg).

An extension of the interactional approach, and the third variation of this theoretical perspective, is the microinteractional approach. This variant, the Chicago School of thought, focuses on the individual and the self, and the central metaphor is a dramaturgical approach (White & Klein, 2002; Forte, 2001). There is an emphasis on complete fluidity in roles; the self shifts within interactional context and conceptualization of the context and its associated rules (White & Klein, 2002). This approach, though, does not make any attempt to extend their explanations to the macroscopic level; this problem is the major criticism of this variation (White & Klein, 2002).

Finally, phenomenology of the family is the final variation. This perspective focuses on the "taken-for-granted everyday life world and the ways in which these taken-for-granted meanings are created and maintained" (White & Klein, 2002, 76). Phenomenology of the family aims "to identify the assumptions and typifications that enter into the construction of the everyday life". Each individual's report of subjective experience is influenced by intersubjective components; these components are shared with and communicable to others (White & Klein, 2002). These intersubjective meanings are "the foundation of the social world", "shared in a set of actors", "compose the commonly held and understood meanings of our everyday life", and "represent frames of reference" (White & Klein, 2002, 76).

These four variations describe different ways of thinking about symbolic interactionism, and all intersect with a major debate within this framework. The debate discusses two viewpoints regarding interactions between people: (1) interactions are "a product of the expectations residing in the social structure", (2) interactions are "created and negotiated by the actors in each interaction" (White & Klein, 2002, 72). Each variation falls somewhere in the continuum of these two extreme approaches. However, in the current research, neither extreme is appropriate. The two positions, as expressed through the variants of symbolic interactionism, are both relevant on some level to the current research effort.

Symbolic interactionism, and specifically the interactional approach, is relevant to the current endeavor as shared cultural models developed in a support group setting are investigated. Kaye (1997, 19) proposes that "the support group may be conceptualized as a social microcosm in that it is a small, complete social world." Within this microcosm, illness meanings in support groups, in this case beliefs about LF, are negotiated on multiple ecological levels including intrapersonal and interpersonal (Kramer & Nash, 1995; Kurtz, 1997). Forte (2001, 31) explains, "the person is both a producer of society, a free agent who influences social processes, and a product of society, a member caught in the necessities of the social-historical drama." Support group participants both shape the group dynamic and are shaped by it. As reality only exists through the lense of human interpretation (Forte, 2001), beliefs about causes of and treatment for LF do not exist absent from human interaction.

Support Groups

Support groups are defined as “a group of people, sometimes led by a therapist, who provide each other moral support, information, and advice on problems relating to some shared characteristic or experience” (Support Group, 2007). Schopler & Galinsky (1995, 4) suggest that support groups exist in the middle of the continuum between self-help groups and treatment groups and are “member-centered; leadership is provided by professionals, volunteers, or, at times, by members.” They are generally small groups that, as described by Kurtz (1997 4), “meet for the purpose of giving emotional support and information to persons with a common problem.” These groups often involve professional facilitators and affiliation with broader issue- oriented groups (Kurtz, 1997; Schopler & Galinsky, 1995). Groups of this nature do not generally charge fees and are not highly structured (Kurtz, 1997).

Several key elements are present in support groups. Kaye (1997, 21; Schopler & Galinsky, 1995) suggests there are five processes present: “giving support, imparting information, conveying a sense of belonging, communicating experiential knowledge, and teaching coping methods.” These processes aid in attaining goals that are typically found in support groups such as “emotional release, validation of concerns, reduction of social isolation, information, improved coping, decreased stress, problem-solving, and, at times, advocacy” (Schopler and Galinsky, 1995, 6; Kaye, 1997).

Participants in support groups are often deviant in some particular way; this deviance may involve a “problem central to daily living or with a set of life circumstances that represents a departure from the norm" (Kaye, 1997). Kaye (1997,18) suggests that "the individual typically views the problem or life circumstance as one that will endure over time, believes it to be socially or psychologically isolating, and has had little or no preparation or forewarning in advance of its onset." In the case of lymphatic filariasis, the illness is the deviant condition that draws individuals to take on support group membership.

Support groups are generally formed through three stages of development (Hermann, 2005). Coreil & Mayard (2006, 129) nicely summarize the three stages of support group development as defined by the American Cancer Society (Hermann, 2005): "phase one, where members find commonalities, seek out information, and explore alternative ways of alleviating problems; phase two, where members provide mutual support, share experiences, offer help, redefine the illness experience, and uncover new ways of coping; and phase three, in which the group may be brought to a close (if goals have been met) or become a long-term project (whether goals have been met or not)."

As a support group moves through these developmental stages, the group provides a microcosm where the tenets of symbolic interactionism play out. Within these groups, participants are interacting at interpersonal, community, and societal levels. At each level of interaction, meanings are shaped and defined. Coreil & Mayard's (2006) work in Haiti, as well as the Archaie project, provides insights on the indigenization of illness support groups as they move through these three phases. In this work, indigenization is defined as "the process of transformation that often occurs when social institutions developed in one social context are transplanted into a totally different social context" (Coreil & Mayard, 2006, 129). The transformation described exemplifies the symbolic interactionism perspective in action.

Interpersonal interactions within the support group resulted in adaptation of the general support group model. The format and content of each meeting was adjusted to increase effectiveness in the local context; meetings were infused with religious overtones including prayers and hymns (Coreil & Mayard, 2006). Also, the primary content of interest did not include discussion of personal illness experience (Coreil & Mayard, 2006). Rather, the women were eager to gain health information and acquire new vocational skills (Coreil & Mayard, 2006). In the Archaie project, the support groups were tailored to the following agenda (Table 3):

Table 3. Support Group Meeting Agenda

Support Group Meeting Agenda
Pray
Sing
News about health for each member of the group
Teach the assigned subject in the book (educational manual related to lymphatic filariasis and self-care practices)
Discussion about the topic for that meeting
Exercise and washing the leg
Share experiences about the disease and social life
Planning for the next meeting
Refreshments
Amusement – gossip, talking
Singing
Pray
Close and Farewell

(G. Mayard, personal communication, June, 2007)

Again elements of religion and educational information were of primary importance. These adaptations closely relate to hallmarks of phase one development. The way that the group tailored the support group on the interpersonal level ties in nicely with the goals of phase one, finding commonalities (religious belief) and seeking out information (health information and skills).

At the community level, phase two development, redefining the illness experience, is evidenced. First, support groups are impacted by the group interaction; in both the Archaie project and the Leogane project, ideas about what lymphatic filariasis is, how it is caused, how to treat LF, and other illness beliefs are influenced through discussion and the educational modules discussed. In addition, both support group initiatives interacted with the community at large through an end of year party and increased awareness of lymphatic filariasis (Coreil & Mayard, 2006). The support groups achieved these goals at the organizational level and general local community level, respectively.

The last phase of support group development parallels with interactions at the societal level. In the Leogane support group, the original program period was intended to last two years. At the end of this program, participants were enthusiastic about continuing the support group as a long term project. Towards this end, group members broadened the scope of the program to focus on general health and development initiatives in Haiti beyond lymphatic filariasis exclusively (Coreil & Mayard, 2006). Also, all women in the Leogane community were invited to participate (Coreil & Mayard, 2006). Through increased membership and partnerships with hospital administrators, the original support groups became subsumed under FADES (Femmes en Action Pour le Developpment et la Sante/Women in Action for Development and Health) (Coreil & Mayard, 2006).

Support groups provide an appropriate conduit for the examination of the symbolic interactionism processes. Coreil & Mayard's (2006) work as well as the current Archaie project provide an example of how interactions at multiple levels can shape the meaning of what a support group is in Haiti as well as what goals can be accomplished through this format. The current project aims to use this perspective to examine phase two development in support groups particularly. The primary focus will be on how the illness experience of lymphatic filariasis is redefined as a result of support group participation. As the illness experience is redefined, explanatory and cultural models of illness shift.

Explanatory and Cultural Models

One way of understanding illness beliefs is to look for the meaning of a disease experience. Symbolic interactionism allows that these illness beliefs may be created and ascribed meaning through structural norms, individual interactions, and the assumptions of everyday life. As meaning organizes social behavior (Fulton, Madden, & Minichello, 1996, 1355), the proposal to find meaning in the lymphatic filariasis (LF) experience is appropriate.

There are several key contributors to the study of meaning and social behavior related to illness, and Kleinman is among these individuals. Kleinman works to achieve an understanding of illness experiences and social meanings related to those experiences. In his work, Kleinman (1988) distinguishes between illness and disease.

Illness and disease are two terms that play a role in explanatory models, or an individual's understanding of a condition. Disease involves the biomedical understanding of the condition; personal, social and cultural concepts related to a condition are excluded

(Kleinman, 1988, 5). In Kleinman's work, a disease, in biomedicine, is defined in "the narrow biological terms of the biomedical model, this means that disease is reconfigured only as an alteration in biological structure or functioning" (Kleinman, 1988, 5). The pathophysiology of the body and the concept of biological reductionism are key in the western biomedical healthcare delivery system (Kleinman, 1988, 6). The body is treated as a machine; if there is something wrong with the machine, it is pinpointed, diagnosed, and then fixed, cure. The biomedical construct of disease is objective in nature, and only captures a portion of the entire experience a patient has when they have a medical condition.

The concept of illness is different from disease, and it complements the gaps present in the biomedical definition of disease. Illness, according to Kleinman, involves the symptoms, suffering, and response of the sick individual to a diagnosis (1988, 3). Illness focuses on "how the sick person and the members of the family or wider social network perceive, live with, and respond to symptoms and disability "(Kleinman 1988, 3). Sociocultural and psychological factors are key in understanding illness (Good, 1994). In contrast to the disease condition, the illness condition is subjective.

Kleinman suggests one way to understand illness and disease in a community is to extract meaning from a social occurrence via the explanatory models used by a society. An explanatory model includes the "notions that patients, families, and practitioners have about a specific illness episode" (1988, 121). A more technical definition follows:

> A set of beliefs about the etiology of an illness, onset of symptoms, the pathophysiology, the course of the sickness, and the appropriate treatment that is used by the individual to interpret symptoms and make sense of the illness

> experience. (H. Mathews, personal communication, class notes, 2000; Kleinman, 1988, 121)

Influences including cultural beliefs, popular culture, family and community traditions, biomedicine, and idiosyncratic experiences shape the development of these explanatory models (Kleinman, 1978, 253).

Kleinman uses the concept of a headache as an example of an explanatory model (Kleinman, 1988). The symptoms that define a headache are culturally defined (Kleinman, 1988). For instance, when throbbing in the temples occurs, is that a headache or a migraine? Understandings about the difference in the symptoms and experience indicate which definition is more appropriate. Once the condition is diagnosed, then culturally defined treatment options are available. The traditions, beliefs, and prior experience associated with the condition shape which treatment option is deemed appropriate. The social categorizations of symptoms, causes, and treatment options for the condition are part of the explanatory model.

In order to extract an individual's explanatory model of an illness, it is necessary to obtain several pieces of information. Generally, the following types of questions are raised:

1. What do you think is wrong with you-- what is the problem (sickness) that you are experiencing?
2. What do you think has caused this problem (sickness)?
3. Why do you think it started when it did?
4. What do you think your sickness does to you? How does it work?
5. How severe is your sickness? Will it have a short or long course and

why?

6. What kind of treatment do you think you should receive?
7. What are the most important results you hope to receive from this treatment?

   Can your sickness be cured? If so, how will you know when the cure has taken place?
8. Have you done anything else about your sickness-- have you taken any home remedies, seen any other kinds of healers, etc.? If yes, how are these things working and are you satisfied with them/why or why not?
9. What are the chief problems your sickness has caused for you?
10. What do you fear most about your sickness?
11. What resources do you have available (questions about social support, income, access to community programs) to help you cope with this illness? Will/do you use them -- why or why not?

(Kleinman, 1988, 121; H. Mathews, personal communication, class notes 2000)

Once the required data have been collected, the information can be synthesized into an individual's explanatory model.

Cultural models are a natural extension of the explanatory model concept. Cultural models are "schemas about a domain that are shared by members of a group having shared problems, shared task solutions, and similar life experiences" (Bradway & Barg, 2006). Where explanatory models are episodic and rooted in the individual's illness experience and help-seeking behavior, cultural models are broader in context. In the cultural model, the same dimensions of an illness are of interest, but they are expressed, for example, as more general beliefs about what types of things cause an illness and what types of treatment are appropriate. In the case of the explanatory model personal experience is explored, and, in the case of the cultural model, group level beliefs are investigated.

Though there is a distinction between explanatory and cultural models, the literature, to date, has often used these terms interchangeably. The following discussion regarding explanatory models and cultural models reflects this circumstance.

Currently, no literature exists that summarizes general Haitian illness and disease concepts. However, disease specific research has been undertaken and several themes surrounding illness consistently emerge. Two major categories exist: natural and supernatural (Miller, 2000). Within the natural category, beliefs surrounding disease causation include the blood paradigm, TB paradigm, microbe paradigm, and humoral (hot/cold) imbalances. Supernatural causes of illness are rooted in problematic social relationships between the afflicted and either another person or a displeased spirit/ancestor (Miller, 2000). Miller (2000, 207) explains that, in Haiti, the body is considered "permeable to the actions, for good or for ill, of outside forces."

Farmer's (1990) work with cultural models of HIV/AIDS in Haiti exemplifies these themes. In his work, Farmer (1990) looked at how cultural models emerge and change. Farmer suggests that as HIV/AIDS was introduced into Haitian culture, the society at large produced cultural explanations for how the disease arrived and spread.

The Haitians proposed three paradigms to explain the presence of HIV: the blood paradigm, the TB paradigm, and the microbe paradigm (1990, 23). The blood paradigm suggests that there is a link between social atmosphere and the descriptive characteristics of an individual's blood (Farmer, 1990). It was not considered extraordinary if a person surrounded by social controversy became ill due to "bad blood."

The tuberculosis paradigm presented as the symptoms of HIV/AIDS were similar to those observed in tuberculosis cases. The condition is "not only disfiguring but also chronic, sapping the body's strength over months or years" (Farmer, 1990). In addition, a number of individuals diagnosed with HIV/AIDS in Haiti also present with a tuberculosis diagnosis (Farmer, 1990).

The microbe paradigm falls in line with biomedicine; in this paradigm, HIV/AIDS is caused by a microbial source. This belief "has the official blessing of the local representatives of cosmopolitan medicine" (Farmer, 1990). These paradigms suggest ways in which HIV was caused.

Alternatively, the same community suggested two ways in which the disease spread: by the mode of infectious disease and by the process of sorcery (Farmer, 1990, 21). When HIV/AIDS spread by infectious disease, it was considered "universally fatal" (Farmer, 1990). However, if the disease was sent through sorcery, "magical intervention is possible" (Farmer, 1990). Ultimately, the models proposed in Haiti link "sickness to moral concerns and social relations" (Farmer, 1990, 23). Each case of HIV/AIDS was determined to be a product of sorcery or infectious disease by examining the social relations of the seropositive individual.

In the case of lymphatic filariasis, beliefs about causation in Haiti draw on these general ideas of illness and disease. Additionally, multiple studies have explored explanatory models of lymphatic filariasis worldwide and similar disease concepts arise. Illness beliefs regarding cause and treatment of lymphatic filariasis in Haiti, India, Dominican Republic, Ghana, and Thailand are reviewed (Coreil et al., 1998, Ramaiah, Vijay Kumar, & Ramu, 1996; Person et al., 2007; Ahorlu et al., 1999; Rauyajin, Kamthornwachara, & Yablo, 1995; Bandyopadhyay, 1996; Eberhard, Walker, Addiss, & Lammie, 1996; Morfit, 1998; Babu, Hazra, Chhotray, & Satyanarayana, 2004; Coreil et al., 2003; Gyapong, Gyapong, Adjei, Vlassoff, & Weiss, 1996).

Across all of these studies, only a small percentage of the sample population identified mosquitoes as the vector for LF (microbe or biomedical paradigm). The popular causes mentioned were rooted in traditional belief systems, and the treatment options provided leaned primarily towards traditional medicine. Trained health care professionals and drug treatment regimens (MDA specifically) retain a minor presence in the treatment spectrum. Traditional beliefs highlighted in several studies are presented in the following tables (Table 4, 5):

Table 4. Causes of Lymphatic Filariasis: Traditional Beliefs

Cause	**Country**				
	Haiti	India	Dominican Republic	Ghana	Thailand
<u>Humoral</u>					
Heat	X				X
Excess Coldness in the Body	X				
<u>Blood</u>					
Accumulation of Bad Fluid		X			
Circulation Problems			X		X
Bad Blood				X	X
<u>Environmental</u>					
Walking Barefoot in Dirt	X				
Walking Barefoot in Water	X				
Drinking Water from local ponds/Contaminated Water		X		X	X
Insect/Spider Bites	X		X		
Air Circulation					X
Contact with fevered individual					X
Worms	X				
Climate		X			
<u>Supernatural</u>					
Magic Powder	X		X	X	
Witchcraft			X	X	
Curses	X			X	
Bad Spirits		X		X	X
Magic Charms				X	
Supernatural Forces					X
Magic	X				
Fate					X
Dwarves				X	
Intense Moral Conflict	X				
<u>Occupational</u>					
Weaving Occupation		X			
Excessive Physical Labor	X	X			X
Standing too long at a disagreeable job			X		
<u>Heredity</u>					
Heredity	X	X	X	X	X
<u>Health, Illness, Injury</u>					
Injury to the Foot	X	X	X	X	
Poor Nutrition or Dietary Habits	X	X		X	
Pregnancy		X	X		
Fever				X	
<u>Other</u>					
Cycling too much		X			
Sleeping in the same house with an infected man, and the man gets up and leaves while his partners still sleeps	X				

(Coreil et al., 1998; Ramaiah et al., 1996; Person et al., 2007; Ahorlu et al., 1999; Rauyajin et al., 1995; Bandyopadhyay, 1996; Eberhard et al., 1996; Kanda, 2004; Morfit, 1998; Babu et al., 2004; Coreil et al., 2003; Gyapong et al., 1996)

Table 5. Treatments for Lymphatic Filariasis: Traditional Beliefs

Treatment	**Country**				
	Haiti	India	Dominican Republic	Ghana	Thailand
<u>Herbal</u>					
Herbal Remedies: Potions (Ex: manioc leaf, custard apple, oak)	X		X	X	X
Herbal Remedies: Wraps/Poultices (Ex: ashes, animal feces, castor oil, cornmeal)	X	X	X	X	X
Soaking in Salt Water	X				
Powders (Ex: fonsa)	X				
<u>Supernatural/Religious</u>					
Prayers	X		X		
Spiritual Consultation				X	
Magical Ritual					X
Incantation			X		
<u>Traditional</u>					
Leeches/Bloodletting/Scarification	X			X	
Scrubbing the Surface of Leg with Red Ants					X
Jolting or Hitting the Affected Area					
Massage	X	X			
<u>Self-Medication</u>					
Pharmaceuticals (Ex: flanax, tetrazan, penicillin, oral painkillers, chloroquine, paracetamol)	X		X	X	X
Dietary Control		X			X
Injections	X		X		
Creams	X		X	X	
Enema				X	
<u>Surgery</u>					
Amputation/Surgery	X	X		X	

(Coreil et al., 1998; Ramaiah et al., 1996; Person et al., 2007; Ahorlu et al., 1999; Rauyajin et al., 1995; Bandyopadhyay, 1996; Eberhard et al., 1996; Kanda, 2004; Morfit, 1998; Babu et al., 2004; Coreil et al., 2003; Gyapong et al, 1996)

Explanatory and cultural models provide useful ideas about the social and cultural meaning of a condition. For instance, individuals may only contract an illness as a result of some socially deviant action. Alternatively, the cause for the onset of an illness may be understood in strictly biomedical terms: the illness was caused by bacteria and was not brought on by deviant behavior. Of the multiple dimensions present in the explanatory model framework, it is arguable that the two most important dimensions are cause and treatment. Varied understandings of causation are important to the development of the patient's help-seeking and compliance patterns. Several studies have made this link between perceived cause of a condition and subsequent help-seeking behavior and treatment choices (Coreil, 1983; Rauyajin et al., 1995; Ahorlu et al., 1999; Ramaiah et al., 1996).

The strength of cultural models is that they allow for the influence of social and cultural variables on an illness to be understood and handled. The social understandings that are incorporated into cultural models, respectively, are drawn from different sources of knowledge. These sources are rooted in shared cultural beliefs and include shared popular knowledge from the media, ethnomedical or alternative healing traditions, biomedical understandings, and personal or family experiences. Cultural models explored here provide insight into the culturally shared beliefs about a particular disease and into the processes by which the participants incorporate these understandings into their own illness experience.

With the insights of the symbolic interactionism perspective, it is possible to see how cultural models could become a useful tool in evaluating the success of public health interventions. Cultural models are one manifestation of social interaction. These ways of understanding illness have very real implications in how individuals perceive their condition and seek treatment for it. Insights related to the shift in understanding that resulted from an intervention yield multiple implications. For instance, an intervention shown to influence changes in thinking about illness that lead to more help-seeking behavior, more acceptance by the community, more adherence to treatment, fewer secondary conditions, and a better quality of life could be a very powerful indicator indeed. This information could also provide ideas towards culturally tailoring future interventions for a specific population.

Cultural Consensus and Cultural Consonance

In order to evaluate how explanatory and cultural models of LF have shifted from baseline to outcome points, a specialized statistical analysis will be utilized in conjunction with commonly used statistical approaches. Specifically, cultural consensus analysis will be utilized. Romney (1999, S103) explains that "cultural consensus theory helps describe and measure the extent to which cultural beliefs are shared," and the central idea is to look at "the use of the pattern of agreement or consensus among informants to make inferences in their differential competence in knowledge of the shared information pool constituting culture" (Romney et al., 1986, 316). Thus, examining cultural models is in line with cultural consensus theory.

This type of quantitative analysis, cultural consensus analysis, aims to deal with two problems: “first how can the ‘cultural knowledge’ of different informants be estimated, and, second, how can the ‘correct’ answers to specific questions be inferred and with what degree of confidence” (Romney et al, 1986, 88). In this case, the first aim is of interest as the goal is to better understand the “cultural knowledge” in the target community. One goal of this research is to understand if there are shifts in the consensus of the sample population as to what cultural models are primary.

In order to think about cultural consensus within this project, it is likened to factor analysis. Factor analysis takes sets of survey items and looks for those items that hang together on certain factors. These factors represent more macro level latent constructs, and the items that hang on a factor provide an indirect measure of the underlying latent construct. Similarly, cultural consensus analysis examines items related to cultural knowledge and identifies the informants that hang together in their responses to the items of interest. These informants who respond to the items similarly are assumed to draw upon the same underlying cultural domain. The key difference in these approaches is that factor analysis identifies survey items that are related, and cultural consensus analysis identifies informants whose response patterns are related. The items that will be examined through cultural consensus analysis in this research are drawn from the baseline and outcome questionnaires administered in the Evaluation of Support Groups in the Management of Lymphedema Caused by Lymphatic Filariasis project.

Initially, cultural consensus analysis was only used with dichotomous variables, but Romney, Batchelder, & Weller (1987) have shown that it is also a robust statistical approach with true/false, multiple choice, and fill-in-the-blank data. Also, the use of rank order data and interval data in cultural consensus analysis has been introduced (Romney et al., 1987; Weller, 1987). The data utilized in this project are appropriate for the application of cultural consensus analysis as defined by these criteria.

The data in this project will be analyzed along the three major components in consensus analysis. These components include the overall shared consensus in a sample population, individual levels of cultural competence, and the "answer key" developed from the data itself (Romney et al., 1986). In the first component, the levels of agreement at baseline, outcome, and between the two points in time will be examined. If the eigenvalue ratio, between the first and second eigenvalues, attains a threshold of 3.0, consensus is assumed (Dressler, 2001). When consensus is met, it means that the sample is drawing on the same cultural domain. Dressler (2001, 3) defines a cultural domain as "some topic or subject found in everyday life that people talk about."

The second component that must be addressed is the level of individual knowledge, or cultural competence. In this circumstance, competence is a measure of the individual's knowledge as compared to the shared cultural knowledge base (Weller, 1987). In specific terms, Weller (1987, 181) describes competence as "the probability that an individual knows an answer is equivalent to the proportion of shared knowledge that individual has with the unobservable culturally correct answers." When high competence and low standard deviation exist within a population, high levels of consensus result (Romney et al., 1987).

Finally, the culturally correct "answer key" must be developed from the data. In order to develop this key, each informant's competence is assessed. The answers provided by informants who have higher levels of competence are weighted more heavily than individuals who are less competent (Romney et al., 1986). Through this process, the informants who best know the culture that is being measured have more influence in identifying the best cultural estimate for each item (Romney et al., 1986). When the most competent informants find high levels of concordance on items, then these items are flagged as key pieces of the cultural domain being accessed. These key pieces form the cultural model shared by the population.

The strengths of this approach are multiple, and this analysis is appropriate to the current endeavor. Per Romney et al. (1987), cultural consensus analysis is appropriate for research circumstances where the cultural competence of each informant, as well as the "correct" answers to questions posed, are unknown. In addition, Romney at al. (1987, 164) explain that "one of the main purposes of cultural consensus theory is to use response data to provide estimates of the correct answers as well as tell us how confident we can be of those answers." As the research is undertaken without prior knowledge as to what cultural domains are being assessed, this approach is appropriate.

Results obtained by applying this analysis "should also contribute to the solution of some questions about what the cultural beliefs actually are in some cases" (Romney et al., 1986, 333). This final application is relevant to the problems at hand. It is important to understand what the beliefs are and how much consensus each belief commands in a population in order to inform culturally tailored public health efforts.

If significant changes in cultural models have taken place, it is of interest to know what kind of changes these include. For instance, are cultural models resulting after the community support group intervention more in line with biomedical beliefs or did they become more rooted in traditional medical beliefs associated with the diagnosis? If significant changes are not present, is that considered a problem from the evaluation standpoint?

An extension of the cultural consensus analytic approach is cultural consonance which examines behaviors. As previously stated, beliefs about causation of an illness have been linked to help-seeking behaviors, and these findings are in line with an anthropological view "that culture serves a directive function with respect to behavior" (Dressler, Dos Santos, & Balieiro, 1996). Cultural consonance aims to quantify divergence or convergence of individual level behaviors as they relate to the cultural model identified in the cultural consensus analysis (Dressler et al., 1996). Dressler et al. (1998) and Chavez, McMullin, Shiraz, Hubbell (2001) have shown that the degree of cultural consonance in a community has been linked to health outcomes such as coronary heart disease and cervical cancer screening.

In this project, self-care behaviors present in the cultural model of lymphatic filariasis are the elements examined. The degree to which an individual's behaviors correspond with the treatment options present in the cultural model is quantified as a percent coefficient, or percentage of behaviors an individual engages in out of all possible behaviors. Values can range from 0 – 100%, where a score of 100% indicates an individual is behaving in complete alignment with the self-care treatment elements identified in the community's cultural model of LF. Also, if the sample is examined as a whole, the average rate of consonance can be calculated, indicating the percentage of ideal behaviors an average person in the study population enacts related to self-care and lymphatic filariasis.

Cultural consensus and cultural consonance work together as analytic approaches in an evaluation context. Cultural consensus highlights elements included in local community belief systems, and cultural consonance measures the degree to which community members implement these illness beliefs through behavior. Regarding evaluation, both knowledge and behavior resulting from these analyses are grounded in the local community itself and, as such, are culturally appropriate. Also, the link between belief and behavior can be examined in an illness and context specific way. Finally, if a link between local cultural models and behaviors is strong, there is evidence that changes in cultural model resulting from the support group intervention do indeed impact health care behaviors. Should the cultural model shifts towards a biomedical framework, one could extrapolate that support group participants are more likely to engage in biomedically grounded self-care behaviors.

Chapter 3: Methods

Study Design

The primary focus of this work was to conduct a test regarding the utility of the cultural model as an evaluation indicator. In order to attain this goal, changes in cultural models before and after participation in women's support groups were explored. The central research questions investigated to better understand changes in cultural models over time and the utility of CM's for evaluation purposes are reviewed below (Table 6):

Table 6. Linking Research Questions to Method of Analysis

Research Question	Hypothesis	Method of Analysis
Does a cultural model exist in the sample population at baseline? * If so, does the CM meet the threshold for cultural consensus at baseline? * If so, what is the strength of the consensus?	It is expected that a shared cultural model of LF will exist at baseline.	Cultural Consensus Analysis
Does a cultural model exist in the sample population at outcome? * If so, does the model meet the threshold for cultural consensus at outcome? * If so, what is the strength of the consensus?	It is expected that a shared cultural model of LF will exist at outcome.	Cultural Consensus Analysis
Are there significant changes in levels of cultural competency existing at baseline and outcome?	It is expected that levels of cultural competency will be greater at outcome than baseline.	Cultural Consensus Analysis
Are there significant differences in the elements included in the CMs from baseline and outcome points? Is the cultural model present at baseline different from the cultural model present at outcome?	* It is expected that the CM at outcome will be significantly different than the CM present at baseline. The outcome CM is expected to include more elements of western biomedical beliefs than the CM at baseline. * It is expected that a bicultural model will exist at outcome incorporating elements of traditional and western biomedical ideas about LF.	Cultural Consensus Analysis
Is the strength of cultural consensus for the CM greater at outcome than baseline?	It is expected that the strength of consensus for the CM at outcome will be greater than the strength of consensus for the CM at baseline.	Cultural Consensus Analysis
Does a significant link between belief (cultural model) and behavior (cultural consonance) exist in the sample population?	It is expected that greater consensus regarding cultural models will be linked to higher rates of self-care behaviors identified in the cultural model.	Cultural Consensus Analysis Cultural Consonance Analysis

This project involves testing for significant differences, changes, from baseline to outcome points, and it is appropriate to employ a quasi-experimental design (McDermott & Sarvela, 1999, 217). Randomization was not possible as the study specifically focused on the LF-infected population; participant availability was a concern (Kanda, 2004). Also, no list existed of eligible participants (Kanda, 2004). When it is not possible to randomize group assignment to test group differences, the quasi-experimental approach can be used with equal success as long as the groups do not display significant differences prior to the intervention (McDermott & Sarvela, 1999). Each group is assessed for the presence of cultural models at baseline and outcome as well as any changes in model through cultural consensus analysis in order to determine the success of the support group program. Additionally, cultural consonance analysis is employed to examine the degree to which participants' behaviors reflect the existing cultural models in the sample population at each point, baseline and outcome.

In addressing these research questions it is necessary to run analyses on the reliability and validity of the data as well as demographics, cultural consensus analysis, and cultural consonance analysis. Reliability and validity analyses are necessary to establish the accuracy and integrity of the dataset. Univariate statistics examining demographics are important as they allow for a description of the sample population, both in size and distribution.

Once these preliminary analyses were conducted, cultural consensus and cultural consonance analyses were required. Cultural consensus analyses yielded results regarding group level illness beliefs around the cultural domain investigated, lymphatic filariasis.

The consonance portion complemented the cultural consensus work as it explored the link between cultural models and the enactment of self-care behaviors.

Description of the Data

The data utilized in this work were drawn from support groups in 3 Haitian towns, were gathered in an evaluation context, and are diachronic in nature (data were collected at baseline and post-intervention points). Though the nature of the data set requires both a pre and post data point measure, some participants were lost to follow-up for the second point of data collection. Participants invoked different aliases at the baseline and outcome points; however, the original research team successfully matched 87 individuals as they personally knew the aliases they utilized. Non-probability sampling was utilized as "the study was focused on a particular condition of a single disease and there was no list or information of the study population" (Kanda, 2004, 39). Kanda (2004) further explains that this approach to data collection was appropriate as the population available for participation was limited and that potential participants were not easily identified.

A quasi-experimental quantitative design was utilized and, as such, involved both control and intervention groups. Also, this description is appropriate as participants were not randomly assigned to their respective groups. The original research team identified all known cases of LF in women across the three sites; they expected to find approximately 200 cases and intended to enroll 100 people in control and intervention groups, respectively. As cases were identified, each woman was approached and asked to complete a baseline survey. After completion of the questionnaire, they were invited to participate in the support group; thus, participants self-selected themselves into the intervention group. Remaining participants became control members of the population. Members of the control group completed baseline and outcome surveys, and these individuals were not involved in the support group program. Alternately, participants in the intervention portion of the project were exposed to the support group program and also completed surveys at both baseline and outcome points. La Plaine contributed control group participants only; Cabaret and Archaie included individuals involved in both the intervention and control groups.

The baseline sample was gathered in September 2003, and the outcome sample was obtained in April 2005. These evaluation surveys, conducted as part of a program evaluation, were gathered over the course of the second year, commencing after the first year of participation.

A total sample size of 241 participants was attained at baseline, after the exclusion of men and individuals indicating they were less than 18 years of age at baseline, and the sample sizes were 80, 50, and 102, for Archaie, Cabaret, and La Plaine, respectively (Table 7). In the outcome data, there were 200 subjects (Table 8). For the analyses involving change in cultural models over time, participants' baseline and outcome data were matched. This portion of the analysis includes 60 people in the intervention group and 27 in the control group (Table 9).

Table 7. Sample Sizes for Baseline Data

Baseline Data		
Archaie	La Plaine	Cabaret
89	102	50
Baseline Data N = 241		

Table 8. Sample Sizes for Outcome Data

Outcome Data		
Archaie	La Plaine	Cabaret
108	65	27
Outcome Data N = 200		

Table 9. Sample Sizes for Matched Data

Matched Data					
Archaie (n=46)		La Plaine (n=19)		Cabaret (n=22)	
Intervention	Control	Intervention	Control	Intervention	Control
40	6	0	19	20	2
Total N = 87		Intervention N = 60		Control N = 27	

The sample sizes for the matched intervention and control groups do meet the power threshold required by cultural consensus analysis. In a resource poor setting, diachronic data are difficult to gather; thus, this data set is preferable to cross-sectional data sets that may otherwise be available.

Context of the Data

The primary study that produced the data examined support groups for women with lymphatic filariasis (LF) in Haiti. Funded by the Presbyterian Women's Birthday Fund, the primary research was an extension of a support group program conducted by Coreil et al. (2003) in Leogane. Partners from Hôpital Ste. Croix, CDC, the University of South Florida, and the Presbyterian Church USA worked with the project director.

The Archaie project involved sample groups in Archaie, Cabaret, and La Plaine. Archaie is the most rural of the three towns, but it also has the largest estimated population at 100,000 (Kanda, 2004). Cabaret is smaller than Archaie with approximately 60,000 residents (Kanda, 2004). Also, though Cabaret is more metropolitan in nature than Archaie, participants in the study lived in the more rural areas of this town. Lastly, La Plaine is both the smallest and most urban of the three towns, with an estimated population of 10,000 (Kanda, 2004)

The three sites identified in the Archaie project were chosen for several reasons. First, a national filariasis survey indicated each of these towns experience a high prevalence of LF disease (Beau de Rochars et al., 2004). Kanda (2004, 38) further explains, "The towns are also located in one of two regions which have the highest prevalence of microfilaremia. Therefore, analysis of the data collected in these towns would be one of the most representative information about LF in Haiti." In addition to the rates of lymphatic filariasis, each of these sites had no previous exposure to clinical LF treatment programs (J. Coreil, personal communication, April 10, 2008). Lastly, the national program was interested in expanding a clinical treatment program into Archaie and was interested in the baseline data produced as part of the Archaie project (J. Coreil, personal communication, April 10, 2008).

Within these sites, the Cabaret sample had one support group while Archaie included five support groups (G. Mayard, personal communication, June 2007). Gladys Mayard provided information regarding the context of the data; a description of this support group program is below.

Each support group was conducted by a peer facilitator. In order to be a facilitator, an individual must meet several criteria. These requirements follow (Table 10):

Table 10. Requirements for potential facilitators

Requirements
1. The individual must be a patient herself
2. The individual must participate in the baseline survey
3. The individual must have time to invite other members to attend meetings
4. The individual must have time to visit with sick patients at their homes
5. The individual must be able to produce a report, written in Kreyol, after each support group meeting.
6. The individual must be able to keep the group materials in her house. These materials included items for hygiene (soap, towels, medicines) and items for exercise.
7. The individual must be able to respect the rules of the groups.
8. In the event that several people were interested and met the necessary criteria, facilitator positions were given to poorer patients participating in the group.

(G. Mayard, personal communication, June, 2007)

Once facilitators were chosen for each of the groups, they completed a training program. The project director conducted a week-long training for support group facilitators. Two animators assisted with this process. Elements included in facilitator training included review of the objectives of support groups, the rules for support group meetings, discussion of the duties and responsibilities of the facilitator position, and a review of all educational activities to be covered over the course of the next year.

After completion of the first year of the program, the project director initiated a second training session. Facilitators, individual support group leaders, were evaluated for their year one performance and reviewed the key topics in the initial training program. If facilitators received a poor evaluation, they were replaced. Two support groups received new facilitators for year two.

Two animators, or assistant directors, were employed to manage multiple support groups; the animators were not diagnosed with LF. The project director trained these two individuals on how to manage a group and how to teach the subject matter in the support group materials. Each animator had a monthly debriefing meeting with the project director. Finally, the project director also visited each group once a month.

Once facilitators and animators were selected and trained, a location for each support group meeting was identified. The preferred location for meetings was a patient's house. Facilitators conducted a site visit to evaluate the appropriateness of the home volunteered. If the location was not acceptable, facilitators made arrangements to utilize a local school. Another important quality each meeting location must possess was a position of centrality to the participants. Because some patients had more advanced disease, a walk of no more than 15 minutes to arrive at the meeting was desired. Chosen locales included: patient homes, kindergarten school, national school, and a college (G. Mayard, personal communication, June, 2007).

After animators, facilitators, and meeting locations were selected, the groups began to meet. Facilitators organized each meeting and all communication towards this end was conducted face to face. Then, the animators attended each meeting to teach the subject matter included in the curriculum for each session. Each support group had an assigned meeting day and each meeting was a minimum of two hours long. One hour was allotted for LF curriculum instruction, and the other hour involved patients sharing their experiences, refreshments, and amusement (Table 11). Topics for the next session were agreed upon by support group participants at the end of each reunion. These meetings took place two times a month for the first year and weekly during year two of the program.

Table 11. Restatement of Support Group Meeting Agenda

Support Group Meeting Agenda
Prayer
Singing
News about health for each member of the group
Teach the assigned subject in the book
Discussion about the topic for that meeting
Exercise and washing the leg
Share experiences about the disease and social life
Planning for the next meeting
Refreshments
Amusement – gossip, talking
Singing
Prayer
Closing and Farewell

The objectives of these support groups were multiple (Table 12):

Table 12. Objectives of the Support Group

Objectives of the Support Group
1) To understand LF etiology and transmission
2) To learn and practice recommended self-care regimen
3) To recognize signs and symptoms of complaints needing medical attention
4) Reduce stigma and negative psychosocial impact of disability (increased self-esteem, etc.)

Variables of Interest

Several different categories of variables are included in the analyses of the support group program described above. These categories include variables relevant to understanding demographic information, cultural models, and cultural consonance within the sample population. The demographic variables included in this project serve two purposes. The first is to help describe the sample population in this work. The second is to provide a means for understanding differences in cultural models or other evaluation measures along demographic dimensions. The leg measurement and illness history questions also provide data that can be used towards the latter purpose.

The knowledge about the illness measures provide information that parallel the key questions in Kleinman's (1988) work on explanatory models. The variables that address these topics are utilized in the cultural consensus analysis aimed at understanding cultural models of lymphatic filariasis. Complementing the cultural consensus analysis, the self-care practices variable allows for examination of the degree of cultural consonance present in the sample.

The questionnaires that are being analyzed involve several major sections: demographics, illness history, foot exam, knowledge about the illness, self-care practices, self-efficacy, SF-36 Scale, EuroQol, CES-D, and CDC Healthy Days. Only the quality of life and depression segments of the survey will not be utilized. Below is a list of the variables of interest (Table 13):

Table 13. Variables of Interest

Variable	Construct	Scale	Response Options
Demographics			
Sex	Sex	Nominal	Female Male
Age	Age	Ratio	18 – 95
Marital Status	Marital Status	Nominal	Married, Common Law, Live Together, Separated/Divorced, In Relationship, Engaged, Single, Other
Religion	Religion	Nominal	Catholic, Religion, Protestant, Voudouiste, No, Other
Occupation	Occupation	Nominal	Farmer, Seller at home, Unemployed, Seller at market, Tailor/ seamstress, Other Work
Income	Income	Nominal	Radio, Living Room, Bicycle/Motorbike, Storage Chest
Literacy	Literacy	Nominal	Yes No
Illness History			
What did you think you had?	Diagnosis	Nominal	Chill, Gland, Magical powder, Sprain, Big foot, Don't know, Eczema, Pregnancy, Insect bite, An illness, Filariasis, Other
What was the first symptom you noticed?	Symptom	Nominal	Foot swollen, Swollen gland, Headache, Other, Pain, Fever, Foot hot

Table 13. *(continued)*

Variable	**Construct**	**Scale**	**Response Options**
		Illness History (continued)	
What did you do to treat the illness?	Treatment	Nominal	Traditional healer Herbal remedy Pommade Herbal leaves on leg Cupping/leeches Put ice on leg Pharmaceutical medicine Other
What precautions do you take with your foot? Tell me everything you do for it.	Treatment	Nominal	Apply Dolex or Pomade to the Leg Do Nothing Take Medicines: Pills, Injections Avoid Water: Cold, Rain, Dirty Avoid the Cold Wash the leg: leaves Avoid Walking on the Ground Leg Elevation Bandage Herbal Remedies Wear Clothing: Socks, Pants Massage See a Doctor Do not play football Do not hit the leg Exercises Epson Salts Do not use Leeches Do not use hot remedies Pray Sing when there is rain Wear flat shoes Keep leg clean Keep leg warm Less work in garden
During the past year, how many acute attacks did you have?	Severity	Ratio	0-3

Table 13. *(continued)* Variables of Interest

Variable	Construct	Scale	Response Options	
		Illness History (continued)		
Did you buy materials for swollen leg in the past year per attack?	Treatment	Nominal	Yes	No
What did you buy?	Treatment	Nominal	Shoe/Sandal Pomade Bandage	Stool Basin Other
		Leg Measurements		
Right Leg Measurements: 10 cm from toe	Severity	Ratio	19-42	
Right Leg Measurements: 10 cm from floor	Severity	Ratio	18-49	
Right Leg Measurements: 20 cm from floor	Severity	Ratio	23-54	
Left Leg Measurements: 10 cm from toe	Severity	Ratio	18.5-38	
Left Leg Measurements: 10 cm from floor	Severity	Ratio	17-57	
Left Leg Measurements: 20 cm from floor	Severity	Ratio	22.5-80	
Stage of Illness – Right	Severity	Nominal	0-6	
Stage of Illness – Left	Severity	Nominal	0-6	
Lesions present – Right	Severity	Nominal	Yes	No
Lesions present – Left	Severity	Nominal	Yes	No

Table 13. *(continued)*

Variable	**Construct**	**Scale**	**Response Options**
Knowledge about the Illness			
Can you tell me what causes this illness?	Illness Cause	Nominal	Insect bite Magic Vitamin Deficiency Sprain/injure foot Chill Worms Other
What kinds of care can help your gwopye?	Treatment	Nominal	Hygiene/washing Wear shoes Permanganate Medicine Crème (Salve) Elevation Massage Exercise Bandage Nothing Other
Are there things you can do to prevent acute attacks?	Treatment	Nominal	Yes No
What can you do?	Treatment	Nominal	Hygiene/washing Wear shoes Permanganate Crème Elevation Massage Exercise Bandage Medicine Nothing Other
What can be done to provide relief during an acute attack?	Treatment	Nominal	Hygiene/washing Wear shoes Permanganate Medicine Crème Elevation Massage Exercise Bandage Nothing Other

Table 13. *(continued)* 09

Variable	Construct	Scale	Response Options	
Self-Care Practices				
Tell me everything you do for your leg and how often.	Treatment	Nominal	Hygiene Wear Sandals Crème (Salve) Permanganate Herbal Remedy Pommade	Massage Elevation Exercise Bandage Medicine Other
What other things can you do to help your leg that you do not currently do?	Treatment	Nominal	Exercise Wear Sandals Permanganate Crème Remedy Elevation Massage	Hygiene Bandage Medicine Herbal Pomade Other

Data Quality

The data resulting from these questionnaires were entered into Microsoft Excel and they were analyzed with SAS and UNICET 6, a program with the consensus analysis capabilities. However, the data were cleaned before any of the information was examined. This process involved "carefully reviewing the data to ensure that they were keyed correctly and are being read correctly by the computer" (Hatcher & Stepanski, 1994, 98).

A student at the Centers for Disease Control (CDC) input the raw baseline data into a Microsoft Excel database, and the completed database was evaluated for reliability and validity prior to conducting analyses on the data. First, the reliability of the measures in the dataset was assessed.

In order to evaluate the accuracy of the data entry process, calculations measuring the reliability of the double entry process were conducted. This type of reliability involves capturing the "degree to which two or more raters…are consistent with each other" (Tashakkori, 1998, 85). The raw data from 10% of the baseline respondents (n=25) were re-entered by the principal investigator in this project. Then, a Kappa coefficient, a method for assessing the amount of agreement between raters, was calculated to determine if reasonable reliability for the double entry process existed ($\kappa \geq 90\%$, $p<.05$)(Gwet, 2002). Specifically, a simple kappa coefficient was employed as only two raters are involved (Gwet, 2002).

Validity of the measures included in this study was also reviewed. Content validity was reasonable within the illness history, leg measurement, knowledge of illness, and self-efficacy measures. Content validity involves having experts evaluate whether or not an item measures what it is supposed to be measuring (Tashakorri, 1998). The research instrument was team designed by individuals possessing expertise on Haitian culture and lymphatic filariasis, respectively. The team was comprised of a Haitian culture expert, lymphatic filariasis experts, and local social science researchers of Haitian descent (former support group staff). Their previous work on support groups and lymphatic filariasis reveal local categories present regarding causes and treatment of lymphatic filariasis (Coreil et al., 2003; Coreil et al., 1998). In addition, the project director conducted a pilot development process, to aid in instrument development, through open-ended interviews with providers and patients (J. Coreil, personal communication, Dec 3, 2007). Finally, the instrument was pre-tested and revised accordingly before it was implemented in the current study (J. Coreil, personal communication, Dec 3, 2007).

Analyses

Once the quality of the data entry has been established, data analyses aimed at addressing the research questions were conducted. Demographic analyses are presented to provide a better understanding of the sample population. Cultural consensus analysis explored the existence of and elements retained in the populations' cultural model. Cultural consonance analysis examined the degree to which study participants enact behaviors incorporated in the representative cultural model.

Demographics

The demographic data allows for a description of the sample population. Univariate statistics (frequencies, means, standard deviations) were utilized to inform the shape of the distribution for select measures and describe the sample population. Also, bivariate analyses were used to assess for the presence of significant demographic differences between the intervention and control groups at baseline.

Cultural Models

In order to understand the cultural models present in a community, it is important to understand the domains of inquiry included in this approach. Kleinman (1998) works to achieve an understanding of illness experiences and social meanings through exploration of explanatory models. Explanatory models are defined as:

> A set of beliefs about the etiology of an illness, onset of symptoms, the pathophysiology, the course of the sickness, and the appropriate treatment that is used by the individual to interpret symptoms and make sense of the illness experience. (Kleinman, 1988, 121)

Influences including cultural beliefs, popular culture, family and community traditions, biomedicine, and idiosyncratic experiences shape the development of these explanatory models (Kleinman, 1978, 253). The major domains addressed in Kleinman's concept of explanatory models included diagnosis, illness cause, reason for the onset of illness, illness manifestation, severity of the condition, treatment, possible treatment outcomes, help-seeking (actions taken to address illness), primary problems associated with the illness, fears about the illness, and resources available to address the illness (Kleinman, 1988, 121).

The domains present in one's explanatory model were explored through several questions on the survey utilized to provide the current data. However, these questions were asked about general beliefs surrounding lymphatic filariasis, not about an individual's specific subjective lived experience with the same condition. As such, elements of the community's cultural model are explored. Cultural models are "schemas about a domain that are shared by members of a group having shared problems, shared task solutions, and similar life experiences" (Bradway & Barg, 2006).

Specifically, questions regarding cause and treatment were included in this analysis of community cultural models. The inclusion of only two domains is defensible as they are arguably the two most important dimensions. Foster (1976, 775) explains the central role of illness causality:

> "we find that the kinds of curers, the mode of diagnosis, curing techniques, preventive acts, and the relationship of all these variables to the wider society of which they are a part, derive from beliefs about illness causality. It is not going to far to say that, if we are given a clear description of what people believe to be the cause of illness, we can in broad outline fill in the other elements in that medical system."

Foster (1976, 778) further indicates that "the kind of curers found in a particular society, and the curing acts in which they engage, stem logically from the etiologies that are recognized."

Studies examining a variety of disease conditions exemplify the relationship between perceived cause of illness and patterns of help-seeking behavior. Heurtin-Roberts & Reisin (1992) found two lay models regarding hypertension in an African American population, and these varying health beliefs were significantly related to rates of treatment compliance. In the case of diarrheal disease in Haiti, the model of oral rehydration therapy (ORT) an individual identified correlated significantly with time delayed before utilizing ORT therapies (Coreil & Genece, 1988). Additionally, Mathews, Lannin, & Mitchell (1994) linked cultural models of breast cancer to delays in seeking cancer treatment among African American women. Finally, as discussed previously, several studies on lymphatic filariasis support the relationship between etiology beliefs and home care practices (Coreil, 1983; Rauyajin et al., 1995; Ahorlu et al., 1999; Ramaiah et al., 1996).

These cultural models of lymphatic filariasis along the dimensions of cause and treatment were investigated in this study through cultural consensus analysis. Initially, cultural consensus analysis was only used with dichotomous variables, but Romney et al. (1987) have shown that it is also a robust statistical approach with true/false, multiple choice, and fill-in-the-blank data. Also, the use of rank order data and interval data in cultural consensus analysis has been introduced (Romney et al., 1987; Weller, 1987). The data utilized in this project are appropriate for the application of cultural consensus analysis as defined by these criteria.

In this work, the approach to consensus analysis for dichotomous variables was adopted. Romney et al. (1986) provided the table below to explain the matrix of information utilized in cultural consensus analysis. In this table:

> "X_{ik} is the ith informant's response to the kth question. There are N informants and M questions. The model assumes a questionnaire where each question has L possible response alternatives with only one 'correct' answer" (Romney et al., 1986, 316).

Informant					**Question**			
	1	2	.	.	K	.	.	M
1	X_{11}	X_{12}	.	.	X_{1k}	.	.	X_{1M}
2	X_{21}	X_{22}	.	.	X_{2k}	.	.	X_{2M}
.	.							
.	.							
I	X_{i1}	X_{i2}	.	.	X_{ik}	.	.	X_{iM}
.	.							
.	.							
N	X_{N1}	X_{N2}	.	.	X_{Nk}	.	.	X_{NM}

(Romney et al., 1986, 316)

This matrix provides an example of how the raw data in this study will look when it is prepared for analysis. Once the data are prepared and cleaned, the process of cultural consensus analysis will commence.

When conducting cultural consensus analysis, there are three key components in the analysis: the overall shared consensus in a sample population, individual levels of cultural competence, and the "answer key" developed from the data itself (Romney et al., 1986). In order to assess for consensus, Romney et al. (1986) apply the minimal residual method of factor analysis. Factor analysis approaches are utilized as a variable reduction procedure (Hatcher and Stepanski, 1994). This factor analysis process yields "estimates of each informant's competence on this set of questions" (Romney et al., 1986, 322). As each informant's competence is plotted, an underlying factor structure emerges. In cultural consensus analysis, a single factor structure is desired. Romney et al. (1986, 323) explain that a single factor structure in cultural consensus analysis indicates "that a single underlying all-positive factor, in our case competence, accounts for several times as much variance as the next factor." When a single factor structure is present, it implies that the informants are referring to a shared cultural domain when they produce responses to the items (Romney et al, 1986.).

The second component, cultural competence, is a measure of the individual's knowledge as compared to the shared cultural knowledge base (Weller, 1987). To estimate competence, or a person's cultural expertise, the process is slightly different from the one used to assess the portion of correct answers for a single individual when the correct answers are known. When the correct answers are known a priori, it is possible to assess each individual's competence without linking it to another informant's answers (Romney et al., 1986). However, when there is not an a priori answer key, the only way to estimate the proportion of correct answers for an informant is to examine one individual's responses in comparison to all other informants' responses (Romney et al., 1986).

Regarding the answer key, Romney et al. (1986) outline a Bayes probability framework and illustrate the process with an example with only two informants and one true-false question. The authors explain that, for example, if you already know the individual competencies of each informant (.00-1.0) and the a priori probability that a question is answered correctly (.5 for each possible response, true [1] or false [0]) then it is possible to solve for the probability of a response pattern where the correct answer is true (1, 1 or where both informants produced the correct answer). Once these probabilities are arrived at, then it is possible to assess the overall likelihood of a true or false 'correct' answer for all informants in the dataset, not just the two informants used to arrive at the information above. When the posteriori probabilities are calculated, it is possible to discern the culturally correct answer to each item for the overall informant pool. In this case, the response with the highest posteriori probability is the culturally correct response (Romney et al., 1986).

In order to execute the analysis to produce these three components, three major assumptions exist. These assumptions are common truth, local independence, and homogeneity of items (Romney et al, 1986). Common truth indicates that "there is a fixed answer key 'applicable' to all informants" (Romney et al, 1986, 317), and local independence "assumes that each informant's answers are given independently of each other informant" (Romney et al., 1986, 317). Finally, homogeneity of items assumes that "questions are all of the same difficulty level" (Romney et al., 1986, 318).

In the formal model, items relative to a domain of interest are identified by the population of interest. Romney (1999) explains this process by describing Weller's (1984) work with Guatemalan women in brief. The first step in preparing items that can be analyzed using consensus analysis involved identifying which items provide appropriate measures. In order to achieve this goal, Weller asked a group of 20 Guatemalan women to free list all known contagious diseases (Romney, 1999). These women identified a number of diseases, and, ultimately 27 diseases were identified by at least 15% of the population (Romney, 1999). These 27 remaining items from the free listing exercise were incorporated into the instrument for Weller's work on cultural consensus.

The goal of the free-listing component is to produce an exhaustive list of possible responses in a particular domain. Then responses identified by a moderate proportion of community members are retained for the analysis. The present data are secondary in nature, and this free listing exercise was not possible. However, the responses included in the instrument were generated in an ethnographic survey conducted in 1996 (J.Coreil, personal communication, 2008). Thus, previous work has approximated the free-listing process.

The formal cultural consensus model is appropriate in this study as the data were measured at the nominal level and the data can be transformed to a dichotomous response format (Weller, 1987). The data related to cultural models were collected in a multiple choice format, where more than one response selection was allowed for each question; these questions, each of which has L possible responses, were first converted to a true/false format. For example, if item 1 has 6 possible response categories, each informant was described as to whether or not they indicated each possible response as an answer (1) or not (0) in the response matrix. Each possible response was converted into a true/false format where only two values (1,0) were possible. In this case, item 1 was converted into six variables, 1a-1f.

Once the data were transformed into individual, dichotomous variables, the UNICET 6 statistical software program was used to conduct the cultural consensus analysis. Now that the process of cultural consensus analysis for this particular problem has been described, it is important to review the variables included in the cultural model portion of the analysis (Table 14):

Table 14. Variables used in Cultural Consensus Analysis

Variable	Construct	Data Available	Number of variables after transformation
Pre-Post Analyses			
1) Can you tell me what causes this illness?	Cause	Baseline and Outcome	6 variables
2) What treatment options can be used for your foot?	Treatment	Baseline and Outcome	11 variables
Post Analyses Only			
3) What kinds of care can help your gwopye?	Treatment	Outcome Only	10 variables
4) What can you do to prevent acute attacks?	Treatment	Outcome Only	10 variables
5) What can be done to provide relief during an acute attack?	Treatment	Outcome Only	10 variables

Weller (2007) suggests analyses that involve 20 variables or more provide "reasonable estimates" in cultural consensus analysis. Seventeen and forty-seven variables were present for analysis in the baseline and outcome data, respectively. Variable two in the table above was developed by the combination of the two following variables: "tell me everything you do for your leg and how often", "what other things can you do to help your leg that you do not currently do?" Though less data are available in the baseline survey, the analyses were still valid. Weller (personal communication, May 15, 2008), co-founder of cultural consensus analysis, indicated that 17 variables was close enough to 20 to provide reasonable outcomes. Pre-post comparative analyses were conducted on the first two items identified in the table; outcome analyses were only run on all the items in the table. The elements retained in the full and reduced outcome analyses were also compared.

Cultural consensus analysis was run on the baseline and outcome data, respectively, by town, Archaie, Cabaret, La Plaine. Within the baseline data, the results were compared, with independent samples t-tests, for significant differences in cultural competence. Then, chi-square analyses tested the culturally correct “answer keys” for significant differences. At baseline the participants in the matched intervention and control groups across the three towns were assessed for these differences. If the null hypotheses were supported, the baseline data from all three towns could be combined in additional analyses.

In the next step, data were assessed with the baseline data only for all baseline informants, matched intervention only, and matched controls only. Similarly, the outcome data were examined for cultural models for matched controls only and matched intervention informants only. Cultural consensus analysis was run on both the reduced, items available at both times, and full, including additional CM items present in the outcome data only, data sets; the analysis on the reduced data allowed for comparison between the baseline and outcome cultural model results. Once these analyses were completed, these same samples were assessed along demographics and other dimensions. These dimensions included: age, marital status, religion, wealth, literacy, stage of disease, and number of acute attacks.

The presence of a shared cultural model was evaluated in each of these dimensions. In addition, independent samples t-test comparisons were utilized to compare baseline and outcome data for significant differences in mean cultural competency scores. Paired sample t-tests were used to explore significant differences in the matched intervention and control samples from baseline to outcome. A chi-square comparison assessed for significant differences in the culturally correct "answer key" for matched intervention and control samples from baseline to outcome as well.

Cultural Consonance

After the cultural consensus analyses were conducted, it was possible to next examine the levels of cultural consonance in the various samples. The degree to which an individual's behaviors corresponds with elements in the cultural model, cultural consonance, is quantified as a percent coefficient, or percentage of behaviors an individual engages in out of all possible behaviors. The percentage is an approximation of the degree to which individuals' behaviors are in line with the cultural ideal, or the elements included in the cultural model identified through cultural consensus analysis (Dressler, 1996; Dressler, Bindon, & Neggers, 1998). Values can range from 0 – 100%, where a score of 100% indicates an individual is behaving in complete alignment with the elements identified in the community's cultural model of LF (Dressler et al., 1996). Also, if the sample is examined as a whole, the average rate of consonance can be calculated, indicating the percentage of ideal behaviors an average person in the community enacts.

The cultural consonance methodology has previously been applied in several different domains. Dressler utilized this measure to examine the relationship between cultural consonance, as related to cultural model of lifestyles (1996), access to social support (Dressler, Balieiro, & Dos Santos, 1997), and blood pressure. He has also explored the relationship between cultural consonance of lifestyles and coronary heart disease (Dressler et al., 1998). In addition, Chavez et al. (2001) investigated the relationship between cultural consonance and cervical cancer-screening. Though these and several other studies have employed the cultural consonance approach, this methodology has not yet been implemented in either the Haitian population or in a community of individuals with lymphatic filariasis.

In this project, self-care behaviors present in the cultural model of lymphatic filariasis were examined. The degree to which an individual's behaviors correspond with the treatment options present in the cultural model was calculated. Additionally, the sample's average rate of consonance was calculated, indicating the percentage of ideal behaviors an average person in the community enacted related to self-care and lymphatic filariasis.

Cultural consonance analyses were run on the same samples and sub-samples described in the cultural model segment. In this way, the extent of cultural consonance was established in tandem with the cultural model findings. For the comparisons between samples and sub-samples, independent and paired samples t-tests were used, as appropriate, to test for significant differences in mean percentage coefficients.

Sample Size

In order to determine the sample size needed to appropriately conduct cultural consensus analysis, several factors were considered: cultural competence of the sample participants, confidence level, and the proportion of questions that must be clearly classified (Romney et al., 1986). With a higher level of cultural competence, fewer individuals are needed (Romney et al., 1986). Alternately, the higher the desired confidence level, the larger the sample size must be (Romney et al., 1986). Finally, the more questions that must be correctly classified yields a larger sample size (Romney et al., 1986).

Romney et al. (1986) explain how the appropriate sample size was derived. First, the a posteriori probability for a true answer equals the confidence level that a question is decisively classified in the culturally correct answer key. For instance, if the a posteriori probability of a culturally correct answer being given is .95, then there is only a 5% chance that a respondent will answer that question "incorrectly." In order for a question to be considered decisively classified, where one of the two possible responses is considered clearly correct, a minimum confidence level accepted is .80.

Once the culturally correct answers to the instrument are determined at .80 threshold, then it is important to examine the proportion of questions overall that meet this criteria. If 95% of the questions in the instrument meet these parameters, then the proportion of questions decisively classified is .95.

After the proportion of questions decisively classified is determined, then Romney et al.'s (1986) table indicating sample size requirements is utilized. This table indicates the sample size required to attain the desired confidence level in cultural consensus data (Table 15).

Table 15. Sample Size Table for Cultural Consensus Analysis

Proportion of Questions	**Average level of cultural competence**				
	.5	.6	.7	.8	.9
.90 Confidence Level					
.80	9	4	4	4	4
.85	11	6	4	4	4
.90	13	6	6	4	4
.95	17	10	6	6	4
.99	25	16	10	8	4
.95 Confidence Level					
.80	9	7	4	4	4
.85	11	7	4	4	4
.90	13	9	6	4	4
.95	17	11	6	6	4
.99	29	19	10	8	4
.99 Confidence Level					
.80	15	10	5	4	4
.85	15	10	7	5	4
.90	21	12	7	5	4
.95	23	14	9	7	4
.99	*	20	13	8	6
.999 Confidence Level					
.80	19	11	7	6	4
.85	21	13	8	6	4
.90	23	13	10	8	5
.95	29	17	10	8	5
.99	*	23	16	12	7

Note: * Well over 30 informants needed.
(Romney et al., 1986, 326)

Using this table, a sample size of only 23 was required when the following conditions were met: .5 level of cultural competence, .999 confidence level, and .90

proportion of questions correctly classified. In this case, each informant was assumed to have a confidence only slightly better than guessing, a higher threshold for questions decisively classified was set, and the highest confidence level possible was indicated. If concordance rates are high within the sample and less stringent parameters are set on determining sample size, it is possible a sample size as small as 4 informants could yield the same results. Supplementing the standard cultural consensus sample size parameters, Sue Weller (personal communication, May 4, 2007), co-founder of the cultural consensus approach, recommended a sample size of 60 in this project because change over time was being investigated; the intervention sample, with N=60, met this criteria. Thus, for all research components, the sample size was adequate.

Chapter 4: Results

Univariate, bivariate, cultural consensus, and cultural consonance analyses were conducted in order to describe the sample population and to address the research questions of the study. The results will be discussed in relation to the specific study aims. The research questions are presented here for reference (Table 16):

Table 16. Review of Research Questions and Hypotheses

Research Question	Hypothesis
Does a cultural model exist in the sample population at baseline? * If so, does the CM meet the threshold for cultural consensus at baseline? * If so, what is the strength of the consensus?	It is expected that a shared cultural model of LF will exist at baseline.
Does a cultural model exist in the sample population at outcome? * If so, does the model meet the threshold for cultural consensus at outcome? * If so, what is the strength of the consensus?	It is expected that a shared cultural model of LF will exist at outcome.
Are there significant changes in levels of cultural competency existing at baseline and outcome?	It is expected that levels of cultural competency will be greater at outcome than baseline.
Are there significant differences in the elements included in the CMs from baseline and outcome points? Is the cultural model present at baseline different from the cultural model present at outcome?	* It is expected that the CM at outcome will be significantly different than the CM present at baseline. The outcome CM is expected to include more elements of western biomedical beliefs than the CM at baseline. * It is expected that a bicultural model will exist at outcome incorporating elements of traditional and western biomedical ideas about LF.
Is the strength of cultural consensus for the CM greater at outcome than baseline?	It is expected that the strength of consensus for the CM at outcome will be greater than the strength of consensus for the CM at baseline.
Does a significant link between belief (cultural model) and behavior (cultural consonance) exist in the sample population?	It is expected that greater consensus regarding cultural models will be linked to higher rates of self-care behaviors identified in the cultural model.

Integrity of the Data

The accuracy of double entry in the baseline data was tested for reliability to ensure the secondary data provided at the baseline point was accurate. The overall sample at baseline was comprised of 241 individuals; thus, 10% of the baseline surveys were re-entered from the raw data into an excel database. A simple kappa co-efficient was run on 2 raters, 25 surveys, 45 variables, and high levels of reliability for the double entry process resulted (κ=.99, $p<.0001$). Additionally, the outcome data were re-entered in its entirety into the excel database ensuring accurate and consistent recording of the values from the raw data.

Variables included in the analyses exhibited good content validity, assessed by asking experts to evaluate whether or not an item measures what it is supposed to be measuring (Tashakorri, 1998), as the cause and treatment variables on the survey were developed by a team of experts including a Haitian culture expert, lymphatic filariasis experts, and local social science researchers of Haitian descent (former support group staff). Additionally, the team's expertise was further informed by previous research on local categories surrounding lymphatic filariasis (Coreil et al., 2003; Coreil et al, 1998), and both a pilot development and pre-test process were executed in the current project (J. Coreil, personal communication, Dec 3, 2007).

Demographic Analyses

Descriptive statistics provide general information on the sample and sub-samples investigated in this project. Groups of interest include all individuals in the baseline data (B-All), baseline matched controls only (BMC), baseline matched intervention only (BMI), outcome matched controls only (OMC), and outcome matched intervention only (OMI). These five sample groups are described in the tables below (Table 17):

Table 17. Demographics: Baseline Data

Demographics		**B-All (N=241)**	**BMC (N=27)**	**BMI (N=60)**
		N (%)	N (%)	N (%)
Town	Archaie	89(37%)	6(22%)	40(67%)
	Cabaret	50(21%)	2(7%)	20(33%)
	La Plaine	102(42%)	19(70%)	0(0%)
Marital Status	Married, Partnered, Live Together	142(59%)	21(78%)	32(53%)
	In Relationship, Engaged	17(7%)	2(7%)	1(2%)
	Single, Separated, Divorced, Widowed	80(33%)	4(15%)	27(45%)
Religion	Catholic	118(49%)	15(56%)	27(45%)
	Protestant	96(40%)	6(22%)	28(47%)
	Voudouiste	10(4%)	2(7%)	3(5%)
	None, Other	17(7%)	4(15%)	2(3%)
Literacy	Literate	137(57%)	15(56%)	38(63%)
Wealth	> 2 Wealth Items	69(29%)	3(11%)	25(42%)
(radio, storage set, living room, bicycle/motorcycle)	≤ 2 Wealth Items	172(71%)	24(89%)	35(58%)
Occupation	Farmer	14(6%)	1(4%)	1(13%)
	Seller at Home or Market	111(46%)	12(44%)	29(48%)
	Tailor/Seamstress	14(6%)	2(7%)	2(3%)
	Other	33(14%)	4(15%)	6(10%)
	Unemployed	69(29%)	8(30%)	15(25%)
		Mean(SD)	Mean(SD)	Mean(SD)
Age		47(16.6)	46(14.9)	47(15)

At baseline (B-All), the majority of participants were married, Catholic, literate, less wealthy, and engaged in selling at home or the market (Table 17). When baseline intervention (BMI) and control (BMC) groups were compared, the control group was more likely to be married while members of the intervention group tended to be single, separated, divorced, or widowed. The intervention and control groups were not significantly different from one another on the dimensions of religion (chi-sq=3.07,df=1, p<.08), where vodouism, no religion, and other were removed from the comparison due to small cell sizes, income(chi-sq=3.72,df=4,p<.45), literacy(chi-sq=.47,df=1,p<.49), and age(t=-.29,df=85,p<.77).

Table 18. Demographics: Outcome Data

		OMC (N=27)	OMI (N=60)
Demographics		N (%)	
Town	Archaie	6(22%)	44(73%)
	Cabaret	3(11%)	15(25%)
	La Plaine	18(67%)	1(2%)
Marital Status	Married, Partnered, Live Together	17(63%)	31(52%)
	In Relationship, Engaged	0(0%)	0(0%)
	Single, Separated, Divorced, Widowed	10(37%)	29(48%)
Religion	Catholic	14(52%)	29(48%)
	Protestant	9(33%)	28(47%)
	Voudouiste	0(0%)	0(0%)
	None, Other	4(15%)	3(5%)
Literacy	Literate	11(42%)	37(62%)
Wealth	> 2 Wealth Items	3(11%)	25(42%)
(radio, storage set, living room, bicycle/motorcycle)	≤ 2 Wealth Items	24(89%)	35(58%)
Occupation	Farmer	1(4%)	5(8%)
	Seller at Home or Market	12(44%)	24(40%)
	Tailor/Seamstress	2(7%)	4(7%)
	Other	12(44%)	27(45%)
	Unemployed	0(0%)	0(0%)
		Mean(SD)	
Age		46 (14.9)	47(14.5)

Between baseline and outcome, most of the trends noted in the baseline data remained the same (Table 18). At outcome, intervention (OMI) and control groups (OMC) at outcome were not significantly different on the following dimensions: marital status(chi-sq=.96,df=1,p<.33) where "in a relationship" and "engaged" were collapsed with the married/partnered/living together category due to small cell sizes, religion(chi-sq=.66,df=1,p<.42), where voudism, no religion, and other were removed from the comparison due to small cell sizes, income(chi-sq=3.72,df=4,p<.45), literacy(chi-sq=2.76,df=1,p<.10), and age(t=.37,df=85,p<.71).

In addition to the basic demographics of the sample populations, the baseline data included information on each participant's personal experience with lymphatic filariasis. The table below provides information regarding the illness profile of the baseline sample population along multiple dimensions: age the individual first knew of their illness, their first impression of the illness, first symptom noticed, treatment choices, stage of disease, presence of lesions, number of acute attacks in the past year, and foot, ankle, and leg sizes for each leg, respectively. The outcome sample is also profiled in the table below on a more limited basis (Table 19).

Table 19. Illness Beliefs: Baseline Data

		BL All (N=241)	**BL Controls (N=27)**	**BL Intervention (N=60)**
		N (%)		
Cause	Insect Bite	7(3%)	0(0%)	3(5%)
	Magic	24(10%)	4(15%)	7(12%)
	Sprain	23(10%)	1(4%)	4(7%)
	Worms	16(7%)	4(15%)	1(2%)
	Chill	29(12%)	1(4%)	6(10%)
	Vitamin Deficiency	3(1%)	1(4%)	0(0%)
	Other	32(13%)	0(0%)	13(22%)
	Don't Know	139(58%)	17(63%)	37(62%)
Treatment	Hygiene	189(78%)	22(81%)	45(75%)
	Sandal	206(85%)	24(89%)	50(83%)
	Permanganate	36(15%)	5(19%)	6(10%)
	Crème	44(18%)	5(19%)	12(20%)
	Elevation	67(28%)	7(26%)	19(32%)
	Massage	23(10%)	4(15%)	3(5%)
	Exercise	16(7%)	1(4%)	7(12%)
	Bandage	49(20%)	6(22%)	9(15%)
	Medicine	58(24%)	3(11%)	12(20%)
	Herbal Remedy	132(55%)	14(52%)	31(52%)
	Pomade	87(36%)	8(30%)	22(37%)
	Other	102(42%)	9(33%)	34(57%)

Overall, the baseline sample (B-All) was, on average, in their late twenties when they first knew of their illness and there were not significant differences between the control (BMC) and intervention (BMI) groups on this measure (t=-.07,df=70,p<.94). These participants had about one acute attack in the past year and exhibited stage one and stage two disease in the right and left legs, respectively. Most individuals did not have lesions on their affected legs. Control and intervention groups were not significantly different for the number of acute attacks they experienced($t=-1.30, df=84, p<.20$), size of the ankles(Left: $t=1.67, df=32.2, p<.11$; Right: $t=1.77, df=84, p<.08$), and size of the right leg ($t=.99, df=84, p<.32$).

When individuals realized they were sick, most self-reported that their condition was due to a chill or gland issues. The first symptoms most noticed in association with the illness included a swollen foot, pain, and swollen glands. Treatment options used most frequently to address this health concern were herbal remedies, seeking out a health professional, and use of pharmaceutical medicines.

With regards to age of onset, number of acute attacks, presence of lesions, and disease stage of the right and left legs, the intervention (BMI) and control (BMC) groups at baseline followed the same trends as the overall sample (B-All). However, there were some differences between the control and intervention groups, respectively, regarding the first impression of the illness and treatment choices. The control group tended to identify their condition as rooted in bad blood or magical powder, while the intervention group attributed their problems to bad blood or a chill. Herbal remedies and cupping/leeching were most used to treat the control group’s problems at baseline, and the intervention group identified the same treatment choices as the overall baseline sample: herbal remedies, aid of a health professional, pharmaceutical medicines.

Table 20. Illness Profile: Outcome Data

Illness Profile: Outcome Data		**OMC (N=27)**	**OMI (N=60)**
		Mean(SD)	
Number of Acute Attacks in the Past Year		1.33(.68)	1.58(.86)
Foot Size: Right		25.85(2.26)	23.61(2.27)
Foot Size: Left		26.42(3.87)	23.96(2.27)
Ankle Size: Right		27.17(4.35)	25.52(3.83)
Ankle Size: Left		28.94(7.25)	26.41(4.13)
Leg Size: Right		37.19(5.23)	35.9(5.66)
Leg Size: Left		39.27(7.54)	35.61(5.44)
		N(%)	
Number of Acute Attacks in the Past Year	0	12(44%)	22(37%)
	1	11(41%)	29(48%)
	2	3(11%)	5(8%)
	3	1(4%)	4(7%)
Stage of Disease: Right	0	5(19%)	7(12%)
	1	3(12%)	18(31%)
	2	9(35%)	19(32%)
	3	8(31%)	13(22%)
	4	0(0%)	2(3%)
	5	1(4%)	0(0%)
	6	0(0%)	0(0%)
Stage of Disease: Left	0	3(12%)	3(5%)
	1	8(31%)	20(34%)
	2	4(15%)	21(36%)
	3	5(19%)	12(20%)
	4	2(8%)	3(5%)
	5	4(15%)	0(0%)
	6	0(0%)	0(0%)
Lesions	Yes	10(43%)	21(40%)
	No	13(57%)	31(60%)

In the outcome samples, the control group (OMC) did not generally have an acute attack within the past year while the intervention group (OMI) had about one acute attack in the same time period (Table 20). Both groups showed stage two disease in the right leg, and in the left leg controls (OMC) and intervention (OMI) participants tended to have stage one and two disease, respectively. In the outcome intervention (OMI) and control group (OMC) samples, differences were assessed; no differences between these two groups for the number of acute attacks experienced in the past year($t=-.57,df=85,p<.57$), for the sizes of the foot(Right: $t=1.92,df=85,p<.06$; Left: $t=1.75,df=37.9,p<.09$), the size of the legs(Right: $t=1.49,df=34.2,p<.14$; Left: $t=1.82,df=30.8,p<.08$), stage of illness(Right: $\text{chi-sq}=.75,df=1,p<.39$; Left: $\text{chi-sq}=2.42,df=1,p<.12$), or lesions($\text{chi-sq}=.06,df=1,p<.80$).

Study participants were asked about both their personal illness experience, baseline samples only, and their general beliefs about what could cause lymphatic filariasis and how one might treat it. The distribution of these general belief categories are outlined below for both the baseline and outcome samples.

Table 21. Illness Beliefs: Baseline Data

Illness Beliefs		B-All (N=241)	BMC (N=27)	BMI (N=60)
		N (%)		
Cause	Insect Bite	7(3%)	0(0%)	3(5%)
	Magic	24(10%)	4(15%)	7(12%)
	Sprain	23(10%)	1(4%)	4(7%)
	Worms	16(7%)	4(15%)	1(2%)
	Chill	29(12%)	1(4%)	6(10%)
	Vitamin Deficiency	3(1%)	1(4%)	0(0%)
	Other	32(13%)	0(0%)	13(22%)
	Don't Know	139(58%)	17(63%)	37(62%)
Treatment	Hygiene	189(78%)	22(81%)	45(75%)
	Sandal	206(85%)	24(89%)	50(83%)
	Permanganate	36(15%)	5(19%)	6(10%)
	Crème	44(18%)	5(19%)	12(20%)
	Elevation	67(28%)	7(26%)	19(32%)
	Massage	23(10%)	4(15%)	3(5%)
	Exercise	16(7%)	1(4%)	7(12%)
	Bandage	49(20%)	6(22%)	9(15%)
	Medicine	58(24%)	3(11%)	12(20%)
	Herbal Remedy	132(55%)	14(52%)	31(52%)
	Pomade	87(36%)	8(30%)	22(37%)
	Other	102(42%)	9(33%)	34(57%)

In the baseline data, the majority of respondents indicated that they did not know what caused lymphatic filariasis (Table 21). However, there were some clear thoughts regarding actions people can take to treat this disease including the use of sandals, hygiene, and herbal remedies, respectively. Members of the control and intervention groups exhibited the same beliefs about illness cause as the entire baseline sample (B-All), and the control group (BMC) also identified the same three treatment options as the entire baseline sample. The intervention group (BMI) varied slightly as “other” was chosen as a key option in addition to the use of sandals and hygiene.

Table 22. Illness Beliefs: Outcome Data

		OMC (N=27)	**OMI (N=60)**
		N (%)	
Cause	Insect Bite	1(4%)	37(62%)
	Magic	1(4%)	4(7%)
	Sprain	0(0%)	4(7%)
	Worms	4(15%)	7(12%)
	Chill	0(0%)	0(0%)
	Vitamin Deficiency	0(0%)	0(0%)
	Other	21(78%)	19(32%)
Treatment	Hygiene	23(88%)	53(88%)
	Sandal	23(88%)	54(90%)
	Permanganate	2(8%)	15(25%)
	Crème	1(4%)	27(45%)
	Elevation	5(19%)	49(82%)
	Massage	2(8%)	34(57%)
	Exercise	1(4%)	46(77%)
	Bandage	4(15%)	13(22%)
	Medicine	11(42%)	25(42%)
	Herbal Remedy	10(38%)	36(60%)
	Pomade	9(35%)	25(42%)
	Other	5(19%)	24(40%)
Treatment (OC Only)	Hygiene	18(67%)	51(85%)
What kinds of care can help your gwopye?	Sandal	15(56%)	36(60%)
	Permanganate	1(4%)	17(28%)
	Crème	3(11%)	24(40%)
	Elevation	6(22%)	46(77%)
	Massage	2(7%)	34(57%)
	Exercise	2(7%)	44(73%)
	Bandage	3(11%)	12(20%)
	Medicine	9(33%)	24(40%)
	Nothing	2(7%)	0(0%)
	Other	8(30%)	15(25%)

Table 22. Illness Beliefs: Outcome Data *(continued)*

		OMC (N=27)	**OMI (N=60)**
		N (%)	
Treatment (OC Only)	Hygiene	12(44%)	42(70%)
What can you do to prevent acute attacks?	Sandal	12(44%)	34(57%)
	Permanganate	1(4%)	7(12%)
	Crème	1(4%)	11(18%)
	Elevation	3(11%)	33(55%)
	Massage	0(0%)	27(45%)
	Exercise	0(0%)	34(57%)
	Bandage	0(0%)	6(10%)
	Medicine	3(11%)	20(33%)
	Nothing	2(7%)	0(0%)
	Other	4(15%)	17(28%)
Treatment (OC Only)	Hygiene	14(52%)	38(63%)
What can be done to provide relief during an acute attack?	Sandal	12(44%)	25(42%)
	Permanganate	0(0%)	13(22%)
	Crème	1(4%)	13(22%)
	Elevation	4(15%)	31(52%)
	Massage	1(4%)	27(45%)
	Exercise	1(4%)	29(48%)
	Bandage	3(11%)	9(15%)
	Medicine	13(48%)	26(43%)
	Nothing	1(4%)	1(2%)
	Other	7(26%)	18(30%)

In the outcome data, the population suggested two primary causes of lymphatic filariasis: “other” causes and insect bites (Table 22). The control group (OMC) chose “other” as the prominent cause of lymphatic filariasis. In contrast, the intervention group (OMI) highlighted insect bites and “other” causes, respectively.

When asked about general treatment, the outcome control group (OMC) selected sandals, hygiene, and pharmaceutical medicines as important options. The intervention group (OMI) responded differently with these treatment possibilities: sandals, hygiene, elevation, and exercise.

The outcome sample was asked three additional questions on general beliefs about treating lymphatic filariasis. The first additional question was what kinds of care can help your gwopye (LF). The control group (OMC) chose hygiene, sandal, and the use of pharmaceutical medicines. In contrast, participants in the intervention (OMI) sample pointed to hygiene, sandals, elevation, and exercise were selected most often.

The next additional treatment question used in the outcome sample was what can you do to help prevent acute attacks? Responding to this question, the control group (OMC) suggested hygiene and sandals, and the intervention (OMI) group indicated hygiene, sandals, exercise, elevation, and massage as viable alternatives.

The final question asked regarding cultural models of LF in the outcome sample was what can be done to provide relief during an acute attack? Specific to the control group (OMC) hygiene, medicine, sandal were identified as treatment possibilities. Lastly, the intervention group (OMI) suggested hygiene, elevation, exercise, and massage as ways to provide relief for an acute attack.

Cultural Models at Baseline

Cultural Consensus Analysis by Baseline Locale

After the demographic analyses were completed, cultural consensus and consonance analyses were conducted. Before grouping the data into intervention and control groups for examination, the cultural models present in each town at baseline were reviewed. This step was necessary in order to ensure homogeneity of cultural models existing across the three sites, Archaie, Cabaret, and La Plaine, at baseline.

First, a consensus analysis was run on each of the sites; Archaie (n=89) failed to meet consensus as the eigenvalue ratio (ER) between first and second eigenvalues was 2.52, suggesting the lack of a shared cultural model in this location. Cabaret (n=50) and La Plaine (n=102) exhibited consensus with ER of 4.0 and 3.2, respectively. Though all three towns did not exhibit consensus for a single cultural model, the criterion required to combine the towns for further analyses involved a review of the "culturally correct" answer keys (AK). If the elements of the AK, or elements identified as part of the local CM, were not significantly different from one another by location, regional variation could be disregarded. Chi-square analyses resulted in the interpretation of the Fisher's exact statistic as the data involved small cell sizes (Hatcher & Stepanski, 1994), and the findings suggest no significant differences exist between the AK in the three locales (Table 23).

Table 23. Culturally Correct Answer Keys by Town

		Archaie (N=89)	Cabaret (N=50)	La Plaine (N=102)
		Answer (Weighted %)	Answer (Weighted %)	Answer (Weighted %)
Cause	Insect Bite	0(95%)	0(98%)	0(98%)
	Magic	0(87%)	0(96%)	0(95%)
	Sprain	0(91%)	0(86%)	0(96%)
	Worms	0(92%)	0(100%)	0(92%)
	Chill	0(80%)	0(90%)	0(93%)
	Vitamin Deficiency	0(96%)	0(100%)	0(100%)
Treatment	Hygiene	1(87%)	1(91%)	1(96%)
	Sandal	1(93%)	1(97%)	1(100%)
	Permanganate	0(92%)	0(90%)	0(73%)
	Crème	0(83%)	0(93%)	0(72%)
	Elevation	0(71%)	0(82%)	0(62%)
	Massage	0(97%)	0(99%)	0(80%)
	Exercise	0(94%)	0(95%)	0(94%)
	Bandage	0(86%)	0(86%)	0(70%)
	Medicine	0(78%)	0(74%)	0(76%)
	Herbal Remedy	1(66%)	1(63%)	0(52%)
	Pomade	0(57%)	1(60%)	0(76%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met
*** Weighted % values are derived from the frequency with which a response was given in the sample population to a given item adjusted for the varying degrees of cultural competency of sample participants. Increased weight was allocated for the responses of sample participants who possessed higher cultural competency.

Table 24. Comparisons of Culturally Correct Answer Keys by Town

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
Archaie vs. Cabaret	.1799	1	.67	1.00*
Archaie vs. La Plaine	.2345	1	.63	1.00*
Cabaret vs. La Plaine	.8095	1	.37	.66*

In addition to the evidence provided by the comparison of the answer keys, each town was also assessed for significant differences in mean cultural competency scores (Table 24), where cultural competency describes the degree of cultural expertise any given sample participant has regarding the cultural domain in question (e.g.: lymphatic filariasis). Archaie and Cabaret show borderline significant differences in levels of competency ($t=-1.94$, $df=137$, $p<.054$) while Archaie and La Plaine clearly exhibit a lack of significant differences in individual cultural competency levels ($t=-1.54$, $df=189$, $p<.1249$). Likewise, Cabaret and La Plaine are not significantly different in the average levels of cultural competency present in each town ($t=.82$, $df=150$, $p<.4119$). Taken as a whole, the lack of clearly significant differences between these three towns further supports the grouping of the sample populations in all additional analyses.

Baseline Cultural Consensus Analysis Comparison by Matched Group: Intervention and Control

After examining the baseline sample by town, analyses were conducted by intervention and control group designation. Consensus analysis was run on the following samples: baseline matched controls (BMC), baseline matched intervention (BMI), entire baseline sample (B-All). Additionally, groups were compared for significant differences between levels of cultural competency as well as between elements of the culturally "correct" answer key.

Table 25. Baseline: Consensus Analysis Results by Group

	N	First Eigenvalue	Second Eigenvalue	Eigenvalue Ratio
BMC	27	7.829	3.248	2.410
BMI	60	17.038	7.015	2.429
B-All	241	71.840	24.892	2.886

*One individual removed from analyses in the outcome control group due to missing data

As the eigenvalue ratio between the first and second eigenvalues was not equal to or greater than three, the threshold for consensus was not met for all three baseline samples (Table 25). Once the degree of consensus in a sample was established, the answer keys were compared for significant differences. The answer keys and comparative analyses are below:

Table 26. Culturally Correct Answer Keys by Intervention and Control Group

Baseline Sample		BMC (N=27)	BMI (N=60)	B-All (N=241)
		Answer (Weighted %)	Answer (Weighted %)	Answer (Weighted %)
Cause	Insect Bite	0(100%)	0(95%)	0(97%)
	Magic	0(82%)	0(93%)	0(93%)
	Sprain	0(98%)	0(96%)	0(92%)
	Worms	0(86%)	0(99%)	0(94%)
	Chill	0(96%)	0(90%)	0(88%)
	Vitamin Deficiency	0(96%)	0(100%)	0(99%)
Treatment	Hygiene	1(93%)	1(91%)	1(92%)
	Sandal	1(98%)	1(97%)	1(97%)
	Permanganate	0(81%)	0(88%)	0(84%)
	Crème	0(83%)	0(76%)	0(82%)
	Elevation	0(75%)	0(63%)	0(70%)
	Massage	0(84%)	0(95%)	0(91%)
	Exercise	0(97%)	0(86%)	0(94%)
	Bandage	0(77%)	0(86%)	0(80%)
	Medicine	0(89%)	0(82%)	0(77%)
	Herbal Remedy	0(51%)	0(53%)	1(58%)
	Pomade	0(69%)	0(66%)	0(61%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

In the baseline sample, all groups identify hygiene and sandals as a treatment choice (Table 26). When the full baseline sample (B-All) is reviewed, herbal remedies are also indicated as a viable treatment option.

Table 27. Baseline Sample: Comparisons of Culturally Correct Answer Keys by Intervention and Control Groups

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
BMC vs. B-All	.2345	1	.6282	1.00*
BMI vs. B-All	.2345	1	.6282	1.00*
BMC vs. BMI	.0000	1	1.0000	1.00*

* indicates which statistic was interpreted for significant differences between the answer keys
**In the BMC vs. B-All comparisons the B-All sample was reduced to an n=214 (removed the control individuals) so answer keys could be examined absent any overlapping individuals
*** In the BMI vs. B-All comparisons the B-All sample was reduced to an n=181 (removed the intervention individuals) so answer keys could be examined absent any overlapping individuals

Chi-square analyses were conducted to examine the differences between answer keys (Table 27). In some cases, this analysis was appropriate; however, in other comparisons, small cell sizes resulted in the interpretation of the Fisher's exact statistic instead. As expected, the baseline comparisons did not indicate significant differences in the culturally correct answer keys.

In addition to analyzing the answer keys for differences, average levels of cultural competency were also assessed (Table 28).

Table 28. Baseline Sample: Cultural Competency Analysis Results by Group

	N	**Average Competency**
BMC	27	.51
BMI	60	.49
B-All	241	.50

*One individual removed from analyses in the outcome control group due to missing data

Table 29. Baseline Sample: Comparisons of Cultural Competency by Intervention and Control Groups

	df	**t**	**p<**
BMC vs. B-All	239	-.13	.8994
BMI vs. B-All	239	.64	.5200
BMC vs. BMI	85	.44	.6591

*In the BMC vs. B-All comparisons the B-All sample was reduced to an n=214 (removed the control individuals) so an independent samples t-test could be run
** In the BMI vs. B-All comparisons the B-All sample was reduced to an n=181 (removed the intervention individuals) so an independent samples t-test could be run

Independent samples t-tests indicate no significant differences in competency between the baseline samples (Table 29).

Baseline Cultural Consensus Analysis: Intervention and Control Groups by Demographic Characteristics

Once the baseline intervention and control groups were reviewed for the presence of cultural consensus and significant group differences were explored, the intersection between demographic dimensions and cultural models were examined. Consensus analysis was run on the same samples as the comparisons above: baseline matched controls (BMC), baseline matched intervention (BMI), and the entire baseline sample (B-All). In addition to the consensus analyses, groups were compared for significant differences between levels of cultural competency as well as between elements of the culturally "correct" answer key on the following demographics: marital status, religion, literacy, wealth, age, stage of disease, and number of acute attacks.

With regard to the demographic analyses, Protestants and Catholics were compared as there were too few individuals who selected vodou, other, or no religion to include in the analysis. Along the demographic dimension of wealth, two categories were identified for comparison. Each individual was asked if they possessed any of the following four items: radio, storage chest, bicycle, living room. These indicators are common markers of material style of life in the Haitian context, a construct that has been used to indirectly measure relative wealth. If an individual owned two of these items or less, they were classified as less wealthy; in contrast, people owning either three or four of the items were identified as more wealthy. For age, the median age, 46 years old, was used to divide the sample into younger and older groupings. Stage of disease was also assessed for differences in cultural model. Individuals were grouped into two categories for comparison: less severe and more severe. Those people experiencing stage 0-2 disease were grouped with less severe as these stages are characterized by either no symptoms or swelling only. In contrast, individuals experiencing stage 3-7 disease were assigned a value of more severe as stages 3-7 are associated with skin folds, knobs, lesions, and the inability to care for oneself. In the data, each person had each leg staged for disease severity; the most severe of these values was utilized in this analysis. Finally, the number of acute attacks experienced by each individual in the past year was also explored. People were grouped by fewer and more attacks in the past year due to the small cell sizes present in the alternate comparison of no acute attacks versus any acute attacks. Thus, individuals having 0-1 acute attacks in the past year were identified as having fewer attacks than their counterparts with more attacks, 2-3 acute attacks within the past year. The tables below outline the general demographic findings; more detailed demographic data from the baseline cultural consensus analyses are available in Appendix A.

Table 30. Key Findings in Baseline Data for Demographic Characteristics

Group	Demographic Characteristic	Demographic Category	N	Presence of Consensus
BMC	Marital Status	Single	4	No
		Not Single	23	No
BMI		Single	27	No
		Not Single	33	No
B-All		Not Single	159	Yes
		Single	82	No
BMC	Religion	Protestant	6	No
		Catholic	15	Yes
BMI		Protestant	28	No
		Catholic	27	No
B-All		Protestant	96	No
		Catholic	118	Yes
BMC	Literacy	Literate	15	No
		Not Literate	12	Yes
BMI		Literate	38	No
		Not Literate	22	Yes
B-All		Literate	137	No
		Not Literate	104	Yes
BMC	Wealth	Less Wealth	24	No
		More Wealth	3	Yes
BMI		Less Wealth	35	Yes
		More Wealth	25	No
B-All		Less Wealth	172	Yes
		More Wealth	69	No
BMC	Age	Younger	14	No
		Older	13	No
BMI		Younger	28	No
		Older	32	No
B-All		Younger	121	No
		Older	120	No
BMC	Stage of Disease	Less Severe	9	No
		More Severe	18	Yes
BMI		Less Severe	36	No
		More Severe	24	No
B-All		Less Severe	125	No
		More Severe	116	No
BMC	Number of Attacks	Fewer Attacks	19	Yes
		More Attacks	8	No
BMI		Fewer Attacks	31	No
		More Attacks	28	No
B-All		Fewer Attacks	149	Yes
		More Attacks	89	No

Table 31. Significant Differences in Culturally Correct Answer Keys in the Baseline Data for Demographic Characteristics

Demographic Characteristic	Demographic Comparison	BMC	BMI	B-All
Marital Status	Single vs. Not Single	No	No	No
Religion	Protestant vs. Catholic	No	No	No
Literacy	Literate vs. Not Literate	No	No	No
Wealth	Less Wealth vs. More Wealth	No	No	No
Age	Younger vs. Older	No	No	No
Stage of Disease	Less Severe vs. More Severe	No	No	No
Number of Attacks	Fewer Attacks vs. More Attacks	No	No	No

Table 32. Significant Differences in Cultural Competency in the Baseline Data for Demographic Characteristics

Demographic Characteristic	Demographic Comparisons	BMC	BMI	B-All
Marital Status	Single vs. Not Single	No	No	No
Religion	Protestant vs. Catholic	No	No	No
Literacy	Literate vs. Not Literate	No	No	No
Wealth	Less Wealth vs. More Wealth	No	No	No
Age	Younger vs. Older	No	No	No
Stage of Disease	Less Severe vs. More Severe	No	No	No
Number of Attacks	Fewer Attacks vs. More Attacks	No	Yes	Yes

Though consensus was not present in the complete baseline samples (BMC, BMI, B-All), consensus was reached in some sub-samples when demographic designations were considered (Table 30). Regarding marital status, the full baseline sample (B-All) reached consensus for the non-single portion of the sample. The Catholic segment of the baseline controls (BMC) population showed strong consensus, and this consensus was also reflected in the full baseline sample. Non-literate individuals exhibited consensus across all three baseline samples (BMC, BMI, B-All). Participants who are wealthier displayed consensus in the baseline control group (BMC), while less wealthy individuals showed consensus in the intervention group (BMI) and the full baseline sample (B-All). With regards to severity, the baseline control group (BMC) presented with consensus for people experiencing higher stage disease. Also, the baseline control (BMC) and full baseline sample (B-All) produced cultural consensus in the sub-sample reporting fewer acute attacks in the past year.

Though some sub-samples presented with shared consensus, none of the culturally correct answer keys were significantly different from one another within each demographic characteristic (Table 31). However, both the baseline intervention (BMI) and full baseline samples (B-All) for number of attacks did show significant differences in competency along the number of attacks demographic characteristic (Table 32).

Cultural Models at Outcome

Outcome Cultural Consensus Analysis Comparison by Matched Group: Intervention and Control

Once cultural consensus analyses were conducted on the baseline samples, these analyses were repeated by intervention and control group for the following samples: outcome matched controls (OMC-Reduced Model [RM]) and the outcome matched intervention (OMI-RM) sample. Also, outcome matched controls (OMC-Full Model [FM]) and intervention (OMI-FM) participants were assessed for cultural models with the inclusion of the additional CM questions only present in the outcome survey. Groups were also compared for significant differences between levels of cultural competency as well as between elements of the culturally "correct" answer key.

Table 33. Outcome Sample: Consensus Analysis Results by Group

	N	**First Eigenvalue**	**Second Eigenvalue**	**Eigenvalue Ratio**
OMC-RM*	26	9.135	2.347	3.892
OMI-RM	60	26.897	5.714	4.71
OMC-FM*	26	6.959	2.646	2.630
OMI-FM	60	20.469	4.253	4.812

*One individual removed from analyses in the outcome control group due to missing data

As the eigenvalue ratio between the first and second eigenvalues was equal to or greater than three, the threshold for consensus was met for the following three groups: outcome controls (OMC-RM), outcome intervention (OMI-RM), outcome intervention with additional items (OMI-FM) (Table 33). Of the three groups that met consensus, it was greatest in the intervention groups at outcome.

Once the degree of consensus in a sample was established, the answer keys were compared for significant differences (Table 34, 35). The outcome samples suggest that hygiene and sandals remain elements of the cultural model across both control (OMC-RM) and intervention (OMI-RM) groups. However, the cultural model for the intervention (OMI-RM) group is also comprised of the following key treatment elements: crème, elevation, massage, exercise, and herbal remedies. This group also believes that insect bites cause lymphatic filariasis.

Table 34. Culturally Correct Answer Keys by Intervention (OMI-RM) and Control (OMC-RM) Group

Outcome Sample		**OMC-RM (N=26)**	**OMI-RM (N=60)**
		Answer (Weighted %)	
Cause	Insect Bite	0(96%)	1(72%)
	Magic	0(97%)	0(96%)
	Sprain	0(100%)	0(96%)
	Worms	0(85%)	0(89%)
	Chill	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)
Treatment	Hygiene	1(98%)	1(97%)
	Sandal	1(97%)	1(98%)
	Permanganate	0(94%)	0(77%)
	Crème	0(97%)	1(50%)
	Elevation	0(83%)	1(94%)
	Massage	0(97%)	1(66%)
	Exercise	0(97%)	1(89%)
	Bandage	0(93%)	0(81%)
	Medicine	0(56%)	0(61%)
	Herbal Remedy	0(58%)	1(42%)
	Pomade	0(69%)	0(59%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met
*** One individual removed from analyses in the outcome control group due to missing data

In the full outcome model, including items present only in the outcome data, the control (OMC-FM) group suggests hygiene and sandals are the only agreed upon courses of treatment. Alternately, the intervention (OMI-FM) group endorsed the idea of insect bites as the cause of LF and the use of hygiene, sandals, elevation, massage, exercise, and herbal remedies.

Table 35. Culturally Correct Answer Keys by Intervention (OMI-FM) and Control (OMC-FM) Group that Include Additional Cultural Model Items only Present in the Outcome Sample

Outcome Sample		**OMC-FM (N=26)**	**OMI-FM (N=60)**
		Answer (Weighted %)	
Cause	Insect Bite	0(94%)	1(74%)
	Magic	0(94%)	0(98%)
	Sprain	0(100%)	0(95%)
	Worms	0(95%)	0(86%)
	Chill	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)
Treatment	Hygiene	1(100%)	1(99%)
	Sandal	1(99%)	1(99%)
	Permanganate	0(96%)	0(79%)
	Crème	0(99%)	0(53%)
	Elevation	0(93%)	1(95%)
	Massage	0(99%)	1(66%)
	Exercise	0(99%)	1(93%)
	Bandage	0(94%)	0(82%)
	Medicine	0(68%)	0(64%)
	Herbal Remedy	0(82%)	1(57%)
	Pomade	0(85%)	0(59%)
Treatment (OC Only)	Hygiene	1(92%)	1(98%)
What kinds of care can help your gwopye?	Sandal	1(86%)	1(80%)
	Permanganate	0(97%)	0(67%)
	Crème	0(94%)	0(52%)
	Elevation	0(87%)	1(93%)
	Massage	0(97%)	1(70%)
	Exercise	0(97%)	1(92%)
	Bandage	0(97%)	0(87%)
	Medicine	0(75%)	0(67%)
	Nothing	0(98%)	0(100%)
Treatment (OC Only)	Hygiene	1(73%)	1(89%)

Table 35. *(continued)*

Outcome Sample		OMC-FM (N=26)	OMI-FM (N=60)
		Answer (Weighted %)	
What can you do to prevent acute attacks?	Sandal	1(73%)	1(78%)
	Permanganate	0(97%)	0(88%)
	Crème	0(97%)	0(79%)
	Elevation	0(90%)	1(72%)
	Massage	0(100%)	1(56%)
	Exercise	0(100%)	1(74%)
	Bandage	0(100%)	0(94%)
	Medicine	0(87%)	0(69%)
	Nothing	0(95%)	0(100%)
Treatment (OC Only)	Hygiene	1(78%)	1(79%)
What can be done to provide relief during an acute attack?	Sandal	1(75%)	1(60%)
	Permanganate	0(100%)	0(78%)
	Crème	0(99%)	0(76%)
	Elevation	0(93%)	1(67%)
	Massage	0(99%)	1(57%)
	Exercise	0(99%)	1(65%)
	Bandage	0(94%)	0(89%)
	Medicine	0(68%)	0(63%)
	Nothing	0(97%)	0(99%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met
*** One individual removed from analyses in the outcome control group due to missing data

Table 36. Outcome Sample: Comparisons of Culturally Correct Answer Keys by Intervention and Control Groups

	Chi-Square	**df**	**P<**	**Fisher's Exact Two-Tailed p<**
OMC-RM vs. OMI-RM	5.1000*	1	.0239	.0570
OMC-FM vs. OMI-FM	9.5958*	1	.0020	.0036
OMI-RM vs. OMI-FM	.0003*	1	.9859	1.00
OMC-RM vs. OMC-FM	.2617	1	.6090	1.00*

* indicates which statistic was interpreted for significant differences between the answer keys

Chi-square and Fisher's exact analyses were conducted to examine the differences between answer keys (Table 36). As expected, significant differences existed between the elements of the answer keys in these comparisons: outcome controls (OMC-RM) vs. outcome intervention (OMI-RM), outcome controls with additional items (OMC-FM) and outcome intervention with additional items (OMI-FM). Also, as hypothesized, the remaining comparisons did not indicate significant differences.

In addition to analyzing the answer keys for differences, average levels of cultural competency were also assessed (Table 37).

Table 37. Outcome Sample: Cultural Competency Analysis Results by Group

	N	Average Competency
OMC-RM	26	.56
OMI-RM	60	.62
OMC-FM	26	.44
OMI-FM	60	.51

*One individual removed from analyses in the outcome control group due to missing data

Table 38. Outcome Sample: Comparisons of Cultural Competency by Intervention and Control Groups

	df	t	P<
OMC-RM vs. OMI-RM	84	-1.08	.2833
OMC-FM vs. OMI-FM	84	-1.17	.2458
OMI-RM vs. OMI-FM		2.06	.0439
OMC-RM vs. OMC-FM		2.41	.0237

Independent samples t-tests point to significant differences in competency when the outcome intervention and control (OMI-RM & OMC-RM) groups were compared to the outcome samples including additional CM items (OMI-FM & OMC-FM); this occurrence suggests that there is a lesser degree of cultural competency when patients are asked to identify treatment options for specific scenarios, such as how to treat an acute attack, rather than general treatment choices for LF (Table 38).

Outcome Cultural Consensus Analysis: Intervention and Control Groups by Demographic Characteristics

Once the outcome intervention and control groups were reviewed for the presence of cultural consensus and significant group differences were explored, the intersection between demographic dimensions and cultural models were examined. Consensus analysis was run on the same samples as the comparisons above: outcome matched controls (OMC-RM), outcome matched intervention sample (OMI-RM), as well as outcome matched controls (OMC-FM) and intervention (OMI-FM) participants with the inclusion of the additional CM questions only present in the outcome survey (Table 39). In addition to the consensus analyses, groups were compared for significant differences between levels of cultural competency as well as between elements of the culturally "correct" answer key on the following demographics: marital status, religion, literacy, wealth, age, stage of disease, and number of acute attacks (Table 40, 41). The tables below outline the general demographic findings; more detailed demographic data from the outcome cultural consensus analyses are available in Appendix B.

Table 39. Key Findings in Outcome Data for Demographic Characteristics

Group	Demographic Characteristic	Demographic Category	N	Consensus
OMC-RM*	Marital Status	Single	4	Yes
		Not Single	22	Yes
OMI-RM		Single	27	Yes
		Not Single	33	Yes
OMC-FM*		Single	4	Yes
		Not Single	22	No
OMI-FM		Single	27	Yes
		Not Single	33	Yes
OMC-RM*	Religion	Protestant	6	Yes
		Catholic	15	Yes
OMI-RM		Protestant	28	Yes
		Catholic	27	Yes
OMC-FM*		Protestant	6	Yes
		Catholic	15	No
OMI-FM		Protestant	28	Yes
		Catholic	27	Yes
OMC-RM*	Literacy	Literate	15	Yes
		Not Literate	11	Yes
OMI-RM		Literate	38	Yes
		Not Literate	22	Yes
OMC-FM*		Literate	15	No
		Not Literate	11	Yes
OMI-FM		Literate	38	Yes
		Not Literate	22	Yes
OMC-RM*	Wealth	Less Wealth	23	Yes
		More Wealth	3	No
OMI-RM		Less Wealth	35	Yes
		More Wealth	25	Yes
OMC-FM*		Less Wealth	23	No
		More Wealth	3	No
OMI-FM		Less Wealth	35	Yes
		More Wealth	25	Yes

Table 39. *(continued)*

Group	Demographic Characteristic	Demographic Category	N	Consensus
OMC-RM*	Age	Younger	13	No
		Older	13	Yes
OMI-RM		Younger	28	Yes
		Older	32	Yes
OMC-FM*		Younger	13	No
		Older	13	Yes
OMI-FM		Younger	28	Yes
		Older	32	Yes
OMC-RM*	Stage of Disease	Less Severe	9	Yes
		More Severe	17	Yes
OMI-RM		Less Severe	36	Yes
		More Severe	24	Yes
OMC-FM*		Less Severe	9	Yes
		More Severe	17	Yes
OMI-FM		Less Severe	36	Yes
		More Severe	24	Yes
OMC-RM*	Number of Attacks	Fewer Attacks	18	Yes
		More Attacks	8	Yes
OMI-RM		Fewer Attacks	31	Yes
		More Attacks	28	Yes
OMC-FM*		Fewer Attacks	18	Yes
		More Attacks	8	Yes
OMI-FM		Fewer Attacks	31	Yes
		More Attacks	28	Yes

*One individual removed from analyses in the outcome control group due to missing data

Table 40. Significant Differences in Culturally Correct Answer Keys in the Outcome Data for Demographic Characteristics

Demographic Characteristic	**Demographic Comparison**	**OMC RM**	**OMI RM**	**OMC FM**	**OMI FM**
Marital Status	Single vs. Not Single	No	No	No	No
Religion	Protestant vs. Catholic	No	No	No	No
Literacy	Literate vs. Not Literate	No	No	No	No
Wealth	Less Wealth vs. More Wealth	No	No	No	No
Age	Younger vs. Older	No	No	No	No
Stage of Disease	Less Severe vs. More Severe	No	No	No	No
Number of Attacks	Fewer Attacks vs. More Attacks	No	No	No	No

Table 41. Significant Differences in Cultural Competency in the Outcome Data for Demographic Characteristics

Demographic Characteristic	**Demographic Comparison**	**OMC RM**	**OMI RM**	**OMC FM**	**OMI FM**
Marital Status	Single vs. Not Single	No	No	No	No
Religion	Protestant vs. Catholic	No	No	No	No
Literacy	Literate vs. Not Literate	No	No	No	No
Wealth	Less Wealth vs. More Wealth	Yes	No	Yes	No
Age	Younger vs. Older	No	No	No	No
Stage of Disease	Less Severe vs. More Severe	No	No	No	No
Number of Attacks	Fewer Attacks vs. More Attacks	No	No	No	No

Marital Status

An eigenvalue ratio greater than three was present for the outcome control group with additional items (OMC-FM) for the single sample, as well as the control group (OMC-RM), intervention group (OMI-RM) and intervention group with additional items (OMI-FM) at outcome regardless of marital status. When a group exhibited consensus in either or both conditions, it was stronger for the single portion of the sample.

The highest cultural competency presented in the intervention group at outcome (OMI-RM) across both marital conditions, and this finding is in line with overall study hypotheses. Additionally, no significant differences in levels of competency exist within each group by marital status. This information, considered with the levels of cultural consensus and lack of significant differences in answer keys suggests that single individuals experience more cohesiveness in their cultural model of LF, but that this difference is not great enough to impact the overall shared cultural model when both single and not single participants are grouped together.

Religion

In the case of religion, Protestants and Catholics were compared; there were too few individuals who selected vodou, other, or no religion to include in the analysis. Consensus was met for several groups: Protestants and Catholics in the outcome controls sample (OMC-RM), Protestants and Catholics in the outcome intervention sample (OMI-

RM), Protestants in the outcome controls with additional items group (OMC-FM), and both Protestants and Catholics in the in outcome intervention group with additional items (OMI-FM). Consensus was highest in the two intervention groups for the Protestant sample.

No significant differences between answer keys by religion existed within each of the groups. Regarding cultural competency, no significant differences existed between conditions, Protestant and Catholic, within each of the groups analyzed.

Literacy

In the case of literacy, strongest consensus is present among the outcome controls both reduced and full samples (OMC-RM & OMC-FM). Consensus if also found in all members of the intervention group in both full and reduced models (OMI-RM & OMI-FM); however, consensus is greater among individuals who are not literate. The answer keys showed no significant differences within each group. The same trend held true when differences in cultural competency were examined within each group.

Wealth

Within the wealth comparisons, outcome intervention groups, both full and reduced (OMI-RM & OMI-FM), exhibited the highest level of consensus across both wealth categories. Specifically, individuals with more wealth in the intervention group showed stronger consensus than their less wealthy counterparts. For the outcome control groups, only the less wealthy individuals for the reduced model (OMC-RM) showed consensus. However, in the outcome intervention group both stronger consensus and competence was present for wealthier individuals.

Age

When looking at cultural models present in the sample by age, younger outcome intervention members exhibit consensus where their outcome control counterparts do not. Older members show consensus in all four outcome models, but the younger group indicates the strongest consensus. The younger portion either had no consensus or the strongest consensus of all outcome groups (OMI-RM).

Stage of Disease

All groups showed consensus at outcome albeit lesser in the control groups. In the reduced outcome model, consensus is highest in the portion of the sample experiencing more severe disease. In the outcome intervention model assessing general treatment options, consensus existed for individuals more severely impacted by LF. However, when specific treatment scenarios were introduced, the intervention model with additional items present in the outcome survey only (OMI-FM), those with less severe disease indicated greater consensus.

Number of Acute Attacks

Consensus is also present in all outcome groups for number of acute attacks, and it is greater in the outcome intervention groups (OMI-RM & OMI-FM). Within the intervention groups, people with fewer attacks exhibited slightly more consensus than the portion experiencing more acute attacks. The highest cultural consensus for individuals having fewer attacks was found in the outcome intervention sample (OMI-RM), and the highest overall consensus presented in the outcome control sample (OMC-RM) for those with more attacks.

Changes in Cultural Competency: Baseline to Outcome

In addition to assessing the cultural models through consensus analysis at each data point, baseline and outcome, longitudinal changes were also examined. One change investigated included the degree of change in cultural competency levels between groups before and after support group participation (Table 42).

Table 42. Baseline and Outcome: Cultural Competency Analysis Results by Group

	N	**Average Competency**
BMC	27	.51
BMI	60	.49
OMC-RM	26	.56
OMI-RM	60	.62

*One individual removed from analyses in the outcome control group due to missing data

Table 43. Baseline to Outcome: Comparisons of Cultural Competency by Intervention and Control Groups

	Df	t	p<
BMC vs. OMC-RM		.62	.5407
BMI vs. OMI-RM		3.63	.0006

Paired samples t-tests measured the degree of change over time in cultural competency for both the control and intervention samples (Table 43). The findings support the key hypotheses that no significant change in cultural competency would occur from baseline to outcome in the control group and, in contrast, that the intervention group would show significant improvement of cultural competency at outcome.

Changes in Cultural Models: Baseline to Outcome

The second component of the cultural consensus analyses examined longitudinally was a comparison of culturally correct answer keys between the two baseline and outcome samples.

Table 44. Baseline to Outcome: Comparisons of Culturally Correct Answer Keys by Intervention and Control Groups

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
BMC vs. OMC-RM	.0000	1	1.0000	1.00*
BMI vs. OMI-RM	5.1000*	1	.0239	.0570

* indicates which statistic was interpreted for significant differences between the answer keys

Chi-square and Fisher's exact analyses were conducted, as appropriate, to examine the differences between answer keys (Table 44). As expected, significant differences existed between the baseline and outcome intervention samples (BMI & OMI-RM). Also, as hypothesized, the remaining comparison, baseline and outcome control samples (BMC & OMC-RM) did not indicate significant differences.

Strength of Cultural Consensus: Baseline to Outcome

The final component of the cultural consensus analyses involved a review of the degree of shared consensus within samples at baseline and outcome. These comparisons are descriptive only as no test of statistical significance currently exists to assess for significant differences in the eigenvalue ratio from baseline to outcome points.

Table 45. Baseline and Outcome: Consensus Analysis Results by Group

	N	First Eigenvalue	Second Eigenvalue	Eigenvalue Ratio
BMC	27	7.829	3.248	2.410
BMI	60	17.038	7.015	2.429
OMC-RM*	26	9.135	2.347	3.892
OMI-RM	60	26.897	5.714	4.71

*One individual removed from analyses in the outcome control group due to missing data

As the eigenvalue ratio between the first and second eigenvalues was equal to or greater than three, the threshold for consensus was met for the following three groups: outcome controls (OMC-RM) and the outcome intervention sample (OMI-RM) (Table 45). Overall, consensus increased from baseline to outcome for both the control and intervention groups. However, the degree of shared consensus remained greatest for the intervention group at outcome (OMI-RM).

Link Between Cultural Consensus and Cultural Consonance: Baseline to Outcome

Cultural Consonance Analyses

After the cultural consensus analyses were completed, cultural consonance (CC) was then assessed. For each of the comparison groups, baseline control (BMC), baseline intervention (BMI), baseline all (B-All), outcome controls (OMC-RM), and outcome intervention (OMI-RM), tested in the first portion of the CM evaluation, a CC analysis was also conducted. The outcome control and intervention models including the additional items (OMC-FM & OMI-FM) cannot be assessed for cultural consonance as the questions elicited information regarding what a person could do in each treatment scenario and did not inquire as to which treatment behaviors were actually enacted in these more specific treatment circumstances. In each model tested, treatment items identified in each culturally correct answer keys are the items tested for consonance. Thus, if four treatment options are identified as part of the cultural model in a sample, each respondent could exhibit a consonance of 0, 25%, 50%, 75%, or 100%. The average consonance of each sample is reported in this section where average consonance indicated average degree of behavioral enactment of elements incorporated in the cultural model within the sample population (Table 46).

Table 46. Baseline and Outcome: Cultural Consonance Analysis Results by Group

	N	Average Consonance
BMC	27	.83
BMI	60	.70
B-All	241	.63
OMC-RM*	26	.88
OMI-RM	60	.56

* One individual removed from analyses in the outcome control group due to missing data

In these comparisons, outcome controls (OMC-RM) showed the highest rates of consonance followed by the baseline control group (BMC). This finding is alternate to the expected relationship between consonance and consensus. Independent samples t-tests were also executed in order to assess for significant differences in levels of cultural consonance, and the results are presented in the table below:

Table 47. Comparisons of Cultural Consonance by Intervention and Control Groups

	df	t	p<
BMI vs. BMC	85	1.39	.1687
B-All vs. BMC	266	-3.35	<.0009
B-All vs. BMI	73.3	-1.24	.2184
OMC-RM vs. OMI-RM	35.5	5.07	<.0001
BMC vs. OMC-RM	51	-.56	.5776
BMI vs. OMI-RM	83	2.20	.0309

Though the findings related to average rate of consonance were unexpected, at outcome the consonance rates between the control (OMC-RM) and intervention (OMI-RM) groups were significantly different as were the rates between the baseline (BMI) and outcome (OMI-RM) intervention samples (Table 47).

Cultural Consonance Analyses by Demographics

Once cultural consonance analyses were reviewed for the key comparison samples, consonance was then tested along demographic dimensions for significant differences (Table 48). More detailed results from these analyses are available in Appendix C.

Table 48. Significant Differences in Cultural Consonance for Demographic Characteristics

Demographic Characteristic	**Demographic Comparisons**	**BMC**	**BMI**	**B-All**	**OMC-RM**	**OMI-RM**
Marital Status	Single vs. Not Single	No	No	Yes	No	Yes
Religion	Protestant vs. Catholic	No	Yes	No	No	No
Literacy	Literate vs. Not Literate	No	No	No	Yes	Yes
Wealth	Less Wealth vs. More Wealth	No	Yes	No	No	Yes
Age	Younger vs. Older	No	No	No	No	No
Stage of Disease	Less Severe vs. More Severe	No	No	No	No	No
Number of Attacks	Fewer Attacks vs. More Attacks	Yes	Yes	Yes	No	Yes

Marital Status

Independent samples t-tests suggest that significant differences exist between individuals by marital status in the full baseline sample (B-All) as well as the outcome intervention (OMI-RM) sample. Taken as a whole, it seems that people who participate in the support group program and are partnered are more likely to engage in treatment behaviors than their single counterparts.

Religion

The only group to display significant differences in consonance is the baseline intervention (BMI) sample. At baseline, Protestants exhibited significantly higher rates of consonance, but, after participation in the support group, Catholics increased in consonance greatly; this shift eliminated any significant differences in the two groups at outcome. The data allow that Catholics effectively incorporated self-care practices into their treatment regimen at a rate much improved than was evidenced at baseline.

Literacy

When independent samples t-tests were run, the only significant difference highlighted was found in the outcome intervention group. In this case, it looks as though, at outcome, non-literate individuals were not as greatly impacted by the support group program as literate members of the sample population.

Wealth

Through t-test comparisons, significant differences in consonance were revealed in both baseline and outcome intervention groups. This observation suggests that less wealthy people were less amenable to enacting the self-care practices, other than the ones present at baseline, they endorsed in the cultural model. In contrast, wealthier people were able to incorporate newly introduced self-care practices into both their belief and behavioral systems.

Age

After looking at the consonance rates by age, t-tests comparisons support the finding that there are no significant differences between age categories within any of the samples tested. The data indicate that older individuals in the intervention sample increased in their willingness to enact treatment practices indicated in the CM after support group participation. Younger individuals in this sample, however, endorsed the beliefs present in the CM, but were not as quick to add additional behaviors to their treatment regimen as evidenced by their reduced rate of consonance at outcome.

Stage of Disease

Independent samples t-tests show no significant differences between the consonance rates of people with more or less severe disease within each of the samples. After a review of these data, it appears that people with less severe disease were less likely to include the additional self-care practices they endorsed, indicated in the culturally correct answer keys, after support group participation than support group participants with more severe disease.

Number of Acute Attacks

When examined for significant differences in consonance by number of acute attacks within the past year, baseline controls (BMC), baseline intervention (BMI), and outcome intervention (OMI-RM) groups met the threshold for significance. Individuals with less acute attacks were more likely to enact self-care behaviors in the treatment regimen after support group participation.

Chapter 5: Discussion

This chapter aims to discuss the study results within the parameters of the key research questions outlined in earlier chapters. Additionally, a brief assessment of the cultural evaluation methodology and the support group program is also presented. Finally, implications of the research findings and future directions in research are presented.

Cultural Models at Baseline

Baseline Comparisons

The first research question posed in this study aimed at understanding key beliefs about lymphatic filariasis and the degree to which these ideas were shared in the baseline sample populations. It was postulated that a shared cultural model, meeting the threshold for consensus, would exist in these samples at baseline. This hypothesis was not supported.

At baseline, all three samples, controls, intervention, and full baseline sample, failed to meet the threshold for consensus, an eigenvalue ratio between the first and second factors greater than three. However, each of these samples (BMC, BMI, B-All) did identify the same key elements in their culturally correct answer keys: hygiene and wearing sandals. The full sample population (B-All) also selected herbal remedies, but this choice was not decisively classified. Competency levels for all three groups were also present at a level barely above the threshold of guessing. Thus, regarding the first research question, it seems that there was no clear cohesiveness in beliefs about lymphatic filariasis.

First, it is of interest to note that no causal categories were clearly endorsed as part of the culturally correct answer key at baseline. This finding could be rooted in the broader Haitian cultural context. As Farmer (1990) noted in his work with HIV/AIDS in Haiti, the cause of an illness carries great social meaning. Attribution of a lymphatic filariasis diagnosis to biomedical causes connotes a treatable illness that doesn't carry a negative moral implication; however, the disease is not considered curable within this paradigm. Alternately, traditional causal categories such as sorcery, if endorsed, may reflect poorly on the individual socially and morally; this type of illness, though, can be cured (Brodwin, 1996; Farmer, 1990). The lack of clearly identified cause for LF within the baseline sample answer keys coupled with the high number of participants identifying other or don't know as the cause of their illness at baseline (Kanda, 2004) could reflect a resistance to categorize one's own illness as either incurable (biomedical) or morally compromising (traditional).

An alternate possibility regarding the causal patterns found in the culturally correct answer keys may be explained by multiple studies on lymphatic filariasis globally. In several studies, biomedical causes of LF (e.g.: insect bites) presented in the data at very minimal levels (Coreil et al., 1998; Ramaiah et al., 1996; Person et al., 2007; Ahorlu et al., 1999; Rauyajin et al., 1995; Bandyopadhyay, 1996; Eberhard et al., 1996; Morfit, 1998; Babu et al., 2004; Coreil et al., 2003; Gyapong et al., 1996). These findings suggest it is plausible that study participants did not make a conscious choice between the morally impacted biomedical or traditional causal categories. In this scenario, it is possible that participants endorse traditional causes of LF, due to lack of awareness regarding biomedical alternatives, but still fail to share consensus regarding which traditional causes most likely result in an LF diagnosis.

Regarding the overall model identified in the answer keys, three possible explanations are presented. First, these results may indicate tension between traditional and biomedical concepts of lymphatic filariasis. However, this explanation is not likely. It is more likely that there were no shared traditional beliefs about LF in the sample populations. The rationale for this assertion lies in the elements identified in the culturally correct answer key. One would expect both traditional and biomedical elements to be highlighted if the two models were in clear opposition or tension, but this finding was not born out in the data. Instead, two key biomedical ideas about lymphatic filariasis were selected. It seems that the groups had some exposure to the biomedical perspective prior to the intervention. This tendency towards biomedical treatments at baseline may indicate that participants in the support groups were primed to receive additional biomedical information about lymphatic filariasis. Also, since there are no heavily competing shared traditional ideas about lymphatic filariasis, resistance to support group content may have been minimized.

Alternately, the results may represent a weak bicultural model comprised of both traditional and biomedical concepts of lymphatic filariasis. The support for herbal remedies, a traditional treatment option, is weaker than that of the biomedical concepts in the baseline samples, but it remains present. This integrated approach would allow for the easy integration of biomedical concepts into the overall cultural model of LF while not excluding the possibility of herbal remedies to exist within the model. This explanation result in the same environment of minimized resistance to the support group content.

A third possibility addresses the strong presence of hygiene and sandals within the baseline cultural models. It is reasonable that study participants had no clear thoughts regarding cause and treatment of LF, as supported by the lack of overall consensus. In lieu of clear beliefs about LF, the general biomedical ideas of hygiene and wearing sandals may have been chosen as they are biomedical treatment options for a number of diseases.

Lastly, these results could reflect the stigmatized nature of LF in Haiti. Within resource poor settings, disabilities are often hidden and not discussed openly (McCallion et al., 1997; Halcon, Blum, Beuhring, Pate, Campbell-Forrester, & Venema, 2003; Mayhew, 2003; Jacobson, 2003). As a result, little to no dialogue between social entities, as described within the social interactionism framework, may occur. This possibility allows for the presence of varied, non-cohesive, or transitional ideas regarding LF; such a landscape would certainly yield a lack of consensus regarding cause and treatment categories of lymphatic filariasis.

Baseline Comparisons by Demographic Dimensions

When the groups were examined by demographic dimensions, several sub-samples showed consensus. These sub-samples include: partnered, Catholic, and non-literate individuals. People experiencing more severe disease and fewer acute attacks in the past year also showed consensus. Consensus was also present along the wealth dimension, but the results varied within the baseline samples. Finally, these sub-samples generally endorsed the use of hygiene and wearing sandals as treatment options while herbal remedies received moderate support.

At baseline, it is possible that partnered individuals were more likely to show consensus as, even in an environment where disability is not openly discussed, partners can negotiate beliefs about lymphatic filariasis interpersonally. Also, LF is often found among more economically disadvantaged segments of the population; it is reasonable that poorer, non-literate people have more exposure to shared ideas of LF leading to higher rates of consensus at baseline. For those that experience more severe disease, they may be more likely to believe in applying the same general treatment options to LF as they do to multiple other illnesses; the need to alleviate symptoms in a landscape of severe disease may encourage shared belief in these general treatment categories.

The presence of consensus in these demographically separated groups at baseline suggests that participants experiencing these designations may experience more impact from the biomedical content of the support group program. This suggestion is supported as these individuals endorsed both hygiene and sandals with a high level of shared belief at baseline. However, the greater impact these participants may experience probably does not significantly affect the overall findings. This assertion is supported as each sample was tested for significant differences between the two demographic conditions (e.g.: younger, older) for each characteristic assessed: marital status, religion, literacy, wealth, age, stage of disease, number of attacks. These comparisons resulted in no significant differences between the two conditions for all the demographic characteristics. As no significant differences were evident, it is probable that no one demographic segment of the population over-influenced the content of the culturally correct answer key or the degree of consensus in the baseline populations.

Cultural Models at Outcome

Outcome Comparisons: Reduced Models (OMC-RM & OMI-RM)

Following the research question assessing the presence of cultural models at baseline, the same question was posed regarding the outcome data. Again, a shared cultural model was expected in both the intervention and control groups. It was hypothesized that the control sample would show consensus, but the consensus was not expected to increase from baseline. Also, the items in the answer key were expected to be more traditional in nature. In contrast, it was hypothesized that the intervention group would show an increased consensus from baseline, that additional biomedical cause and treatment ideas would be included in the CM, and that some traditional elements may also be present in the CM.

Supporting the alternative hypothesis, both the outcome controls and outcome intervention samples displayed consensus at outcome. Also, as expected, the intervention group shared a higher degree of consensus than the control group. Hygiene and sandals were indicated in both groups as key elements of the CM, but the intervention group also incorporated insect bite as a cause of LF and the following as treatment alternatives: crème, elevation, massage, exercise, herbal remedies. Of these treatment options included, insect bite, crème, massage, and herbal remedies were not decisively classified in the model. The items resulting in the intervention CM provide strong support for the hypothesis that biomedical categories would be strongly represented in the culturally correct answer key and some traditional items may retain their presence in the model (i.e.: herbal remedies).

The presence of higher shared levels of consensus in the intervention group was both expected and reasonable when considered within an interactionist framework. Members of the support group were both exposed to the same information about LF and had an opportunity to openly discuss the content with one another. Through the intrapersonal, interpersonal, and inter-group exchanges, the support group format allowed for ideas to be negotiated between members on multiple ecological levels. Ultimately, the cultural model embraced by support group participants reflects the program content to varying degrees.

The variation with which several of the items in the outcome intervention cultural model presented (by way of a posteriori probabilities) can be discussed in a broader context. First, it is not surprising that insect bite as cause of disease did not reach the .80 threshold for definitive classification. At baseline, there was as strong shared belief, .95 a posteriori probability, that insect bites do not cause lymphatic filariasis. However, after support group participation, this cause of LF presented with a probability of .72. Though this item did not reach the threshold, it was both indicated as part of the cultural model and increased greatly as a causal belief from baseline to outcome. This shift could indicate that shared belief in insect bites as the cause of LF are transitional or still in development after participation in the support group. As insect bite globally has not been frequently cited as a cause of LF in previous studies (Coreil et al., 1998; Ramaiah et al., 1996; Person et al., 2007; Ahorlu et al., 1999; Rauyajin et al., 1995; Bandyopadhyay, 1996; Eberhard et al., 1996; Morfit, 1998; Babu et al., 2004; Coreil et al., 2003; Gyapong et al., 1996), it is possible that support group members, while integrating the idea that insect bites cause the condition, are still negotiating what role insect bites play when simultaneously considered with other traditional cause categories.

Another possibility relates to potential confusion between the cause categories worm and insect bite. It is possible that the worms category should be grouped with the insect bite category as the mosquitoes inject a tiny worm through their bites; some people may identify this cause as worms and others insect bite. If these two categories were combined, the cause category insect bite/worm may have met the .80 threshold indicating decisive classification.

An alternate explanation for the insect bite trend in the outcome data refers back to infectious disease and traditional/supernatural causal frameworks. The increased reception of insect bite as a cause of LF could reflect an increased awareness that, while not curable, LF is very treatable and that any future disease progress can be arrested by implementing self-care practices. As such, endorsing an infectious disease causal category removes negative moral implications of the diagnosis and still provides that treatment steps can be taken to improve one's condition.

As insect bites are identified as a cause of LF in the intervention group CM, treatment alternatives endorsed in the sample are expected to be linked to that causal belief. Foster (1976) argued that illness causality provides the base for medical decision-making regarding treatment options, and multiple studies have born out this link between illness cause and treatment (Heurtin-Roberts & Reisin, 1992; Coreil & Genece, 1988; Mathews et al., 1994; Coreil, 1983; Rauyajin et al., 1995; Ahorlu et al., 1999; Ramaiah et al., 1996). Since insect bites are a biomedical cause category, it is expected that biomedical treatment alternatives will have a strong presence in the CM. This trend is present in the intervention sample as biomedical elements of the support group program were clearly embraced: the use of hygiene, wearing sandals to prevent injury to the foot, elevating the leg, and exercising the leg to improve circulation. Additionally, crème and massage are also part of the biomedical regimen and were part of the culturally correct answer key though to a lesser degree.

Herbal remedies were also indicated in the intervention culturally correct answer key. This finding is contrary to the expected outcome. Herbal remedies were not present in the baseline intervention sample, so it is not likely that the degree of belief in herbal remedies remained static over time in the intervention group. However, it is possible that participating in the support group program led to an overall increase in awareness of local treatment possibilities for LF. Within the support group, informal discussions between members could have led to members gaining belief in herbal remedies as an option. Also, while herbal remedies were not introduced in the support group program, if these remedies do not contraindicate with the treatment regimen proposed in the support group, herbal remedies may not have been heavily discouraged either. Since herbal remedies only presented with a .42 a posteriori probability in the outcome intervention group, it is clear that this idea about treatment, while present, is not pervasive.

Where the outcome intervention group showed consensus, so did the outcome control group. This result supports the hypothesis that both outcome control and intervention group would yield shared consensus; however, this hypothesis, for the control group, was predicated on the expectation of consensus at baseline for the control group as well. An increase in consensus was not expected from baseline to outcome in the control group. Thus, this outcome was unexpected, and it is uncertain why this shift emerged.

Multiple plausible explanations for this finding exist. First, it is possible that some diffusion of information from the support groups occurred within the control sites in Archaie and Cabaret as these communities had both an intervention and control group. If this contamination did occur, it was not to a great degree. If a large amount of contamination was present, one would expect items other than hygiene and sandal to receive shared support in the control sample. Instead, the two items present in the baseline sample (hygiene, sandal) strengthened in consensus without the introduction of new treatment concepts.

An alternate possibility is related to the fact that the majority of the control sample came from La Plaine, a control site only. It is not unreasonable to think that the two treatment options present in the baseline CM would receive more support at outcome in a locale that is the most urban of the three towns assessed in this research. As it is a more urban location, it is possible that control members in this town may have had more exposure to western medical ideas during the course of the support group program than their more rural counterparts. Also, though the differences at baseline were not significant between locales for cultural model, Kanda (2004) did find some regional differences in his previous examination of the three towns. This examination suggests that people living in La Plaine, at baseline, "were more likely to utilize health services and routine health care practices. This is likely explained by the greater accessibility to the capital" (Kanda, 2004, 118).

Outcome Comparisons: Full Models (OMC-FM & OMI-FM)

In the outcome survey, several additional cultural model questions were included that were not present in the baseline survey (OMI-FM & OMC-FM). As such, these items cannot be compared over time to the baseline data. However, these data still provide interesting information. The reduced outcome intervention model (OMI-RM) showed consensus as predicted, and the outcome intervention model including the additional items (OMI-FM) also yielded cultural consensus. This finding is in line with the original hypothesis; the outcome intervention sample is expected to show shared cultural consensus.

The larger model (FM) examined some of the same treatment alternatives in the reduced outcome model (RM), but different treatment scenarios were presented. First, a general question assessing what kinds of care can help with lymphatic filariasis was posed, and this question is similar to the information gathered about general treatment in the reduced model. Secondly, participants were asked what can be done to prevent acute attacks. Finally, the survey included the following question for support group members: what can be done to provide relief during an acute attack.

After running cultural consensus analysis, similar results were found in the full model as those in the reduced model for all questions. The only differences present involved the inclusion of massage and exclusion of herbal remedies. Participants exhibited higher rates of shared consensus for hygiene, sandal, elevation, massage, and exercise for the general treatment questions than for the questions addressing treatment of acute attacks.

These findings suggest that support group participants have strong agreement on treatment alternatives when asked generally how one should treat lymphatic filariasis. However, when acute attacks are addressed specifically, study members transfer the general treatment options to the prevention and treatment of acute attacks with less certainty. It is possible that the higher consensus revealed the degree to which specific content was discussed in the program. Thus, the support group program could aim to spend more time on acute attacks specifically; additional time spent on discussing these more specific scenarios allow for more interaction, negotiation, and development of shared agreement on treatment choices. Alternately, this trend may reflect the quality of the program content such that the findings may point to improving support group program content relevant to acute attacks, helping participants to better understand how general treatment options can be best applied towards preventing or treating an acute attack. Thirdly, the lack of high a posteriori probabilities present in the acute attack specific data may reflect the difficulty explaining the link between the self-care practices and prevention of acute attacks.

Outcome Comparisons by Demographic Dimensions

Demographic dimensions were assessed in the outcome samples in an effort to control for these variables. Though tradition regression analyses are not applicable in this evaluation methodology, it is possible to examine the differences in cultural models for each demographic condition (e.g.: single vs. partnered sub-samples). These analyses assess for significant differences within demographic characteristics (e.g.: marital status) along both the culturally correct answer keys and cultural competency. If significant differences are found, it may point to a greater than random influence of a particular demographic variable and require additional consideration.

In the outcome samples for the reduced model (OMC-RM & OMI-RM), multiple sub-samples showed consensus when tested along demographic characteristics. All four sub-samples showed consensus for the following demographic characteristics: marital status, religion, literacy, stage of disease, and number of attacks. Additionally, along the wealth dimension, all groups, except the wealthier outcome controls (OMC-RM), demonstrated consensus. For age, all sub-samples except younger outcome controls (OMC-RM) also met the criteria for consensus.

Within the control sub-samples, hygiene and sandal were universally endorsed for groups who had shared consensus. Participants who were literate and experienced more acute attacks in the past year also endorsed pharmaceutical medicines. Literate controls also selected herbal remedies. The strong support for the use of hygiene and wearing sandals are in line with the results of the reduced and full model control samples at outcome. One possible explanation for the addition of pharmaceutical medicines to the CM for literate individuals may be that these participants had more opportunity to read western medical materials. Through the introduction of additional information, literate members would then have to incorporate this new information into their beliefs about LF. Also, as most of the controls resided in La Plaine, closer to an urban center, people experiencing more attacks may have had more exposure and access to pharmaceutical medicines.

Regarding intervention participants, all sub-samples showed consensus at outcome and all of these samples supported the following as part of the cultural model: insect bite, sandal, elevation, massage, and exercise. All samples except wealth also selected hygiene as part of the CM. Single intervention participants also chose crème, herbal remedies, and pomade, while Protestants and Catholics indicated herbal remedies and crème, respectively. Literate individuals endorsed crème as a treatment alternative while non-literate individuals believed in herbal remedies and pomade. Poorer intervention members believed in herbal remedies and crème while younger people supported crème only. People experiencing more severe disease included crème as a part of their CM and their counterparts indicated pharmaceutical medicines and pomade. Lastly, individuals experiencing fewer attacks incorporated crème in their CM and those with more acute attacks chose herbal remedies. Overall, these findings are similar to those of the full intervention sample CM. The only exception to this trend is the appearance of both pomade and pharmaceutical medicines into the CM for some sub-samples. Further discussion of these trends by demographic dimension follows below.

Considering the CM elements included for marital status, single people seem more likely to take an integrated approach to treating their lymphatic filariasis, incorporating primarily biomedical treatment choices followed by some use of more traditional approaches such as herbal remedies and pomade. Within the Haitian context, single individuals may have less economic support than their non-single counterparts; as such, they may experience more urgency to resolve symptoms in order to retain or restore personal economic viability.

With regards to religion, these elements included in the culturally correct answer key suggest that both Catholics and Protestants benefited from the content of the support group program while Protestants are slightly more likely to integrate some traditional approaches, herbal remedies, in their beliefs about treatment. Generally, though, religion does not seem to heavily influence the type of elements, biomedical vs. traditional, involved in the CM.

Taken as a whole, non-literate members of the support group were more likely to identify traditional healing options than their literate counterparts after support group participation. The exposure of this segment of the sample to less education, and thus less western ideas, may indicate increased openness to traditional treatment options. While non-literate participants may be more open to traditional concepts, it is important to note that they also endorsed similar biomedical concepts to their literate counterparts. Large differences between literate and non-literate study members may have been minimized by the use of educational materials that included descriptive pictures in addition to text.

In addition to the explanation above, it is interesting to note that both crème and pomade are endorsed by literate and non-literate individuals, respectively. The presence of pomade in the CM at outcome may be a result of conflated ideas between crème, biomedical, and pomade, traditional. These concepts are similar, and it is possible that traditional terminology was broadened in the intervention sample community to include crème under the umbrella of the pomade concept.

Along the wealth dimension, less wealthy intervention participants also endorsed crème and herbal remedies as treatment alternatives; this finding is similar to the non-literate outcome intervention sample. It is reasonable to suggest that less wealthy members of the community may also be the segment of the population that has the least access to educational opportunities; thus, it is not surprising that wealth and literacy demographic dimensions produced linked outcomes.

For stage of disease, if pomade and crème were conflated, and both terms are used at outcome to indicate the crème concept, then people who experience less severe disease may be slightly more open to an integrated approach to treating LF. If these two concepts are not conflated, stage of disease does not seem to exert serious pressure towards biomedicine or traditional treatments as both groups, more and less severe, in the intervention sample incorporated at least one traditional treatment alternative.

In this case, it seems that people experiencing more acute attacks are open to integrated approaches to treating LF as they also believe herbal remedies may be helpful. This willingness to endorse both biomedical and more traditional options may be a result of the degree of symptomology they experience; in this situation, people may be more willing to try any treatment they if they believe there is a possibility of alleviating the symptoms.

When the sample populations were examined by demographics for the model including additional outcome survey items, the trends remained essentially the same. Not all of the same groups met consensus in the full model, but those that met consensus in both the full and reduced model presented with the same types of items in the CM.

Changes in Cultural Competency: Baseline to Outcome

After the samples were examined for the presence of consensus and the items that make up the cultural model, the next research question asked are there significant changes in levels of cultural competency existing at baseline and outcome? It was expected that members of the intervention group would display significant increases in cultural competency as a result of support group participation. The key comparisons were between the baseline and outcome control and intervention samples, respectively, and the alternative hypothesis, that significant changes in competency would occur in the intervention group, was supported.

The control group did show some increase in cultural competency, but there was no statistically significant change over the course of the study. In contrast, the intervention sample displayed increases in cultural competency from baseline to outcome, and these shifts were clearly statistically significant. However, there were not significant differences in the level of cultural competency between controls and intervention at outcome. These findings further support the idea that controls either received some information through diffusion or proximity to an urban center as suggested earlier. Though there was an increase in competency across both comparison groups, participants in the support group clearly showed larger gains. This increase in competency within the context of more complex cultural models (more items included in the CM) indicates that the support group program was implemented successfully when considering its impact on levels of cultural expertise and shared belief structures.

In addition to being a stand alone successful finding, the significant increase in cultural competency in the intervention group contributes to the body of literature on support groups and changes in knowledge. First, the findings that there are significant changes in knowledge as a result of support group participation support the trends present for other disease categories such as diabetes and cancer (Clark, 2008;Gottlieb & Wachala, 2007; Ferlic, Goldman, & Kennedy, 1979; Heinrich & Schag, 1985; Cain, Kohorn, Quinlan, Latimer, & Schwartz, 1986; Grahn, & Danielson, 1996; Carlsson & Strang, 1998; Lepore, Helgeson, Eton, & Schulz, 2003; Taylor et al., 2003; Norris, Engelgau, & Narayan, 2001; Deakin, McShane, Cade, & Williams, 2005). Specifically, this LF support group program lasted longer than a year, and the significant change in cultural knowledge of LF supports previous findings that support groups of longer duration showed more improved knowledge (Clark, 2008; Gottlieb & Wachala, 2007).

Also, the presence of significant changes in knowledge resulting from this support group suggests that the CM evaluation tool, along the dimension of cultural competency, has something important to offer. Standard evaluation approaches assess the pre-post changes in knowledge in reference to pre-determined knowledge measures. While this is useful to address certain questions, it is not culturally contextualized. The CM tool, regarding cultural competency, allows for a direct assessment of individual and aggregate levels of expertise in reference to locally shared cultural beliefs.

Another interesting finding regarding cultural competency was the significant difference in cultural competency between the outcome intervention sample and the intervention sample including additional items. It was expected that no significant difference would be present between these samples. As the degree of cultural competency in the full model was much lower than the reduced model and the a posteriori probabilities for items in the CM were also lower when acute attack scenarios were introduced, it is likely that the support group program was more effective in addressing general treatment categories for LF than those related to acute attacks.

Finally, when demographics were reviewed, it became apparent that baseline intervention members experiencing fewer attacks displayed higher levels of competency. Since this same trend was not significantly present at outcome, it is likely that people with more attacks gained more LF specific knowledge from the support group program than those with fewer attacks. People with more attacks may face more challenges with daily living or be less able to participate fully in their local communities; as such, they may have had less exposure to local ideas regarding how to treat LF before participating in the support group. Alternately, participants experiencing more severe disease may have been more highly motivated to adopt health behaviors (Cameron, Leventhal, & Leventhal, 1995); as such, individuals experiencing more attacks may have attended more support group meetings or paid higher attention to the educational content due to a higher perceived need.

Changes in Cultural Models: Baseline to Outcome

The fourth key research question addressed whether or not the culturally correct answer keys were significantly different from baseline to outcome for the comparison groups: baseline controls, baseline intervention, outcome control, outcome intervention. It was postulated that the intervention group would show a significant difference in the culturally correct answer keys between the baseline and outcome points. Additionally, the CM at outcome was expected to reflect both more elements of western biomedical approaches and still retain some traditional elements as well.

As expected, the control group, while increasing in degree of cultural consensus, did not display a significant difference in the elements included in the CM at outcome. This finding bolsters the idea that if diffusion of information from the support group counterparts did occur, this diffusion was not highly significant. If it was highly significant, one would expect additional items to become part of the CM; this situation did not occur. The items included in the CM remained the same. An alternate explanation for the newly developed consensus in the control group is that diffusion of information from support group counterparts in Archaie and Cabaret occurred or, for La Plaine controls, proximity to an urban center resulted in additional exposure to western ideas around treatment.

A final explanation for the unexpected consensus in the control group at outcome includes an element of historicity. All members of all groups may have had some increased support for hygiene and sandals as treatment options as a result of a natural evolution in the belief system around LF, separate from the support group. Though historicity could have accounted for some of the strong support in all groups for hygiene and sandals, the intervention group also selected additional items as culturally correct at outcome. As such, historicity is not likely to have accounted for all the changes in the intervention group.

When the answer keys were compared over time, the intervention group did produce significantly different results. Insect bites were thought to cause lymphatic filariasis. Additionally, hygiene and sandals continued to receive strong support as treatment possibilities. New items in the model include clear belief in elevation and exercise as well as moderate belief in the use of crème, massage, and herbal remedies. These findings support the hypothesis that western ideas would present in the outcome CM. Also, herbal remedies, a traditional treatment for LF, became a part of the CM at outcome, and this result supported the second relevant hypothesis, that traditional elements would also present in the CM. Thoughts as to why herbal remedies, a traditional treatment, would present at outcome and not at baseline in the intervention sample were previously discussed.

As touched upon above, the elements present in the culturally correct answer key contribute to the literature on symbolic interactionism. This theoretical framework has been the primary approach used to examine cross-cultural disability, and it continues to appear applicable when the findings of this study are considered. The answer key reflects participants' newly developed belief in several of the components included in the support group material that, in comparison to the control group, seem to result from the interactions between study members and the material (intrapersonal), each other, the facilitators, and others, respectively. Also, the introduction of herbal remedies into the answer key specifically speaks to the tenets of the SI framework. This item was not a component of the support group educational content. As such, it could only gain in value and consensus within the intervention group through informal interactions between members; one component of each support group meeting, the time for members to share experiences about their disease, lends itself well to these negotiations of meaning. Additionally, it is possible that the components of the education program that were not included in the final answer key were not able to be integrated with the LF paradigm present at baseline as easily as other components included in the culturally correct answer key at outcome.

The final comparison revealed that, at outcome, the control and intervention group displayed significant differences in their respective answer keys. This finding both minimizes the likelihood that historicity played a significant role in any of the results and supports the idea that key changes are directly related to participation in the support group intervention.

Strength of Cultural Consensus: Baseline to Outcome

The fifth question of interest in this study inquires as to whether or not the strength of the cultural consensus, or the ER, changed from baseline to outcome. It was hypothesized that members of the intervention group would experience changes in the degree of cultural consensus observed between baseline and outcome measurements. This hypothesis was fully supported by the data.

Changes in cultural consensus took place in both the control and intervention group over time. These changes could in part be due to reasons stated above including historicity, diffusion of information (controls only), or proximity to urban centers with more exposure to western medical ideas (controls only). However, even if these influences played a role in increasing the degree of consensus for all study participants, it is not likely that the change in consensus can be fully attributed to these possibilities. Taking into account the changes in the culturally correct answer keys, level of cultural competence, and change in consensus as a whole, it becomes clear that much of the change is due to the support group program. Additionally, the change in the degree of consensus for the intervention sample was greater than that present for the control sample. Lastly, the intervention sample at outcome displayed the highest rate of cultural consensus for the four samples (BMC, BMI, OMI-RM, OMC-RM).

Link Between Cultural Consensus and Cultural Consonance

The final study question examines the link between cultural consensus and cultural consonance, or the link between belief and behavior. It was expected that greater consensus regarding cultural models would be linked to higher rates of self-care behaviors identified in the cultural model. This hypothesis was not supported in the data.

In the control sample, consensus increased from baseline to outcome, but consonance decreased at a significant level in this same time period. Significant differences in consonance were also present in the intervention samples over time, but the direction of consonance presented in reverse of expectations; consonance lessened over time. There are at least two possible explanations for this trend. First, the baseline control sample (BMC) retained two items in the culturally correct answer key at outcome (OMC-RM), but consonance still decreased over time. Regarding the control sample, it is possible that both the diffusion and proximity to urban center issues, speculated on previously, led to reinforcement of the two items in the existing CM. This explanation would explain the increased consensus found at outcome. Also, if new treatment ideas were introduced into the control group through these two forces, diffusion and proximity to an urban center, it is possible that some control members moved away from consistent behavioral enactment of hygiene and wearing sandals in favor of experimenting with new treatment possibilities. If this occurred, these new ideas would not be expected to appear as part of the CM because they were not introduced in a formal way and, thus, probably not pervasive enough to be shared on the group level in the control group.

A second alternative relevant to the intervention model is related to the number of items present in the model. All groups exhibited a higher consonance rate than the outcome intervention sample; these three groups also had fewer items comprising the cultural model. Only two items were involved in the CM for both baseline samples (BMI & BMC) as well as the outcome control (OMC-RM) population. In contrast, the intervention sample (OMI-RM) included seven elements. With a higher denominator determining the average rate of consonance, an individual would have to engage in a larger proportion of the behaviors in the outcome intervention sample to attain the same consonance level that was present at baseline. For instance, at baseline, a member of the intervention group would only have to engage in one behavior to display a consonance of .50. At outcome, this same individual would have to engage in three to four of the behaviors to attain the same level of consonance. It is possible that members in the intervention group execute more treatment behaviors than their control counterparts and still display a lower rate of consonance.

Another explanation for the consonance findings in the intervention group is linked to the absence of clinical resources in addition to the support group program. It is possible that members of the support group engaged in less overall health-promoting behavior when health care professionals were not present to reinforce the components of the support group content. This alternative is reasonable as Haitians hold physicians in high esteem (Voyer, Rail, Laberge, & Purnell, 2005); generally, physician's advise is accepted as truth. If the patient-doctor dynamic was present in this intervention, as opposed to a patient-lay health adviser interaction, the behavioral outcomes may have manifested differently.

Finally, a review of the demographic characteristics revealed that members of the outcome intervention group (OMI-RM) who were partnered were more likely to have a higher average rate of consonance. This trend was also present for Protestants in the baseline intervention (BMI) sample. Literate people in the outcome intervention (OMI-RM) showed more consonance than their non-literate counterparts in the outcome control group (OMC-RM), and, at baseline, both control (BMC) and intervention (BMI) group members experiencing fewer acute attacks showed higher consonance. In contrast, at outcome, intervention members (OMI-RM) having more attacks displayed the greater rates of consonance. Lastly, intervention members who were less wealthy at baseline (BMI) and wealthier at outcome (OMI-RM) had higher consonance.

These demographics results suggest that the support group program was more effective for people who were partnered when behavior enactment is considered. This finding is in line with other studies that have shown that an individuals' engagement in health-promoting behaviors can be positively impacted by marital status (Falba & Sindelar, 2008; Parruti et al., 2006; Doherty, Schrott, Metcalf, Iasiello-Vailas, 1983). Also, this trend may result as people who are partnered may be more likely to have two household incomes, and additional monies are available to purchase supplies to enact the treatment regimen. This interpretation complements the finding that wealthier intervention members had higher consonance levels at outcome. Additionally, it seems that when provided with LF specific self-care practice information, people experiencing more severe symptoms utilized more treatment options. This finding is reasonable as increased perceived severity of a disease is often linked to greater amounts of health-promoting intention and behavior (Sherman, Pennington, Simonton, Latif, Arent, & Farley, 2008; Iriyama, Nakahara, Jimba, Ichikawa, & Wakai, 2007; de Wit, Vet, Schutten, & van Steenbergen, 2005). Prior to exposure to the support group content, it is possible that people experiencing more severe symptoms were simply unaware of additional self-care practices that could improve their condition.

Cultural Model Evaluation

Cultural Consensus Analysis Component

Overall, the cultural consensus analysis component performed well within the evaluation context. Changes in consensus were observed as a result of the support group program. Also, this analytic tool was able to identify the shared elements of a cultural model and assess levels of cultural competency; it was also able to detect significant changes over time in the latter two measures. When culture is defined as “patterned ways of thought and behavior that characterize a social group, which are learned through socialization processes and persist through time” (Coreil et al., 2001, 29), the cultural consensus analysis was able to quantitatively measure shifts in the degree of shared patterned ways of thought about lymphatic filariasis in the sample population. Thus, it seems the cultural consensus analysis component of the cultural model evaluation is appropriate and useful when examining longitudinal changes in shared illness beliefs in a cross-cultural context.

Cultural Consonance Component

The cultural consonance component provided more mixed results. While the percent coefficients were assessed for degree of behavioral enactment of the corresponding treatment options present in the CM for each sample, the results presented in a trend opposite from that hypothesized. It is possible that the cultural consonance analysis as it is currently implemented accurately reflects the behavioral patterns in the sample data. However, alternate explanations may also be relevant.

Though the results born out in the consonance analysis could be accurate, it is likely that this component was implemented in a less sensitive manner than is needed to appropriately assess consonance. For instance, if a control sample indicated two treatment options in the CM, then that sample was assessed for its rate of behavioral enactment of those two items. However, if the corresponding intervention group selected seven items, this group would calculate the degree of consonance based on seven treatment behaviors instead of two. Thus, in this evaluation methodology, it may be more accurate to assess members of both the intervention and control samples for their degree of behavioral enactment of the items retained in the CM of the intervention sample. In this way, a more direct comparison between the two groups is possible as both groups now share a common denominator. Also, this approach highlights the overall differences in the amount of health-promoting behavior produced in both groups as a result of exposure or non-exposure to the support group intervention, respectively.

Sample Size and CM Evaluation

Sample Size in the CM evaluation method is also reviewed. After meeting the sample sizes indicated in the power analysis table put forth by Romney et al. (1986) in order to conduct the cultural consensus analysis included in this project, a post-hoc review of the key groups was executed. The four comparison groups, baseline controls (BMC), baseline intervention (BMI), outcome controls (OMC-RM), outcome intervention (OMI-RM), were examined for the number of questions decisively classified and cultural competency levels.

The following proportion of questions was decisively classified for baseline controls, baseline intervention, outcome controls, and outcome intervention, respectively: .76, .76, .82, .59.These proportions are less than the .80 proportion of questions that need to be decisively classified in order to apply the power analysis table in Romney et al. (1986). Average cultural competencies are presented in the same order: .51, .49, .56, and .62. It is expected that answers may be given at a rate of guessing among the three groups that present with cultural competencies at or around the .5 level; all three of these groups were not exposed to the support group intervention. The last group, the outcome intervention group does show an increase in cultural competency that lends itself towards purposeful responses to the questions.

When the information in the data is examined and the power analysis table is utilized, it is necessary to use the lowest number of proportion of questions decisively classified that is available, .80. One of the four groups met this threshold and the other three were below it. With .80 proportion of questions correctly answered, the next step is to examine cultural competency levels in the table. As three of the four groups exhibited at or about .5 competency levels, this value will be designated. In this scenario, even at a .99 confidence level, a sample size of only 15 is required to produce appropriate results. The control samples were almost twice this size, and the intervention samples were quadruple this size. Thus, it is expected that reaching the .80 threshold would have been easily attained.

Multiple explanations for these results exist. The first is that a larger number of items may have resulted in support for this sample size designation with a minimum of .80 questions decisively classified. While seventeen items is considered a reasonable number to obtain estimates, a larger number of items allow for a larger proportion to not exhibit a posteriori probabilities of .80 or greater and still meet the criterion of .80 proportion of questions clearly classified required to apply the power analysis table.

The second possibility is that this power analysis table is appropriate for examining a community that has clear ideas about the cultural domain in question, and that this sample size table does not account for communities that are in transition regarding a cultural domain. Both the outcome control (OMC-RM) and outcome intervention (OMI-RM) groups exhibited cultural consensus (ER >3) while their baseline counterparts (BMC & BMI) did not. However, several items did not meet the .80 a posteriori probability threshold and resulted in less than .80 questions decisively classified in the outcome intervention sample. It is possible that beliefs about the treatment items with lower a posteriori probabilities, pomade, herbal remedies, and pharmaceutical medicines, are in transition within the community and the conflicted beliefs are reflected in the lower probabilities observed. Thus, there is agreement that these items are part of the cultural model for which there is consensus, but the importance of their presence in the cultural model is uncertain or in transition. It is possible that the power analysis tables presently used are appropriate to cross-sectional data only; it may be necessary to further examine power issues when using this analysis to examine longitudinal data.

A third possibility is that four of the items, crème/pomade and worms/insect bite, were conflated in the results. In the case of the crème/pomade confusion, each concept, one biomedical (crème) and one traditional (pomade), refers to an ointment like treatment. Therefore, it would not be surprising that study participants would confuse the two ideas. As neither of these items, crème or pomade, was present in the baseline data, this explanation gains credibility. Additionally, for worms/insect bite, insect bite reflects a biomedical cause of LF and worms are considered a traditional cause category, albeit not one generally associated with LF. However, it is possible that, by mentioning the tiny worms transmitted to the host through the insect bites, that patients invoked traditional ideas about worms causing illness, leading to subsequent confusion of the two terms. If the definitively classified proportion of questions was adjusted to reflect these changes, the outcome intervention (OMI-RM) sample would meet the .80 threshold required in the sample size table, .82.

Only one of the outcome samples met the .80 threshold for proportion of questions definitively classified to obtain accurate results, making it difficult to directly apply the sample size table parameters. However, the sample sizes required by utilizing Romney et al.'s (1986) power table at the lowest confidence interval are greatly exceeded in the study samples. Additionally, the items retained in the cultural models in the control group did not change significantly during the course of the study. This finding further supports that it is possible to be confident that the overall impact of the support group program reported here is not threatened or inaccurate do to sample size concerns. Finally, this position is strengthened as the elements retained in the CM, when run by demographic dimensions and using smaller sample sizes, yielded similar results to the overall main comparisons.

Implications

Implications of the Support Group Program

The findings from this support group intervention suggest that, regarding knowledge around LF, this program is a success. Changes in the amount of shared consensus, degree of cultural expertise, and elements included in the CM were observed. These significant results yield multiple implications.

The shift in cultural knowledge in the community may act as an indicator of the long-term impact of the support group program, and the resulting behavioral trends displayed by the consonance analysis suggest two possibilities. The first implication is relevant to the community readiness for change. The link between behavior and belief may be weak in this study because the support group program was able to influence the community only in its shared thought processes. In this instance, it seems an additional segment may be required to supplement the support group program content in order to translate the shift in shared cultural knowledge into enacted behavior.

An alternative possibility addresses the potential flaw in the consonance analysis. If the methodology requires modification, it is possible that the support group program did affect both shared cultural knowledge and behavior; in this case, the consonance analysis, as conducted, may not have been sensitive enough to capture the changes effectively. This scenario suggests that the support group intervention may have been even more effective than that suggested in the first possible explanation. Thus, in either scenario, the support group program proved its utility.

Also important to note is one implication related to the support group format in general. As support groups are their own microcosm and opportunities for sharing information and negotiation of illness meanings exist within this setting, it is possible that ideas not directly reflective of the educational content may proliferate in this setting. For example, the presence of herbal remedies in the culturally correct answer key at outcome is a product of these social interactions. In this case, a shared belief in herbal remedies does not contraindicate with the self-care practices emphasized in the support group. However, in other situations, the dissemination of non-biomedical beliefs might be counterproductive. This introduction of this kind of misinformation may lead some health professionals to be reluctant in endorsing the support group format (Gray, Carroll, Fitch, Greenberg, Chart, & Orr, 2001).

In contrast to this potential drawback, an additional benefit of support group participation may be increased empowerment on the part of the patient. As lay health advisers presented the information in a more egalitarian setting, support group members may take a more active role in negotiating meaning around the LF diagnosis. After participation, patients may take a more active role in their own healthcare decision-making process.

Implications of the CM Evaluation Methodology

The CCA portion of the CM evaluation methodology appears useful in this research endeavor. Changes in cultural knowledge and behaviors associated with that knowledge were investigated. The knowledge portion of the analysis yields stronger results regarding its utility as an evaluation tool. However, with some modification, the consonance piece may prove more appropriate than it did in this particular application.

Overall, the test of this methodology suggests that the CM evaluation can allow for more appropriate tailoring of a public health program or intervention. For instance, herbal remedies became a part of the CM at outcome for the intervention group even though it was not present at baseline. This finding suggests that the support group content in this context may need to address the role of herbal remedies in treating LF. Also, the data point to possible confusion between the terms crème/pomade and insect bite/worms; the program content may need to adjust to better explain what these two categories are, how they differ, and which alternatives are appropriate self-care practices for LF. This type of data is valuable as the support group represents a microcosm (Kaye, 1997), and, in this case, the support group microcosm is comprised of persons sharing many characteristics with the larger community. As such, the interactions or confusion between new terms and previously existing categories, described above, may provide insight on how the educational content presented will be integrated into the larger community.

Additionally, the implication of this CM evaluation demonstration is that this tool offers different strengths than those present in traditional evaluation approaches. Traditional evaluation measures target the following dimensions: "knowledge, attitudes, behaviors and physiological functioning" (McDermott & Sarvela, 1999). These evaluative approaches gather data at the individual level and indirectly assess community level change by examining the data in aggregate. Also, outcome variables are determined prior to program implementation. For example, a traditional evaluation would not have assessed beliefs in herbal remedies at outcome as this content area was not included in the educational materials utilized in the support group.

The CM evaluation methodology, in contrast, was able to assess changes in cultural knowledge with culturally meaningful categories. The CM approach allowed for the revelation of local cultural categories of cause and treatment to be included in the evaluation instrument; some of these categories, herbal remedies and pomade, were highlighted in the findings. A traditional tool, which typically identifies outcome variables a priori, may not be as sensitive as the CM approach and it is apparent that local ideas are important as born out in this study.

Also, the cultural impact of the program can be assessed in this approach because the cultural knowledge of LF was measured in the study population over time. Thus, unlike traditional evaluation tools that measure individual knowledge and analyze it in aggregate, thereby making an indirect inference regarding community level culture change, the CM approach directly measures shared cultural beliefs. These changes, as evidenced in the culturally correct answer keys, proved significant, and, because they are measured at the population level, this approach is directly relevant for assessing public health programs.

The final implication of testing this CM evaluation approach is that a new way to evaluate programs has been introduced into the public health discipline. This approach to program evaluation is adaptable for interventions with varied goals; in different scenarios, specific components of the methodology may retain more value. For instance, in this study, both the answer key and cultural consonance results were important as the goal was to introduce new ideas about cause and treatment of LF through the support group format that ultimately resulted in behaviors reflecting the beliefs introduced through the program. The degree of consensus and competency were of secondary importance in that they served to strengthen confidence in the changes within the CCA component. Another program may intend to increase expertise around existing health care beliefs; in this scenario, the items included in the culturally correct answer key become secondary in importance to the degree of change in cultural competency within the study sample. Consonance may also provide secondary information if they program evaluated is focused on change in knowledge without a behavioral program goal. Per these examples, both consensus analysis and consonance analysis have been broadened in their scope methodologically and can be applied with utility in a number of different ways.

Strength and Limitations of the Study

Multiple strengths and limitations are present in the study. First, these data are valuable as they were collected in the setting of a developing country. In these environments, it is challenging to rigorously collect large amounts of interview data. In addition, these data are diachronic in nature and, as such, include a baseline and outcome sample. As a result, it is possible to examine changes over time in this sample as well as assess the impact of the support group intervention itself. Finally, the data include both a control group and intervention group. With the involvement of a control group it is easier to understand what changes over time are due to the intervention itself and what trends may be influenced by historical events.

Though the dataset itself includes multiples strengths, there are also limitations. First, as the data are secondary in nature, the limitations related to this kind of research are inherent. These limitations include that the data were not collected for one of the primary research questions in this work and that elements of relevant information may be missing; the original study was designed as a traditional evaluation intervention. Other challenges often posed by secondary data analysis have been mitigated by working closely with the original research team to understand the context of the data and research process employed to gather the information in this dataset.

Another key limitation related to the cultural consensus analysis involves the development of items on the questionnaire that are used to assess the cultural model. These items were not created through the free listing exercise. Thus, some items also present in the cultural model may not be present in the current data. However, this concern is minimized as the variables included in the cultural model questions were developed through previous ethnographic research in Haiti (J. Coreil, personal communication, 2008).

Also, although two components relevant to Kleinman's explanatory models are included in these data, other dimensions are not addressed at all. In order to better assess cultural models in a sample, items relevant to all segments of CM's should be measured. That said, arguably the two most important dimensions of cultural models are cause and treatment; both of these concepts are captured in the current data.

Related to the inclusion of two dimensions of the cultural model, the limited dimensions examined resulted in fewer items assessed in the cultural consensus analysis. The inclusion of more items related to the underlying constructs of treatment and cause may have been helpful. That said, as treatment and cause constructs related to lymphatic filariasis are relatively concrete concepts, fewer items are necessary to appropriately assess these ideas than more abstract ideas.

In addition, though the sample size is adequate for the analyses, a larger sample of matched participants would be preferable. Initially there were 100 participants involved in control group and 100 participants in the intervention group. With the involvement of the original research team, however, only 87 individuals total (60 intervention, 27 control) could be matched between their baseline and outcome data.

Selection bias is also an issue worth noting. Since participants were not randomly assigned to the intervention group, it is possible that the people who chose to participate in the support group were somehow distinctively different than their control group counterparts. It is unknown if members of the control group would have responded differently to the support group program content than the intervention sample discussed.

Future Research

This research project introduced a new evaluation indicator. As such, much additional research is needed to grow the methodology and provide additional support that it is indeed a useful tool. This additional research is also required to expand the application for this method. Several key areas immediately arise.

First, the CM evaluation tool needs to be applied to data that was collected primarily to measure cultural models. Also, dimensions beyond that of cause and treatment need to be included in the analysis. To address the sample size discussion above, the instruments used in the CM analyses should include more items for analysis than those present in this study. Larger sample sizes are desirable so that varying sample sizes can be used to test the accuracy of the CM tools in an environment of fewer and larger samples. Additionally, the CM approach should be applied to cultural domains that are both fully developed and those that are in transition to assess the degree to which the CM approach can accurately assess cultural domains that are in transition over time.

The consonance portion of this evaluation method also needs to be investigated further. Modifications to the consonance tool need to be tested for appropriateness as part of the CM toolkit. Also, specific to this cultural domain and context, CM evaluation should be applied to sample populations experiencing the support group with the support of a local clinic and samples without that exposure. A comparative analysis between these two groups may provide additional information regarding the surprising consonance findings resulting in this study - do people with more exposure to an LF clinic display alternative degrees of consonance from their counterparts in rural towns with no clinic available?

Another area for future investigation relates to outcome evaluation. It is suggested that changes in cultural knowledge revealed in the CM evaluation may act as a proxy indicator of long-term sustainable change in resource poor settings when outcome evaluation is not financially supported or easily conducted. Thus, some study needs to explore this idea further and examine the sustainability of the cultural changes in knowledge present at outcome in this study; do these beliefs remain strong in the community once the program has ended? Do these beliefs in time translate into behavioral change if behavioral change was not observed in the impact evaluation?

Studies utilizing both traditional and cultural model evaluation methodologies are also suggested. This undertaking would allow for triangulation of overall outcomes between the two methodologies. Though traditional and cultural model evaluation methods have different strengths and limitations, confidence in the CM evaluation method could be strengthened if both approaches yield the same general conclusions.

Additionally, specific to the support group itself, the program was implemented over a period of two years. Though originally developed for implementation over a shorter course of time, the support group program clearly did not test this idea. Thus, further inquiry on the duration of the support group program required to produce significant changes in belief and behavior is warranted. Also, additional examination of the potential confusion of crème/pomade and insect bite/worms categories may be useful; the data can be reviewed to assess whether or not respondents rarely selected both of these items as cause categories. If there is little overlap, this finding would lend itself to the assertion that the terms were conflated in the sample population.

Exploration of potential confounders to the findings may also be of interest. Ways to examine these confounders may involve the inclusion of additional questions related to issues like diffusion of information and the impact of more urban locales. Refinement of the methodological design to minimize the likelihood of confounders, like diffusion of information (e.g.: one town is a control group and one is an intervention group), may aid in this process.

Also, inquiry into the types of interventions that may be appropriate for the application of cultural model evaluation is of interest. Support group programs are appropriate for this evaluation approach for several reasons; one of these reasons includes the presence of interaction on several ecological levels within the support group. However, other public health interventions retain different key qualities and, as yet, it is unknown the degree to which the cultural model evaluation is a compatible tool for these alternate contexts.

Finally, development of the statistical analyses to further the sophistication of the cultural model approach is necessary. As it currently stands, the shifts in the degree of cultural consensus over time provide descriptive information only; development of statistical methods that can assess the degree of difference in consensus over time would greatly enhance this methodology. Increased sensitivity in the chi-square analysis implemented in the answer key comparisons may broaden the types of programs that can be assessed with cultural model evaluation and improve its current application. Lastly, the introduction of techniques to assess the impact of various demographic dimensions on a more nuanced level would also be a useful addition to the cultural model evaluation approach.

Conclusions

Overall, the CM evaluation is an innovative evaluation method for public health professionals. The cultural consensus analysis portion exhibits strong evidence for its utility, while the consonance piece warrants further investigation. Additionally, the results of this study suggest that support group programs such as the one implemented in this study can be successful in a resource poor setting lacking the support of a lymphatic filariasis hospital clinic.

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Appendix A

Appendix A

General demographic results from the cultural consensus analyses are presented in the body of Chapter 4. Specific results of the statistical analyses and comparisons summarized previously are captured in the tables below. Demographic dimensions reviewed here include: marital status, religion, literacy, wealth, age, stage of disease, and number of acute attacks.

Marital Status

In the baseline analyses of marital status, an eigenvalue ratio greater than three was present for the full baseline sample (B-All) when participants were not single.

Table A1. Baseline Sample: Consensus Analysis Results by Group and Marital Status

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Not Single	Single	Not Single	Single	Not Single	Single	Not Single	Single
BMC	23	4	6.811	.596	2.587	.238	2.633	2.504
BMI	33	27	9.444	7.815	3.810	2.987	2.479	2.616
B-All	159	82	47.973	24.456	15.710	9.146	3.054	2.674

The culturally correct answer keys were comprised of different items by marital status and group. Both the baseline control groups highlighted hygiene and sandal as treatment options, but only the single group also indicated herbal remedies and pomade as well. The intervention group showed a similar trend, but the single group suggested elevation for treatment instead of herbal remedies or pomade. Finally, the entire baseline sample endorsed hygiene, sandals, and herbal remedies.

Table A2. Baseline Sample: Culturally Correct Answer Keys by Intervention and Control Group by Marital Status

		BMC		BMI		B-All	
		N=23	N=4	N=33	N=27	N=159	N=82
		Answer(Weighted %)					
		Not Single	Single	Not Single	Single	Not Single	Single
Cause	Insect Bite	0(100%)	0(100%)	0(93%)	0(96%)	0(97%)	0(97%)
	Magic	0(85%)	0(77%)	0(91%)	0(96%)	0(91%)	0(96%)
	Sprain	0(100%)	0(78%)	0(92%)	0(100%)	0(90%)	0(96%)
	Worms	0(83%)	0(100%)	0(100%)	0(98%)	0(93%)	0(98%)
	Chill	0(100%)	0(63%)	0(84%)	0(97%)	0(86%)	0(91%)
	Vitamin Deficiency	0(100%)	0(63%)	0(100%)	0(100%)	0(99%)	0(97%)
Treatment	Hygiene	1(94%)	1(78%)	1(88%)	1(95%)	1(93%)	1(91%)
	Sandal	1(97%)	1(100%)	1(94%)	1(99%)	1(97%)	1(98%)
	Permanganate	0(82%)	0(83%)	0(100%)	0(68%)	0(87%)	0(78%)
	Crème	0(80%)	0(100%)	0(80%)	0(72%)	0(80%)	0(84%)
	Elevation	0(75%)	0(83%)	0(73%)	1(50%)	0(74%)	0(61%)
	Massage	0(81%)	0(100%)	0(96%)	0(92%)	0(88%)	0(95%)
	Exercise	0(96%)	0(100%)	0(94%)	0(76%)	0(95%)	0(92%)
	Bandage	0(72%)	0(100%)	0(80%)	0(92%)	0(73%)	0(93%)
	Medicine	0(87%)	0(100%)	0(80%)	0(86%)	0(80%)	0(69%)
	Herbal Remedy	0(51%)	1(59%)	0(51%)	0(52%)	1(58%)	1(57%)
	Pomade	0(72%)	1(59%)	0(61%)	0(73%)	0(65%)	0(55%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

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Comparisons of the answer keys below also indicate a lack of significant differences within each group when compared by marital status.

Table A3. Baseline Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Marital Status

	Chi-Square	**df**	**P<**	**Fisher's Exact Two-Tailed p<**
BMC: Not Single vs Single	.8095	1	.3683	.6562*
BMI: Not Single vs Single	.2345	1	.6282	1.00*
B-All: Not Single vs Single	.0000	1	1.00	1.00*

* indicates which statistic was interpreted for significant differences between the answer keys

In addition to examining levels of consensus and analyzing answer keys for differences, average levels of cultural competency were also assessed.

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Table A4. Baseline Sample: Cultural Competency Analysis Results by Group and Marital Status

	N		Average Competency	
	Not Single	Single	Not Single	Single
BMC	23	4	.51	.37
BMI	33	27	.51	.47
B-All	159	82	.52	.49

*One individual removed from analyses in the outcome control group due to missing data

Table A5. Baseline Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Marital Status

	df	t	p<
BMC: Not Single vs Single	25	1.47	.1531
BMI: Not Single vs Single	42.2	.66	.5140
B-All: Not Single vs Single	133	.87	.3886

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Religion

In the case of religion, Protestants and Catholics were compared; there were too few individuals who selected vodou, other, or no religion to include in the analysis. Consensus was met for Catholics in the full baseline sample (B-All) as well at the baseline controls (BMC). Interestingly, Catholics exhibited a higher level of consensus across all baseline samples, and this trend is reversed in all but one of the outcome samples.

Table A6. Baseline Sample: Consensus Analysis Results by Group and Religion

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Protestant	Catholic	Protestant	Catholic	Protestant	Catholic	Proteestant	Catholic
BMC	6	15	1.658	4.694	1.637	.918	1.013	5.114
BMI	28	27	8.073	7.915	3.414	2.996	2.365	2.642
B-All	96	118	26.812	37.324	10.608	11.672	2.527	3.198

Once the degree of consensus in a sample was established, the answer keys were examined. The baseline control samples selected hygiene and sandal as salient features, and the Protestant control sample also included herbal remedies. Intervention groups at baseline also believe hygiene and sandals are appropriate treatment choices for LF; additionally, the Catholic portion of the intervention sample endorses herbal remedies and pomade. Overall, both Protestants and Catholics in the full baseline sample identified hygiene, sandals, and herbal remedies as ways to treat LF.

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Table A7. Culturally Correct Answer Keys for Intervention and Control Group by Religion

Baseline Sample		BMC		BMI		B-All	
		N=6	N=15	N=28	N=27	N=96	N=118
		Answer(Weighted %)					
		Protestant	Catholic	Protestant	Catholic	Protestant	Catholic
Cause	Insect Bite	0(100%)	0(100%)	0(97%)	0(93%)	0(96%)	0(98%)
	Magic	0(100%)	0(93%)	0(93%)	0(93%)	0(96%)	0(97%)
	Sprain	0(100%)	0(100%)	0(95%)	0(96%)	0(92%)	0(92%)
	Worms	0(65%)	0(93%)	0(100%)	0(97%)	0(93%)	0(95%)
	Chill	0(83%)	0(100%)	0(84%)	0(94%)	0(86%)	0(90%)
	Vitamin Deficiency	0(83%)	0(100%)	0(100%)	0(100%)	0(98%)	0(99%)
	Hygiene	1(100%)	1(99%)	1(96%)	1(87%)	1(92%)	1(96%)
Treatment	Sandal	1(100%)	1(99%)	1(100%)	1(93%)	1(98%)	1(97%)
	Permanganate	0(91%)	0(71%)	0(87%)	0(85%)	0(83%)	0(80%)
	Crème	0(78%)	0(86%)	0(72%)	0(80%)	0(79%)	0(82%)
	Elevation	0(78%)	0(71%)	0(58%)	0(72%)	0(70%)	0(65%)
	Massage	0(85%)	0(78%)	0(96%)	0(100%)	0(85%)	0(93%)
	Exercise	0(88%)	0(100%)	0(86%)	0(86%)	0(91%)	0(96%)
	Bandage	0(91%)	0(63%)	0(78%)	0(93%)	0(75%)	0(80%)
	Medicine	0(100%)	0(78%)	0(89%)	0(75%)	0(84%)	0(68%)
	Herbal Remedy	1(63%)	0(61%)	0(65%)	1(64%)	1(51%)	1(58%)
	Pomade	0(61%)	0(79%)	0(83%)	1(52%)	0(65%)	0(60%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

Appendix A

After review of the elements in each of the answer keys, these answer keys and levels of cultural competency were compared for significant differences. These analyses are below:

Table A8. Baseline Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Religion

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
BMC: Protestant vs Catholic	.2345	1	.6282	1.00*
BMI: Protestant vs Catholic	.8095	1	.3683	.6562*
B-All: Protestant vs Catholic	.0000	1	1.00	1.00*

* indicates which statistic was interpreted for significant differences between the answer keys

Table A9. Baseline Sample: Cultural Competency Analysis Results by Group and Religion

	N		**Average Competency**	
	Protestant	Catholic	Protestant	Catholic
BMC	6	15	.50	.53
BMI	28	27	.49	.49
B-All	96	118	.49	.52

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Table A10. Baseline Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Religion

	Df	**t**	**p<**
BMC: Protestant vs Catholic	19	.26	.7965
BMI: Protestant vs Catholic	53	.06	.9520
B-All: Protestant vs Catholic	212	1.15	.2511

No significant differences between answer keys by religion existed within each of the groups. Regarding cultural competency, no significant differences existed between conditions, Protestant and Catholic, within each of the groups analyzed.

Literacy

In the case of literacy, the threshold for consensus is met in all baseline samples among those who are not literate.

Table A11. Baseline Sample: Consensus Analysis Results by Group and Literacy

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Literate	Not Literate	Literate	Not Literate	Literate	Not Literate	Literate	Not Literate
BMC	15	12	3.967	3.875	2.165	.989	1.832	3.917
BMI	38	22	10.935	6.235	5.110	1.907	2.140	3.270
B-All	137	104	40.477	32.204	14.547	10.161	2.782	3.169

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In all the baseline groups, elements of the cultural model include hygiene and sandal. Treatment with herbal remedies was also identified as a key element in several of the baseline samples.

Table A12. Culturally Correct Answer Keys for Intervention and Control Groups by Literacy

Baseline Sample		BMC		BMI		B-All	
		N=15	N=12	N=38	N=22	N=137	N=104
		Answer(Weighted %)					
		Literate	Not Literate	Literate	Not Literate	Literate	Not Literate
Cause	Insect Bite	0(100%)	0(100%)	0(92%)	0(100%)	0(96%)	0(99%)
	Magic	0(86%)	0(77%)	0(95%)	0(89%)	0(94%)	0(90%)
	Sprain	0(97%)	0(100%)	0(94%)	0(100%)	0(91%)	0(92%)
	Worms	0(82%)	0(95%)	0(98%)	0(100%)	0(91%)	0(99%)
	Chill	0(95%)	0(100%)	0(84%)	0(100%)	0(90%)	0(86%)
	Vitamin Deficiency	0(95%)	0(100%)	0(100%)	0(100%)	0(99%)	0(99%)
Treatment	Hygiene	1(93%)	1(95%)	1(90%)	1(94%)	1(93%)	1(92%)
	Sandal	1(100%)	1(95%)	1(95%)	1(100%)	1(98%)	1(96%)
	Permanganate	0(77%)	0(83%)	0(91%)	0(83%)	0(82%)	0(85%)
	Crème	0(71%)	0(95%)	0(76%)	0(76%)	0(74%)	0(91%)
	Elevation	0(71%)	0(78%)	0(57%)	0(77%)	0(64%)	0(76%)
	Massage	0(66%)	0(100%)	0(93%)	0(100%)	0(85%)	0(96%)
	Exercise	0(100%)	0(95%)	0(89%)	0(83%)	0(92%)	0(96%)
	Bandage	0(59%)	0(91%)	0(76%)	0(100%)	0(69%)	0(93%)
	Medicine	0(86%)	0(91%)	0(80%)	0(85%)	0(74%)	0(81%)
	Herbal Remedy	0(65%)	1(60%)	1(58%)	0(71%)	1(55%)	1(61%)
	Pomade	0(74%)	0(68%)	0(64%)	0(73%)	0(68%)	0(55%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

Appendix A

When the answer keys were compared for differences by literacy, no significant differences were found.

Table A13. Baseline Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Literacy

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
BMC: Literate vs Not Literate	.2345	1	.6282	1.00*
BMI: Literate vs Not Literate	.2345	1	.6282	1.00*
B-All: Literate vs Not Literate	.0000	1	1.00	1.00*

In addition to the lack of significant difference between answer keys within each group, no significant differences in levels of cultural competency within each group by literacy were present either.

Table A14. Baseline Sample: Cultural Competency Analysis Results by Group and Literacy

	N		**Average Competency**	
	Literate	Not Literate	Literate	Not Literate
BMC	15	12	.48	.53
BMI	38	22	.50	.47
B-All	137	104	.51	.50

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Table A15. Baseline Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Literacy

	df	t	p<
BMC: Literate vs Not Literate	25	-.60	.5534
BMI: Literate vs Not Literate	58	.54	.5927
B-All: Literate vs Not Literate	189	.28	.7815

In the case of literacy, the answer keys showed no significant differences within each group. The same trend held true when differences in cultural competency were examined within each group.

Wealth

Within the wealth comparisons, less wealthy members of the baseline intervention (BMI) and full (B-All) samples showed consensus. Also, wealthier baseline controls (BMC) also met the criteria for consensus.

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Table A16. Baseline Sample: Consensus Analysis Results by Group and Wealth

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Less Wealth	More Wealth	Less Wealth	More Wealth	Less Wealth	More Wealth	Less Wealth	More Wealth
BMC	24	3	6.863	.668	2.672	.166	2.569	4.034
BMI	35	25	9.661	7.860	3.182	3.565	3.036	2.205
B-All	172	69	51.027	21.021	17.001	7.999	3.001	2.628

Answer keys were also compared and examined for significant differences within each group by wealth. All baseline samples identified hygiene and sandal as appropriate treatment options. Additionally, all of the groups with a more wealth designation highlighted herbal remedies and pomade as viable treatment choices.

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Table A17. Culturally Correct Answer Keys for Intervention and Control Groups by Wealth

Baseline Sample		BMC		BMI		B-All	
		N=24	N=3	N=35	N=25	N=172	N=69
		Answer (Weighted %)		Answer (Weighted %)		Answer (Weighted %)	
		Less Wealth	More Wealth	Less Wealth	More Wealth	Less Wealth	More Wealth
Cause	Insect Bite	0(100%)	0(100%)	0(97%)	0(93%)	0(99%)	0(94%)
	Magic	0(86%)	0(59%)	0(92%)	0(95%)	0(91%)	0(96%)
	Sprain	0(98%)	0(100%)	0(92%)	0(100%)	0(94%)	0(87%)
	Worms	0(87%)	0(71%)	0(100%)	0(97%)	0(95%)	0(93%)
	Chill	0(96%)	0(100%)	0(100%)	0(73%)	0(91%)	0(79%)
	Vitamin Deficiency	0(96%)	0(100%)	0(100%)	0(100%)	0(99%)	0(97%)
	Hygiene	1(97%)	1(71%)	1(96%)	1(86%)	1(94%)	1(89%)
Treatment	Sandal	1(99%)	1(100%)	1(97%)	1(98%)	1(97%)	1(99%)
	Permanganate	0(76%)	0(100%)	0(80%)	0(95%)	0(82%)	0(90%)
	Crème	0(78%)	0(100%)	0(69%)	0(88%)	0(82%)	0(83%)
	Elevation	0(67%)	0(100%)	0(58%)	0(76%)	0(71%)	0(66%)
	Massage	0(87%)	0(71%)	0(93%)	0(99%)	0(89%)	0(94%)
	Exercise	0(96%)	0(100%)	0(80%)	0(96%)	0(94%)	0(95%)
	Bandage	0(72%)	0(100%)	0(93%)	0(71%)	0(82%)	0(77%)
	Medicine	0(87%)	0(100%)	0(88%)	0(72%)	0(80%)	0(69%)
	Herbal Remedy	0(63%)	1(100%)	0(59%)	1(60%)	1(57%)	1(58%)
	Pomade	0(76%)	1(71%)	0(78%)	1(51%)	0(66%)	1(50%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

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After the answer keys were reviewed for the elements included in each cultural model, the answer keys were compared between more and less wealthy individuals within each group. These analyses indicate that there are no significant differences between answer keys within each group.

Table A18. Baseline Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Wealth

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
BMC: Less Wealth vs More Wealth	.8095	1	.3683	.6562*
BMI: Less Wealth vs More Wealth	.8095	1	.3683	.6562*
B-All: Less Wealth vs More Wealth	.1799	1	.6715	1.00*

Further analyses were conducted to assess rates of cultural competency in each group and whether or not significant differences in competency exist between less and more wealthy individuals in each sample. No significant differences were present in the baseline sample.

Table A19. Baseline Sample: Cultural Competency Analysis Results by Group and Wealth

	N		**Average Competency**	
	Less Wealth	More Wealth	Less Wealth	More Wealth
BMC	24	3	.50	.47
BMI	35	25	.46	.53
B-All	172	69	.50	.52

Table A20. Baseline Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Wealth

	df	**t**	**p<**
BMC: Less Wealth vs More Wealth	25	.29	.77
BMI: Less Wealth vs More Wealth	58	-1.04	.3025
B-All: Less Wealth vs More Wealth	239	-.58	.5655

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Age

When looking at cultural models present in the sample by age, the median age, 46 years old, was used to divide the sample into younger and older groupings. With this grouping, there is no consensus present in any of the baseline samples.

Table A21. Baseline Sample: Consensus Analysis Results by Group and Age

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Younger	Older	Younger	Older	Younger	Older	Younger	Older
BMC	14	13	3.451	4.384	1.477	2.057	2.337	2.131
BMI	28	32	7.354	9.481	3.411	3.737	2.156	2.537
B-All	121	120	34.817	37.683	11.624	13.119	2.995	2.872

A review of the answer keys indicates which elements were salient across different groups. All baseline groups indicate hygiene and sandals as viable treatment options. Additionally some of the groups also identify herbal remedies as a treatment option.

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Table A22. Culturally Correct Answer Keys for Intervention and Control Groups by Age

Baseline Sample		BMC		BMI		B-All	
		N=14	N=13	N=28	N=32	N=121	N=120
		Answer (Weighted %)		Answer (Weighted %)		Answer (Weighted %)	
		Younger	Older	Younger	Older	Younger	Older
Cause	Insect Bite	0(100%)	0(100%)	0(100%)	0(91%)	0(99%)	0(96%)
	Magic	0(94%)	0(73%)	0(94%)	0(94%)	0(93%)	0(92%)
	Sprain	0(100%)	0(96%)	0(95%)	0(96%)	0(91%)	0(92%)
	Worms	0(96%)	0(79%)	0(98%)	0(100%)	0(92%)	0(97%)
	Chill	0(93%)	0(100%)	0(87%)	0(92%)	0(89%)	0(87%)
	Vitamin Deficiency	0(93%)	0(100%)	0(100%)	0(100%)	0(99%)	0(98%)
	Hygiene	1(94%)	1(96%)	1(89%)	1(94%)	1(93%)	1(91%)
Treatment	Sandal	1(98%)	1(100%)	1(97%)	1(97%)	1(98%)	1(97%)
	Permanganate	0(82%)	0(80%)	0(96%)	0(80%)	0(86%)	0(83%)
	Crème	0(86%)	0(82%)	0(77%)	0(74%)	0(74%)	0(89%)
	Elevation	0(86%)	0(67%)	0(67%)	0(59%)	0(64%)	0(76%)
	Massage	0(71%)	0(92%)	0(96%)	0(94%)	0(86%)	0(95%)
	Exercise	0(100%)	0(94%)	0(82%)	0(90%)	0(91%)	0(97%)
	Bandage	0(61%)	0(88%)	0(85%)	0(86%)	0(72%)	0(87%)
	Medicine	0(82%)	0(94%)	0(82%)	0(83%)	0(75%)	0(78%)
	Herbal Remedy	0(67%)	1(57%)	0(57%)	1(51%)	1(53%)	1(62%)
	Pomade	0(71%)	0(67%)	0(77%)	0(58%)	0(71%)	0(52%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

In an examination of culturally correct answer keys and cultural competency, each group exhibited no significant differences by age.

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Table A23. Baseline Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Age

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
BMC: Younger vs Older	.2345	1	.6282	1.00*
BMI: Younger vs Older	.2345	1	.6282	1.00*
B-All: Younger vs Older	.0000	1	1.00	1.00*

Table A24. Baseline Sample: Cultural Competency Analysis Results by Group and Age

	N		**Average Competency**	
	Younger	Older	Younger	Older
BMC	14	13	.44	.57
BMI	28	32	.47	.50
B-All	121	120	.50	.52

Table A25. Baseline Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Age

	df	**T**	**p<**
BMC: Younger vs Older	19.5	1.78	.0906
BMI: Younger vs Older	58	.57	.5715
B-All: Younger vs Older	239	.65	.5139

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Stage of Disease

At baseline, only the control group (BMC) afflicted with more severe symptoms showed consensus.

Table A26. Baseline Sample: Consensus Analysis Results by Group and Stage of Disease

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Less Severe	More Severe	Less Severe	More Severe	Less Severe	More Severe	Less Severe	More Severe
BMC	9	18	2.482	5.426	1.694	1.395	1.465	3.890
BMI	36	24	10.424	6.392	3.606	3.383	2.891	1.890
B-All	125	116	37.231	34.650	13.114	11.861	2.839	2.921

Answer key comparisons reveal that the all members of baseline control groups identify hygiene and sandal as key treatment options, but people with less severe disease also believe that herbal remedies and pomade are appropriate. Members of the baseline intervention groups also identified hygiene and sandal as treatment choices; less severely afflicted members of the intervention group at baseline also believe herbal remedies are relevant for treatment. In the overall baseline sample, hygiene, sandals, and herbal remedies are key treatment choices.

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Table A27. Culturally Correct Answer Keys for Intervention and Control Groups by Stage of Disease

Baseline Sample		BMC		BMI		B-All	
		N=9	N=18	N=36	N=24	N=125	N=116
		Answer (Weighted %)		Answer (Weighted %)		Answer (Weighted %)	
		Less Severe	More Severe	Less Severe	More Severe	Less Severe	More Severe
Cause	Insect Bite	0(100%)	0(100%)	0(95%)	0(96%)	0(97%)	0(97%)
	Magic	0(75%)	0(87%)	0(95%)	0(90%)	0(92%)	0(94%)
	Sprain	0(100%)	0(97%)	0(93%)	0(100%)	0(91%)	0(92%)
	Worms	0(90%)	0(84%)	0(98%)	0(100%)	0(95%)	0(94%)
	Chill	0(87%)	0(100%)	0(91%)	0(88%)	0(85%)	0(91%)
	Vitamin Deficiency	0(87%)	0(100%)	0(100%)	0(100%)	0(98%)	0(99%)
	Hygiene	1(86%)	1(96%)	1(91%)	1(94%)	1(92%)	1(93%)
Treatment	Sandal	1(96%)	1(99%)	1(96%)	1(99%)	1(97%)	1(98%)
	Permanganate	0(68%)	0(89%)	0(86%)	0(90%)	0(85%)	0(83%)
	Crème	0(76%)	0(91%)	0(82%)	0(64%)	0(79%)	0(85%)
	Elevation	0(76%)	0(78%)	0(64%)	0(59%)	0(73%)	0(65%)
	Massage	0(92%)	0(80%)	0(95%)	0(96%)	0(92%)	0(88%)
	Exercise	0(100%)	0(95%)	0(88%)	0(83%)	0(93%)	0(95%)
	Bandage	0(68%)	0(83%)	0(85%)	0(88%)	0(81%)	0(79%)
	Medicine	0(76%)	0(95%)	0(87%)	0(75%)	0(75%)	0(79%)
	Herbal Remedy	1(76%)	0(64%)	1(50%)	0(58%)	1(58%)	1(57%)
	Pomade	1(64%)	0(84%)	0(72%)	0(59%)	0(54%)	0(70%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

Answer key comparisons within each group by stage revealed no significant differences in the elements comprising the cultural model by disease stage.

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Table A28. Baseline Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Stage of Disease

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
BMC: Less Severe vs More Severe	.8095	1	.3683	.6562*
BMI: Less Severe vs More Severe	.2345	1	.6282	1.00*
B-All: Less Severe vs More Severe	.0000	1	1.00	1.00*

The level of cultural competency present in each sample by disease stage was also assessed, and no significant differences were found within each sample.

Table A29. Baseline Sample: Cultural Competency Analysis Results by Group and Stage of Disease

	N		**Average Competency**	
	Less Severe	More Severe	Less Severe	More Severe
BMC	9	18	.49	.52
BMI	36	24	.51	.44
B-All	125	116	.51	.50

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Table A30. Baseline Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Stage of Disease

	df	**t**	**p<**
BMC: Less Severe vs More Severe	25	-.31	.7590
BMI: Less Severe vs More Severe	36.9	1.02	.3153
B-All: Less Severe vs More Severe	239	.17	.8652

Number of Attacks

Consensus at baseline was indicated in the baseline control (BMC) and full baseline (B-All) samples for people with fewer attacks.

Table A31. Baseline Sample: Consensus Analysis Results by Group and Number of Attacks

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Fewer Attacks	More Attacks	Fewer Attacks	More Attacks	Fewer Attacks	More Attacks	Fewer Attacks	More Attacks
BMC	19	8	6.002	1.989	1.003	1.740	5.986	1.143
BMI*	31	28	10.180	6.471	3.722	3.189	2.735	2.029
B-All	149	89	47.174	23.402	14.279	10.039	3.304	2.331

*

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Culturally correct answer keys were produced for each sample along the dimension number of acute attacks within the past year. Individuals in the control group experiencing more attacks suggest that worms are the cause of lymphatic filariasis. All groups indicate that hygiene and sandals are appropriate treatment choices. Herbal remedies are also highlighted in some of the baseline samples.

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Table A32. Culturally Correct Answer Keys for Intervention and Control Groups and Number by Attacks

Baseline Sample		Control		Intervention		Baseline All	
		N=19	N=8	N=31	N=28	N=149	N=89
		Answer(Weighted %)					
	Attacks	Fewer	More	Fewer	More	Fewer	More
Cause	Insect Bite	0(100%)	0(100%)	0(95%)	0(95%)	0(97%)	0(97%)
	Magic	0(82%)	0(91%)	0(88%)	0(100%)	0(91%)	0(96%)
	Sprain	0(97%)	0(100%)	0(93%)	0(100%)	0(92%)	0(93%)
	Worms	0(95%)	1(54%)	0(100%)	0(97%)	0(96%)	0(92%)
	Chill	0(100%)	0(85%)	0(97%)	0(78%)	0(89%)	0(83%)
	Vitamin Deficiency	0(100%)	0(85%)	0(100%)	0(100%)	0(100%)	0(96%)
	Hygiene	1(95%)	1(80%)	1(97%)	1(81%)	1(94%)	1(88%)
Treatment	Sandal	1(98%)	1(96%)	1(95%)	1(98%)	1(98%)	1(96%)
	Permanganate	0(79%)	0(95%)	0(86%)	0(90%)	0(83%)	0(86%)
	Crème	0(91%)	0(75%)	0(76%)	0(76%)	0(82%)	0(82%)
	Elevation	0(79%)	0(75%)	0(58%)	0(76%)	0(73%)	0(67%)
	Massage	0(82%)	0(95%)	0(91%)	0(100%)	0(91%)	0(89%)
	Exercise	0(100%)	0(89%)	0(91%)	0(80%)	0(95%)	0(92%)
	Bandage	0(73%)	0(95%)	0(87%)	0(82%)	0(81%)	0(78%)
	Medicine	0(89%)	0(95%)	0(82%)	0(81%)	0(77%)	0(76%)
	Herbal Remedy	0(51%)	1(61%)	0(51%)	0(51%)	1(56%)	1(62%)
	Pomade	0(78%)	1(63%)	0(57%)	0(76%)	0(60%)	0(61%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

Within the number of attacks demographic characteristic, culturally correct answer keys were tested for significant differences. No significant differences existed.

Table A33. Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Number of Attacks

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
BMC: Fewer Attacks vs More Attacks	1.6190	1	.2032	.3983*
BMI: Fewer Attacks vs More Attacks	.0000	1	1.00	1.00*
B-All: Fewer Attacks vs More Attacks	.0000	1	1.00	1.00*

* indicates which statistic was interpreted for significant differences between the answer keys

In addition to analyzing the answer keys for differences, average levels of cultural competency were also assessed. The baseline intervention (BMI) and baseline all (B-All) groups exhibited significant differences in cultural competency at baseline.

Table A34. Baseline Sample: Cultural Competency Analysis Results by Group and Number of Attacks

	Fewer Attacks	**More Attacks**	**Fewer Attacks**	**More Attacks**
BMC	19	8	.53	.44
BMI	31	28	.55	.42
B-All	149	89	.53	.46

* One individual removed from analyses in the intervention group due to missing data

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Table A35. Comparisons of Cultural Competency for Intervention and Control Groups by Number of Attacks

	df	**t**	**p<**
BMC: Fewer Attacks vs More Attacks	25	1.12	.2728
BMI: Fewer Attacks vs More Attacks	44.9	2.51	.0156
B-All: Fewer Attacks vs More Attacks	157	2.49	.0139

Appendix B

Appendix B

General demographic results from the cultural consensus analyses are presented in the body of Chapter 4. Specific results of the statistical analyses and comparisons summarized previously are captured in the tables below. Demographic dimensions reviewed here include: marital status, religion, literacy, wealth, age, stage of disease, and number of acute attacks.

Marital Status

An eigenvalue ratio greater than three was present for the outcome control group with additional items (OMC-FM) for the single sample, as well as the control group (OMC-RM), intervention group (OMI-RM) and intervention group with additional items at outcome (OMI-FM) regardless of marital status. When a group exhibited consensus in either or both conditions, it was stronger for the single portion of the sample.

Table B1. Outcome Sample: Consensus Analysis Results by Group and Marital Status

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Not Single	Single	Not Single	Single	Not Single	Single	Not Single	Single
OMC-RM*	22	4	7.471	.867	1.998	.201	3.739	4.309
OMI-RM	33	27	14.624	12.130	3.228	1.802	4.530	6.732
OMC-FM*	22	4	5.696	.645	2.426	.149	2.348	4.329
OMI-FM	33	27	10.715	9.709	2.184	1.963	4.907	4.947

*One individual removed from analyses in the outcome control group due to missing data

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The culturally correct answer keys were comprised of different items by marital status and group. Regarding the outcome samples, the control groups produced the same items in the cultural model as were present at baseline. In contrast, the intervention group cultural model included additional elements. Both married and single individuals selected insect bite as the cause of LF and indicated hygiene, sandals, elevation, massage, and exercise for treatment. However, single people in the intervention group also chose crème, herbal remedies, and pomade.

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Table B2. Culturally Correct Answer Keys for Intervention and Control Groups by Marital Status

Outcome Sample		OMC-RM N=22	OMC-RM N=4	OMI-RM N=33	OMI-RM N=27
		Answer (Weighted %)		Answer (Weighted %)	
		Not Single	Single	Not Single	Single
Cause	Insect Bite	0(100%)	0(75%)	1(75%)	1(68%)
	Magic	0(96%)	0(100%)	0(96%)	0(97%)
	Sprain	0(100%)	0(100%)	0(96%)	0(96%)
	Worms	0(82%)	0(100%)	0(81%)	0(96%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(98%)	1(100%)	1(97%)	1(97%)
	Sandal	1(96%)	1(100%)	1(98%)	1(98%)
	Permanganate	0(98%)	0(82%)	0(83%)	0(69%)
	Crème	0(96%)	0(100%)	0(56%)	1(56%)
	Elevation	0(85%)	0(82%)	1(93%)	1(94%)
	Massage	0(96%)	0(100%)	1(66%)	1(65%)
	Exercise	0(96%)	0(100%)	1(86%)	1(92%)
	Bandage	0(91%)	0(100%)	0(83%)	0(78%)
	Medicine	0(58%)	1(58%)	0(61%)	0(63%)
	Herbal Remedy	0(50%)	1(58%)	0(50%)	1(69%)
	Pomade	0(67%)	0(82%)	0(67%)	1(49%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met
*** One individual removed from analyses in the outcome control group due to missing data

In the case of the full models, including the items present in the outcome sample only, both single and not single people identified the same key elements with the exception of pharmaceutical medicines; this item was only present in the control group comprised of single participants. For the different treatment questions presented, the members of the intervention group, both single and not single, agreed on the following elements: insect bite, hygiene, sandal, elevation, massage, exercise. Single individuals in the intervention condition also included herbal remedies, pomade, and crème.

Table B3. Culturally Correct Answer Keys for Intervention and Control Groups that Include Additional Cultural Model Items only Present in the Outcome Sample by Marital Status

Outcome Sample		OMC-FM		OMI-FM	
		N=22	N=4	N=33	N=27
		Answer(Weighted %)			
		Not Single	Single	Not Single	Single
Cause	Insect Bite	0(100%)	0(64%)	1(75%)	1(73%)
	Magic	0(92%)	0(100%)	0(98%)	0(100%)
	Sprain	0(100%)	0(100%)	0(96%)	0(94%)
	Worms	0(94%)	0(100%)	0(78%)	0(95%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(100%)	1(100%)	1(98%)	1(99%)
	Sandal	1(100%)	1(100%)	1(98%)	1(99%)
	Permanganate	0(100%)	0(83%)	0(85%)	0(73%)
	Crème	0(99%)	0(100%)	0(58%)	0(52%)
	Elevation	0(96%)	0(83%)	1(92%)	1(98%)
	Massage	0(99%)	0(100%)	1(64%)	1(67%)
	Exercise	0(99%)	0(100%)	1(89%)	1(98%)
	Bandage	0(92%)	0(100%)	0(87%)	0(77%)
	Medicine	0(72%)	0(53%)	0(61%)	0(68%)
	Herbal Remedy	0(85%)	0(73%)	0(52%)	1(69%)
	Pomade	0(87%)	0(83%)	0(69%)	1(53%)
Treatment (OC Only)	Hygiene	1(93%)	1(90%)	1(98%)	1(98%)

Table B3. *(continued)*

		OMC-FM		OMI-FM	
		N=22	N=4	N=33	N=27
		Answer(Weighted %)			
		Not Single	Single	Not Single	Single
What kinds of care can help your gwopye?	Sandal	1(85%)	1(90%)	1(83%)	1(76%)
	Permanganate	0(100%)	0(83%)	0(64%)	0(72%)
	Crème	0(96%)	0(83%)	0(57%)	1(53%)
	Elevation	0(89%)	0(83%)	1(90%)	1(96%)
	Massage	0(96%)	0(100%)	1(70%)	1(58%)
	Exercise	0(96%)	0(100%)	1(87%)	1(80%)
	Bandage	0(96%)	0(100%)	0(82%)	0(77%)
	Medicine	0(82%)	1(54%)	0(62%)	0(62%)
	Nothing	0(98%)	0(100%)	0(100%)	0(100%)
Treatment (OC Only)	Hygiene	1(70%)	1(90%)	1(89%)	1(90%)
What can you do to prevent acute attacks?	Sandal	1(70%)	1(90%)	1(75%)	1(81%)
	Permanganate	0(100%)	0(83%)	0(87%)	0(91%)
	Crème	0(100%)	0(83%)	0(79%)	0(79%)
	Elevation	0(93%)	0(83%)	1(65%)	1(80%)
	Massage	0(100%)	0(100%)	1(55%)	1(57%)
	Exercise	0(100%)	0(100%)	1(65%)	1(85%)
	Bandage	0(100%)	0(100%)	0(95%)	0(94%)
	Medicine	0(93%)	0(64%)	0(65%)	0(62%)
	Nothing	0(96%)	0(90%)	0(100%)	0(100%)
Treatment (OC Only)	Hygiene	1(81%)	1(73%)	1(73%)	1(87%)
What can be done to provide relief during an acute attack?	Sandal	1(77%)	1(73%)	1(53%)	1(69%)
	Permanganate	0(100%)	0(100%)	0(72%)	0(86%)
	Crème	0(99%)	0(100%)	0(75%)	0(79%)
	Elevation	0(92%)	0(100%)	1(60%)	1(76%)
	Massage	0(99%)	0(100%)	1(54%)	1(62%)
	Exercise	0(99%)	0(100%)	1(57%)	1(75%)
	Bandage	0(92%)	0(100%)	0(86%)	0(94%)
	Medicine	0(72%)	0(53%)	0(56%)	0(74%)
	Nothing	0(96%)	0(100%)	0(100%)	0(98%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

*** One individual removed from analyses in the outcome control group due to missing data

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Comparisons of the answer keys below also indicate a lack of significant difference within each group when compared by marital status.

Table B4. Outcome Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Marital Status

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
OMC-RM: Not Single vs Single	.8095	1	.3683	.6562*
OMC-FM: Not Single vs Single	.0718*	1	.7887	1.00
OMI-RM: Not Single vs Single	1.074*	1	.3001	.4905
OMI-FM: Not Single vs Single	.3837*	1	.5356	.6799

* indicates which statistic was interpreted for significant differences between the answer keys

In addition to examining levels of consensus and analyzing answer keys for differences, average levels of cultural competency were also assessed.

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Table B5. Outcome Sample: Cultural Competency Analysis Results by Group and Marital Status

Outcome Sample	N		Average Competency	
	Not Single	Single	Not Single	Single
OMC-RM	22	4	.54	.46
OMI-RM	33	27	.63	.61
OMC-FM	22	4	.42	.37
OMI-FM	33	27	.52	.50

*One individual removed from analyses in the outcome control group due to missing data

Table B6. Outcome Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Marital Status

	Df	**t**	**p<**
Outcome Controls: Not Single vs Single	24	.79	.4396
Outcome Control with Additional Items: Not Single vs Single	24	.33	.7452
Outcome Intervention: Not Single vs Single	58	.24	.8078
Outcome Intervention with Additional Items: Not Single vs Single	45	.29	.7742

The highest cultural competency presented in the intervention group at outcome across both marital conditions, and this finding is in line with overall study hypotheses. Additionally, no significant differences in levels of competency exist within each group by marital status. This information, considered with the levels of cultural consensus and lack of significant differences in answer keys suggests that single individuals experience more cohesiveness in their cultural model of LF, but that this difference is not great enough to impact the overall shared cultural model when both single and not single participants are grouped together.

Religion

In the case of religion, Protestants and Catholics were compared; there were too few individuals who selected vodou, other, or no religion to include in the analysis. Consensus was met for several groups: Protestants and Catholics in the outcome controls sample (OMC-RM), Protestants and Catholics in the outcome intervention sample (OMI-RM), Protestants in the outcome controls with additional items group (OMC-FM), and both Protestants and Catholics in the in outcome intervention group with additional items (OMI-FM). Consensus was highest in the two intervention groups for the Protestant sample. Interestingly, Catholics exhibited a higher level of consensus across all baseline samples, and this trend is reversed in all but one of the outcome samples.

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Table B7. Outcome Sample: Consensus Analysis Results by Group and Religion

	N		First Eigenvalue		Second Eigenvalue		Eigenvalue Ratio	
	Protestant	Catholic	Protestant	Catholic	Protestant	Catholic	Proteestant	Catholic
OMC-RM	6	15	1.259	5.135	.393	1.4999	3.201	3.425
OMI-RM	28	27	13.198	12.027	1.866	3.105	7.071	3.874
OMC-FM	6	15	1.188	3.969	.288	1.644	4.120	2.415
OMI-FM	28	27	9.377	10.077	1.441	2.552	6.508	3.949

Once the degree of consensus in a sample was established, the answer keys were examined. In the outcome sample, elements for cause and treatment of lymphatic filariasis were highlighted. Within the control sample, hygiene and sandals are the key treatment pieces and are supported in both the Protestant and Catholic portions of the population. Regarding the intervention samples, insect bites are seen as the cause of LF. Protestants and Catholics in the intervention group think that hygiene, sandal, elevation, massage, and exercise are ways to treat their disease. Additionally, Protestants and Catholics endorse herbal remedies and crème, respectively.

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Table B8. Culturally Correct Answer Keys for Intervention and Control Groups by Religion

Outcome Sample		OMC-RM		OMI-RM	
		N=6	N=15	N=28	N=27
		Answer (Weighted %)		Answer (Weighted %)	
		Protestant	Catholic	Protestant	Catholic
Cause	Insect Bite	0(84%)	0(100%)	1(75%)	1(65%)
	Magic	0(100%)	0(94%)	0(98%)	0(94%)
	Sprain	0(100%)	0(100%)	0(97%)	0(94%)
	Worms	0(71%)	0(86%)	0(89%)	0(90%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(92%)	1(100%)	1(95%)	1(100%)
	Sandal	1(100%)	1(94%)	1(98%)	1(97%)
	Permanganate	0(92%)	0(93%)	0(85%)	0(70%)
	Crème	0(100%)	0(95%)	0(57%)	1(62%)
	Elevation	0(92%)	0(73%)	1(94%)	1(93%)
	Massage	0(100%)	0(95%)	1(69%)	1(63%)
	Exercise	0(100%)	0(95%)	1(89%)	1(92%)
	Bandage	0(100%)	0(87%)	0(83%)	0(79%)
	Medicine	0(64%)	0(56%)	0(66%)	0(62%)
	Herbal Remedy	0(52%)	0(65%)	1(66%)	0(53%)
	Pomade	0(72%)	0(56%)	0(58%)	0(57%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

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Within the full models, including additional items in the outcome data only, controls, both Protestant and Catholics thought that hygiene and sandals are appropriate ways to treat lymphatic filariasis. For the intervention group, the following treatment options were indicated in one or both religious groups: hygiene, sandal, elevation, massage, exercise, crème, herbal remedy. Both intervention groups agree that insect bites cause LF.

Table B9. Culturally Correct Answer Keys for Intervention and Control Groups that Include Additional Cultural Model Items only Present in the Outcome Sample by Religion

Outcome Sample		**OMC-FM**		**OMI-FM**	
		N=6	N=15	N=28	N=27
		Answer (Weighted %)		Answer (Weighted %)	
		Protestant	Catholic	Protestant	Catholic
Cause	Insect Bite	0(73%)	0(100%)	1(76%)	1(70%)
	Magic	0(100%)	0(90%)	0(99%)	0(98%)
	Sprain	0(100%)	0(100%)	0(96%)	0(94%)
	Worms	0(93%)	0(94%)	0(87%)	0(86%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(100%)	1(100%)	1(97%)	1(100%)
	Sandal	1(100%)	1(98%)	1(99%)	1(98%)
	Permanganate	0(100%)	0(94%)	0(87%)	0(72%)
	Crème	0(100%)	0(98%)	0(59%)	1(57%)
	Elevation	0(100%)	0(86%)	1(95%)	1(95%)
	Massage	0(100%)	0(98%)	1(70%)	1(62%)
	Exercise	0(100%)	0(98%)	1(91%)	1(98%)
	Bandage	0(100%)	0(89%)	0(87%)	0(79%)
	Medicine	0(66%)	0(67%)	0(65%)	0(68%)
	Herbal Remedy	0(86%)	0(83%)	1(66%)	0(56%)
	Pomade	0(93%)	0(76%)	0(55%)	0(59%)

Table B9. *(continued)*

		OMC-FM		OMI-FM	
		N=6	N=15	N=28	N=27
		Answer (Weighted %)			
		Protestant	Catholic	Protestant	Catholic
Treatment (OC Only) What kinds of care can help your gwopye?	Hygiene	1(86%)	1(95%)	1(98%)	1(99%)
	Sandal	1(86%)	1(84%)	1(75%)	1(84%)
	Permanganate	0(100%)	0(94%)	0(54%)	0(85%)
	Crème	0(100%)	0(88%)	0(51%)	1(51%)
	Elevation	0(100%)	0(77%)	1(91%)	1(95%)
	Massage	0(100%)	0(94%)	1(74%)	1(67%)
	Exercise	0(100%)	0(94%)	1(93%)	1(94%)
	Bandage	0(100%)	0(94%)	0(86%)	0(91%)
	Medicine	0(72%)	0(68%)	0(55%)	0(84%)
	Nothing	0(93%)	0(100%)	0(100%)	0(100%)
Treatment (OC Only) What can you do to prevent acute attacks?	Hygiene	1(86%)	1(68%)	1(83%)	1(94%)
	Sandal	1(86%)	1(68%)	1(73%)	1(84%)
	Permanganate	0(100%)	0(94%)	0(83%)	0(95%)
	Crème	0(100%)	0(94%)	0(74%)	0(84%)
	Elevation	0(100%)	0(83%)	1(72%)	1(69%)
	Massage	0(100%)	0(100%)	1(65%)	0(55%)
	Exercise	0(100%)	0(100%)	1(78%)	1(67%)
	Bandage	0(100%)	0(100%)	0(93%)	0(98%)
	Medicine	0(73%)	0(89%)	0(64%)	0(79%)
	Nothing	0(100%)	0(100%)	0(100%)	0(100%)
Treatment (OC Only) What can be done to provide relief during an acute attack?	Hygiene	1(86%)	1(78%)	1(81%)	1(78%)
	Sandal	1(86%)	1(72%)	1(61%)	1(61%)
	Permanganate	0(100%)	0(100%)	0(65%)	0(90%)
	Crème	0(100%)	0(98%)	0(70%)	0(83%)
	Elevation	0(100%)	0(87%)	1(75%)	1(59%)
	Massage	0(100%)	0(98%)	1(72%)	0(58%)
	Exercise	0(100%)	0(98%)	1(67%)	1(63%)
	Bandage	0(100%)	0(89%)	0(82%)	0(98%)
	Medicine	0(65%)	0(67%)	0(61%)	0(71%)
	Nothing	0(100%)	0(100%)	0(98%)	0(100%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

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Table B10. Outcome Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Religion

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
OMC-RM: Protestant vs Catholic	.0000	1	1.00	.3988*
OMC-FM: Protestant vs Catholic	.0000*	1	1.00	1.00
OMI-RM: Protestant vs Catholic	.0000*	1	1.00	1.00
OMI-FM: Protestant vs Catholic	.0429*	1	.8360	1.00

* indicates which statistic was interpreted for significant differences between the answer keys

Table B11. Outcome Sample: Cultural Competency Analysis Results by Group and Religion

	N		**Average Competency**	
	Protestant	Catholic	Protestant	Catholic
OMC-RM	6	15	.44	.56
OMI-RM	28	27	.64	.62
OMC-FM	6	15	.36	.45
OMI-FM	28	27	.52	.53

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Table B12. Outcome Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Religion

	Df	t	p<
OMC-RM: Protestant vs Catholic	19	1.57	.1340
OMC-FM: Protestant vs Catholic	19	.70	.4906
OMI-RM: Protestant vs Catholic	53	-.36	.7227
OMI-FM: Protestant vs Catholic	53	.17	.8631

No significant differences between answer keys by religion existed within each of the groups. Regarding cultural competency, both religious groups experienced increases in average cultural competency between baseline and outcome in the intervention samples. However, no significant differences existed between conditions, Protestant and Catholic, within each of the groups analyzed. These findings in general suggest that individuals in the intervention groups gained more cultural competency than their control counterparts as a result of the support group, and that Protestants may have been more receptive to the content of the support group module as rates of consensus were greatest among these participants at outcome.

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Literacy

In the case of literacy, strongest consensus is present among the outcome controls both reduced and full samples (OMC-RM & OMC-FM). Consensus if also found in all members of the intervention group in both full and reduced models (OMI-RM & OMI-FM); however, consensus is greater among individuals who are not literate.

Table B13. Outcome Sample: Consensus Analysis Results by Group and Literacy

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Literate	Not Literate	Literate	Not Literate	Literate	Not Literate	Literate	Not Literate
OMC-RM*	15	11	5.603	3.978	1.226	.231	4.571	17.206
OMI-RM	38	22	18.869	8.831	4.008	1.563	4.708	5.651
OMC-FM*	15	11	3.039	3.856	2.163	.199	1.405	19.391
OMI-FM	38	22	13.338	7.695	2.816	1.498	4.737	5.136

*One individual removed from analyses in the outcome control group due to missing data

With regards to the reduced model outcome samples, hygiene and sandals are present in the cultural model. Additional treatment items highlighted in the outcome intervention samples include the use of crème, elevation, massage, exercise, herbal remedies, and pomade. One cause, insect bite, is included in these groups.

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Pharmaceutical medicine and herbal remedies were identified in the outcome control sample comprised of literate individuals.

Table B14. Culturally Correct Answer Keys for Intervention and Control Groups by Literacy

Outcome Sample		OMC-RM		OMI-RM	
		N=15	N=11	N=38	N=22
		Answer (Weighted %)			
		Literate	Not Literate	Literate	Not Literate
Cause	Insect Bite	0(94%)	0(100%)	1(75%)	1(67%)
	Magic	0(100%)	0(91%)	0(97%)	0(95%)
	Sprain	0(100%)	0(100%)	0(99%)	0(91%)
	Worms	0(71%)	0(100%)	0(91%)	0(83%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(95%)	1(100%)	1(100%)	1(90%)
	Sandal	1(93%)	1(100%)	1(100%)	1(93%)
	Permanganate	0(96%)	0(93%)	0(73%)	0(83%)
	Crème	0(94%)	0(100%)	1(64%)	0(78%)
	Elevation	0(74%)	0(93%)	1(94%)	1(93%)
	Massage	0(94%)	0(100%)	1(67%)	1(66%)
	Exercise	0(94%)	0(100%)	1(91%)	1(87%)
	Bandage	0(94%)	0(90%)	0(75%)	0(90%)
	Medicine	1(55%)	0(69%)	0(84%)	0(60%)
	Herbal Remedy	1(70%)	0(93%)	0(58%)	1(88%)
	Pomade	0(57%)	0(82%)	0(64%)	1(51%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met
*** One individual removed from analyses in the outcome control group due to missing data

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For the outcome samples including additional items, insect bite is an element of the cultural model among both intervention groups. Across the various treatment scenarios presented, the intervention samples selected hygiene, sandals, crème, elevation, massage, exercise, herbal remedy, pomade, and medicine as treatment options. Within the control groups, hygiene and sandals were consistently chosen in response to the various treatment situations.

Table B15. Culturally Correct Answer Keys for Intervention and Control Groups that Include Additional Cultural Model Items only Present in the Outcome Sample by Literacy

Outcome Sample		**OMC-FM**		**OMI-FM**	
		N=15	N=11	N=38	N=22
		Answer (Weighted %)			
		Literate	Not Literate	Literate	Not Literate
Cause	Insect Bite	0(88%)	0(100%)	1(76%)	1(72%)
	Magic	0(100%)	0(88%)	0(98%)	0(98%)
	Sprain	0(100%)	0(100%)	0(100%)	0(88%)
	Worms	0(83%)	0(100%)	0(88%)	0(83%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(97%)	1(100%)	1(100%)	1(95%)
	Sandal	1(97%)	1(100%)	1(100%)	1(96%)
	Permanganate	0(98%)	0(94%)	0(76%)	0(86%)
	Crème	0(97%)	0(100%)	1(61%)	0(79%)
	Elevation	0(85%)	0(94%)	1(94%)	1(97%)
	Massage	0(97%)	0(100%)	1(66%)	1(69%)
	Exercise	0(97%)	0(100%)	1(94%)	1(92%)
	Bandage	0(97%)	0(90%)	0(75%)	0(96%)
	Medicine	0(57%)	0(73%)	0(66%)	0(57%)
	Herbal Remedy	0(57%)	0(94%)	0(59%)	1(85%)
	Pomade	0(76%)	0(87%)	0(64%)	1(52%)
Treatment (OC Only)	Hygiene	1(74%)	1(100%)	1(99%)	1(97%)

Table B15. *(continued)*\

		OMC-FM		OMI-FM	
		N=15	N=11	N=38	N=22
		Answer(Weighted %)			
		Literate	Not Literate	Literate	Not Literate
What kinds of care can help your gwopye?	Sandal	1(64%)	1(95%)	1(76%)	1(87%)
	Permanganate	0(100%)	0(94%)	0(70%)	0(61%)
	Crème	0(90%)	0(94%)	1(51%)	0(55%)
	Elevation	0(85%)	0(83%)	1(92%)	1(94%)
	Massage	0(90%)	0(100%)	1(71%)	1(72%)
	Exercise	0(90%)	0(100%)	1(93%)	1(89%)
	Bandage	0(90%)	0(100%)	0(87%)	0(85%)
	Medicine	0(73%)	0(74%)	0(79%)	1(59%)
	Nothing	0(95%)	0(100%)	0(100%)	0(100%)
Treatment (OC Only)	Hygiene	1(57%)	1(79%)	1(88%)	1(92%)
What can you do to prevent acute attacks?	Sandal	1(57%)	1(79%)	1(76%)	1(83%)
	Permanganate	0(100%)	0(94%)	0(85%)	0(94%)
	Crème	0(100%)	0(94%)	0(72%)	0(94%)
	Elevation	0(97%)	0(83%)	1(66%)	1(82%)
	Massage	0(100%)	0(100%)	0(51%)	1(72%)
	Exercise	0(100%)	0(100%)	1(67%)	1(87%)
	Bandage	0(100%)	0(100%)	0(94%)	0(93%)
	Medicine	0(86%)	0(90%)	0(75%)	0(53%)
	Nothing	0(87%)	0(100%)	0(100%)	0(100%)
Treatment (OC Only)	Hygiene	1(66%)	1(82%)	1(73%)	1(90%)
What can be done to provide relief during an acute attack?	Sandal	1(57%)	1(82%)	1(51%)	1(77%)
	Permanganate	0(100%)	0(100%)	0(70%)	0(94%)
	Crème	0(97%)	0(100%)	0(69%)	0(92%)
	Elevation	0(92%)	0(90%)	1(59%)	1(83%)
	Massage	0(97%)	0(100%)	0(52%)	1(77%)
	Exercise	0(97%)	0(100%)	1(56%)	1(83%)
	Bandage	0(97%)	0(90%)	0(86%)	0(94%)
	Medicine	0(55%)	0(73%)	0(66%)	0(57%)
	Nothing	0(92%)	0(100%)	0(98%)	0(100%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met
*** One individual removed from analyses in the outcome control group due to missing data

When the answer keys were compared for differences by literacy, no significant differences were found.

Table B16. Outcome Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Literacy

	Chi-Square	df	P<	Fisher's Exact Two-Tailed p<
OMC-RM: Literate vs Not Literate	.8095	1	.3683	.6562*
OMC-FM: Literate vs Not Literate	.0000*	1	1.00	1.00
OMI-RM: Literate vs Not Literate	.1193*	1	.7298	1.00
OMI-FM: Literate vs Not Literate	.3837*	1	.5356	.6799

* indicates which statistic was interpreted for significant differences between the answer keys

In addition to the lack of significant difference between answer keys within each group, no significant differences in levels of cultural competency within each group by literacy were present either.

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Table B17. Outcome Sample: Cultural Competency Analysis Results by Group and Literacy

	N		**Average Competency**	
	Literate	Not Literate	Literate	Not Literate
OMC-RM	15	11	.58	.56
OMI-RM	38	22	.68	.55
OMC-FM	15	11	.39	.54
OMI-FM	38	22	.55	.47

* One individual removed from analyses in the outcome control group due to missing data

Table B18. Outcome Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Literacy

	df	**t**	**p<**
OMC-RM: Literate vs Not Literate	24	.18	.8588
OMC-FM: Literate vs Not Literate	24	-1.53	.1383
OMI-RM: Literate vs Not Literate	30.7	1.66	.1072
OMI-FM: Literate vs Not Literate	30.9	.87	.3919

In the case of literacy, the answer keys showed no significant differences within each group. The same trend held true when differences in cultural competency were examined within each group. Though there were no significant differences within each group, each of the two linked samples, baseline controls and baseline intervention, showed increases in average cultural competency at outcome. These changes were greatest in the literate portion of the sample. However, the strongest consensus was present in the not literate samples for both control and intervention groups. Thus, literacy does not seem to significantly impact the elements highlighted in the cultural models, but individuals who are not literate seem to share a stronger buy-in to the shared model than their literate counterparts. That said, literate participants in the intervention group showed the greatest overall increase in competency from baseline to outcome.

Wealth

Within the wealth comparisons, outcome intervention groups, both full and reduced, exhibited the highest level of consensus across both wealth categories. Specifically, individuals with more wealth in the intervention group showed stronger consensus than their less wealthy counterparts. For the outcome control groups, only the less wealthy individuals for the reduced model showed consensus.

Table B19. Outcome Sample: Consensus Analysis Results by Group and Wealth

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Less Wealth	More Wealth	Less Wealth	More Wealth	Less Wealth	More Wealth	Less Wealth	More Wealth
OMC-RM*	23	3	8.550	.027	1.991	.021	4.295	1.268
OMI-RM	35	25	14.648	12.163	3.608	1.872	4.060	6.499
OMC-FM*	23	3	6.408	.004	2.278	.003	2.813	1.044
OMI-FM	35	25	11.461	8.871	2.748	1.693	4.170	5.241

*One individual removed from analyses in the outcome control group due to missing data

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The outcome samples all highlighted hygiene and sandal as key pieces of the cultural model. Both intervention groups identified elevation, massage and exercise as well. Specific to the less wealthy intervention individuals, crème and herbal remedies are also selected. Intervention members chose insect bite as a cause of lymphatic filariasis.

Table B20. Culturally Correct Answer Keys for Intervention and Control Groups by Wealth

Outcome Sample		OMC-RM		OMI-RM	
		N=23	N=3	N=35	N=25
		Answer(Weighted %)			
		Less Wealth	More Wealth	Less Wealth	More Wealth
Cause	Insect Bite	0(96%)	0(100%)	1(66%)	1(79%)
	Magic	0(96%)	0(100%)	0(94%)	0(99%)
	Sprain	0(100%)	0(100%)	0(97%)	0(94%)
	Worms	0(84%)	0(100%)	0(95%)	0(80%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(98%)	1(100%)	1(95%)	1(99%)
	Sandal	1(100%)	1(52%)	1(97%)	1(99%)
	Permanganate	0(94%)	0(100%)	0(70%)	0(84%)
	Crème	0(97%)	0(100%)	1(53%)	0(54%)
	Elevation	0(85%)	0(52%)	1(92%)	1(96%)
	Massage	0(97%)	0(100%)	1(68%)	1(63%)
	Exercise	0(97%)	0(100%)	1(87%)	1(91%)
	Bandage	0(92%)	0(100%)	0(76%)	0(86%)
	Medicine	0(56%)	0(52%)	0(64%)	0(58%)
	Herbal Remedy	0(59%)	0(52%)	1(67%)	0(54%)
	Pomade	0(70%)	0(52%)	0(60%)	0(59%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

*** One individual removed from analyses in the outcome control group due to missing data

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Less wealthy members of the control group suggest that hygiene and sandals are the appropriate treatment choices for lymphatic filariasis in a variety of scenarios. More wealthy controls selected hygiene, elevation, medicine, herbal remedy, and pomade. Intervention members who were less wealthy believe that lymphatic filariasis is caused by insect bites and can be treated with hygiene, sandal, elevation, massage, exercise, and herbal remedies. More wealthy intervention members also believe that insect bites cause lymphatic filariasis. They believe that treatment options include: hygiene, sandal, elevation, massage, exercise, crème.

Table B21. Culturally Correct Answer Keys for Intervention and Control Groups that Include Additional Cultural Model Items only Present in the Outcome Sample by Wealth

Outcome Sample		**OMC-FM**		**OMI-FM**	
		N=23	N=3	N=35	N=25
		Answer(Weighted %)			
		Less Wealth	More Wealth	Less Wealth	More Wealth
Cause	Insect Bite	0(93%)	0(100%)	1(68%)	1(81%)
	Magic	0(93%)	0(100%)	0(97%)	0(100%)
	Sprain	0(100%)	0(100%)	0(96%)	0(95%)
	Worms	0(94%)	0(100%)	0(93%)	0(76%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(100%)	1(63%)	1(97%)	1(100%)
	Sandal	1(100%)	0(100%)	1(98%)	1(100%)
	Permanganate	0(96%)	0(100%)	0(75%)	0(85%)
	Crème	0(99%)	0(100%)	0(49%)	0(58%)
	Elevation	0(92%)	1(63%)	1(94%)	1(96%)
	Massage	0(99%)	0(63%)	1(71%)	1(59%)
	Exercise	0(99%)	0(100%)	1(93%)	1(93%)
	Bandage	0(93%)	0(63%)	0(77%)	0(89%)
	Medicine	0(66%)	1(63%)	0(66%)	0(61%)
	Herbal Remedy	0(80%)	1(63%)	1(65%)	0(53%)
	Pomade	0(84%)	1(100%)	0(59%)	0(60%)

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Table B21. *(continued)*

		OMC-FM		OMI-FM	
		N=23	N=3	N=35	N=25
		Answer (Weighted %)			
		Less Wealth	More Wealth	Less Wealth	More Wealth
Treatment (OC Only) What kinds of care can help your gwopye?	Hygiene	1(91%)	0(100%)	1(98%)	1(99%)
	Sandal	1(85%)	0(100%)	1(76%)	1(83%)
	Permanganate	0(96%)	0(100%)	0(71%)	0(63%)
	Crème	0(93%)	0(100%)	0(58%)	1(55%)
	Elevation	0(86%)	1(63%)	1(90%)	1(96%)
	Massage	0(96%)	0(100%)	1(70%)	1(70%)
	Exercise	0(96%)	0(100%)	1(93%)	1(91%)
	Bandage	0(96%)	0(100%)	0(94%)	0(78%)
	Medicine	0(74%)	1(63%)	0(68%)	0(67%)
	Nothing	0(98%)	0(100%)	0(100%)	0(100%)
Treatment (OC Only) What can you do to prevent acute attacks?	Hygiene	1(71%)	0(100%)	1(87%)	1(91%)
	Sandal	1(71%)	0(100%)	1(70%)	1(87%)
	Permanganate	0(96%)	0(100%)	0(93%)	0(82%)
	Crème	0(96%)	0(100%)	0(78%)	0(79%)
	Elevation	0(90%)	1(63%)	1(72%)	1(72%)
	Massage	0(100%)	0(100%)	1(54%)	1(58%)
	Exercise	0(100%)	0(100%)	1(75%)	1(73%)
	Bandage	0(100%)	0(100%)	0(98%)	0(89%)
	Medicine	0(87%)	1(63%)	0(76%)	0(61%)
	Nothing	0(94%)	0(100%)	0(100%)	0(100%)
Treatment (OC Only) What can be done to provide relief during an acute attack?	Hygiene	1(77%)	0(100%)	1(78%)	1(80%)
	Sandal	1(73%)	0(100%)	1(58%)	1(61%)
	Permanganate	0(100%)	0(100%)	0(89%)	0(64%)
	Crème	0(99%)	0(100%)	0(82%)	0(69%)
	Elevation	0(93%)	1(63%)	1(63%)	1(71%)
	Massage	0(99%)	0(100%)	1(58%)	1(57%)
	Exercise	0(99%)	0(100%)	1(67%)	1(62%)
	Bandage	0(93%)	0(100%)	0(95%)	0(81%)
	Medicine	0(65%)	1(63%)	0(67%)	0(60%)
	Nothing	0(96%)	0(100%)	0(98%)	0(100%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

*** One individual removed from analyses in the outcome control group due to missing data

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After the answer keys were reviewed for the elements included in each cultural model, the answer keys were compared between more and less wealthy individuals within each group. These analyses indicate that there are no significant differences between answer keys within each group.

Table B22. Outcome Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Wealth

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
OMC-RM: Less Wealth vs More Wealth	.0000	1	1.00	1.00*
OMC-FM: Less Wealth vs More Wealth	.5937*	1	.4410	.6083
OMI-RM: Less Wealth vs More Wealth	.4857*	1	.4858	.7283
OMI-FM: Less Wealth vs More Wealth	.0000*	1	1.00	1.00

* indicates which statistic was interpreted for significant differences between the answer keys

Further analyses were conducted to assess rates of cultural competency in each group and whether or not significant differences in competency exist between less and more wealthy individuals in each sample. The wealthier portion of the intervention sample showed the highest rates of cultural competency. Significant differences did exist in the cultural competency levels of the less wealth vs more wealthy members of both control models. However, the sample of these groups is comprised of only three people; cultural consensus analysis can theoretically be conducted with a sample of three but even the lowest recommended sample in the power analysis table previously discussed suggests a minimum sample size of four people. Thus, the significant differences suggested in this analysis are suspect.

Table B23. Outcome Sample: Cultural Competency Analysis Results by Group and Wealth

	N		**Average Competency**	
	Less Wealth	More Wealth	Less Wealth	More Wealth
OMC-RM	23	3	.59	.07
OMI-RM	35	25	.59	.75
OMC-FM	23	3	.46	.0007
OMI-FM	35	25	.48	.55

* One individual removed from analyses in the outcome control group due to missing data

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Table B24. Outcome Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Wealth

	Df	t	p<
OMC-RM: Less Wealth vs More Wealth	24	5.41	<.0001
OMC-FM: Less Wealth vs More Wealth	21.9	7.71	<.0001
OMI-RM: Less Wealth vs More Wealth	58	-1.21	.2327
OMI-FM: Less Wealth vs More Wealth	58	-.90	.3710

In the outcome intervention group both stronger consensus and competence was present for wealthier individuals. Also, the change in competence level from baseline to outcome in the intervention group was greater for this group. In contrast, less wealthy controls indicated greater consensus and greater competence in the control groups. That said, the sample size was only 3 individuals in the wealthier segment of the control group sample; thus, trends observed in these samples may be suspect. Considering the evidence in the intervention samples, then, it looks as though the intervention had greater impact on wealthier participants.

Age

When looking at cultural models present in the sample by age, the median age, 46 years old, was used to divide the sample into younger and older groupings. With this grouping, younger outcome intervention members exhibit consensus where their outcome control counterparts do not. Older members show consensus in all four outcome models, but the younger group indicates the strongest consensus.

Table B25. Outcome Sample: Consensus Analysis Results by Group and Age

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Younger	Older	Younger	Older	Younger	Older	Younger	Older
OMC-RM*	13	13	4.382	4.572	1.887	1.043	2.322	4.385
OMI-RM	28	32	13.670	13.257	2.637	2.888	5.183	4.591
OMC-FM*	13	13	3.187	3.692	1.430	.775	2.229	4.766
OMI-FM	28	32	10.308	10.208	1.911	2.527	5.395	4.039

*One individual removed from analyses in the outcome control group due to missing data

For the reduced models at outcome, the answer keys suggest different items are important within the cultural model. Both younger and older control groups selected hygiene and sandals as the only treatment choices. Alternately, intervention groups highlighted insect bites as the cause of lymphatic filariasis and hygiene, sandal, elevation, massage, exercise, and herbal remedies for treatment. Younger members of the intervention sample also added crème as a treatment.

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Table B26. Culturally Correct Answer Keys for Intervention and Control Groups by Age

Outcome Sample		OMC-RM		OMI-RM	
		N=13	N=13	N=28	N=32
		Answer(Weighted %)			
		Younger	Older	Younger	Older
Cause	Insect Bite	0(92%)	0(100%)	1(85%)	1(59%)
	Magic	0(100%)	0(93%)	0(97%)	0(97%)
	Sprain	0(100%)	0(100%)	0(95%)	0(97%)
	Worms	0(80%)	0(91%)	0(90%)	0(87%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(96%)	1(100%)	1(96%)	1(98%)
	Sandal	1(100%)	1(94%)	1(99%)	1(96%)
	Permanganate	0(96%)	0(93%)	0(86%)	0(66%)
	Crème	0(94%)	0(100%)	1(51%)	0(50%)
	Elevation	0(80%)	0(87%)	1(96%)	1(91%)
	Massage	0(94%)	0(100%)	1(74%)	1(58%)
	Exercise	0(94%)	0(100%)	1(88%)	1(90%)
	Bandage	0(94%)	0(92%)	0(79%)	0(83%)
	Medicine	0(55%)	0(57%)	0(66%)	0(56%)
	Herbal Remedy	0(60%)	0(58%)	1(56%)	1(61%)
	Pomade	0(60%)	0(78%)	0(67%)	0(52%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met
*** One individual removed from analyses in the outcome control group due to missing data

Models were also run at outcome with additional treatment items included only in the outcome data. In these full models, both younger and older control groups looked to hygiene and sandals to treat lymphatic filariasis across multiple treatment scenarios. In contrast, insect bites were seen as the cause of LF in both younger and older intervention samples. Intervention groups also feel that hygiene, sandal, elevation, massage, exercise, and herbal remedy were appropriate in different circumstances. Younger and older individuals also identified crème and pomade, respectively.

Table B27. Culturally Correct Answer Keys for Intervention and Control Groups that Include Additional Cultural Model Items only Present in the Outcome Sample by Age

Outcome Sample		OMC-FM		OMI-FM	
		N=13	N=13	N=28	N=32
		Answer(Weighted %)			
		Younger	Older	Younger	Older
Cause	Insect Bite	0(87%)	0(100%)	1(85%)	1(63%)
	Magic	0(100%)	0(88%)	0(98%)	0(98%)
	Sprain	0(100%)	0(100%)	0(94%)	0(96%)
	Worms	0(92%)	0(97%)	0(89%)	0(83%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(99%)	1(100%)	1(98%)	1(99%)
	Sandal	1(100%)	1(99%)	1(100%)	1(98%)
	Permanganate	0(99%)	0(94%)	0(86%)	0(72%)
	Crème	0(98%)	0(100%)	1(53%)	0(57%)
	Elevation	0(92%)	0(93%)	1(98%)	1(93%)
	Massage	0(98%)	0(100%)	1(80%)	1(54%)
	Exercise	0(98%)	0(100%)	1(93%)	1(93%)
	Bandage	0(98%)	0(89%)	0(81%)	0(84%)
	Medicine	0(64%)	0(73%)	0(71%)	0(57%)
	Herbal Remedy	0(80%)	0(84%)	1(54%)	1(60%)
	Pomade	0(79%)	0(90%)	0(68%)	1(49%)
Treatment (OC Only)	Hygiene	1(95%)	1(90%)	1(99%)	1(98%)

Table B27. *(continued)*

		OMC-FM		OMI-FM	
		N=13	N=13	N=28	N=32
		Answer (Weighted %)			
		Younger	Older	Younger	Older
What kinds of care can help your gwopye?	Sandal	1(81%)	1(90%)	1(83%)	1(76%)
	Permanganate	0(100%)	0(94%)	0(61%)	0(73%)
	Crème	0(92%)	0(94%)	1(52%)	0(55%)
	Elevation	0(92%)	0(82%)	1(95%)	1(91%)
	Massage	0(92%)	0(100%)	1(74%)	1(67%)
	Exercise	0(92%)	0(100%)	1(93%)	1(90%)
	Bandage	0(92%)	0(100%)	0(91%)	0(83%)
	Medicine	0(79%)	0(72%)	0(72%)	0(63%)
	Nothing	0(100%)	0(97%)	0(100%)	0(100%)
Treatment (OC Only)	Hygiene	1(66%)	1(80%)	1(97%)	1(82%)
What can you do to prevent acute attacks?	Sandal	1(66%)	1(80%)	1(86%)	1(70%)
	Permanganate	0(100%)	0(94%)	0(84%)	0(92%)
	Crème	0(100%)	0(94%)	0(64%)	0(92%)
	Elevation	0(100%)	0(82%)	1(81%)	1(63%)
	Massage	0(100%)	0(100%)	1(62%)	1(51%)
	Exercise	0(100%)	0(100%)	1(76%)	1(73%)
	Bandage	0(100%)	0(100%)	0(93%)	0(95%)
	Medicine	0(87%)	0(88%)	0(69%)	0(69%)
	Nothing	0(93%)	0(97%)	0(100%)	0(100%)
Treatment (OC Only)	Hygiene	1(73%)	1(84%)	1(86%)	1(74%)
What can be done to provide relief during an acute attack?	Sandal	1(66%)	1(84%)	1(60%)	1(60%)
	Permanganate	0(100%)	0(100%)	0(67%)	0(88%)
	Crème	0(98%)	0(100%)	0(61%)	0(90%)
	Elevation	0(97%)	0(88%)	1(76%)	1(59%)
	Massage	0(98%)	0(100%)	1(70%)	0(54%)
	Exercise	0(98%)	0(100%)	1(75%)	1(56%)
	Bandage	0(98%)	0(89%)	0(87%)	0(91%)
	Medicine	0(63%)	0(73%)	0(68%)	0(60%)
	Nothing	0(93%)	0(100%)	0(100%)	0(98%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met
** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met
*** One individual removed from analyses in the outcome control group due to missing data

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Though there are different elements present in the cultural models discussed above, each group exhibited no significant differences by age.

Table B28. Outcome Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Age

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
OMC-RM: Younger vs Older	.0000	1	1.00	1.00*
OMC-FM: Younger vs Older	.0000*	1	1.00	1.00
OMI-RM: Younger vs Older	.1193*	1	.7298	1.00
OMI-FM: Younger vs Older	.1703*	1	.6799	.8367

* indicates which statistic was interpreted for significant differences between the answer keys

Competency scores were also assessed for significant differences by age within each group. No significant differences were produced in these analyses.

Table B29. Outcome Sample: Cultural Competency Analysis Results by Group and Age

	N		**Average Competency**	
	Younger	Older	Younger	Older
OMC-RM*	13	13	.55	.55
OMI-RM	28	32	.65	.59
OMC-FM*	13	13	.42	.45
OMI-FM	28	32	.53	.49

* One individual removed from analyses in the outcome control group due to missing data

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Table B30. Outcome Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Age

	df	**t**	**p<**
OMC-RM: Younger vs Older	24	.07	.9443
OMC-FM: Younger vs Older	24	.25	.8052
OMI-RM: Younger vs Older	58	-.91	.3644
OMI-FM: Younger vs Older	58	-.53	.5999

The older segment of the sample showed consensus in all four groups at outcome. The younger portion, by comparison, either had no consensus or the strongest consensus of all outcome groups (outcome intervention model). Coupled with the fact that the younger sample in the intervention group showed a greater change in cultural competency from baseline to outcome than the older people, it seems that, while both groups benefited from the support group program, younger individuals were both more receptive to the material presented and more likely to quickly integrate new material into their cultural model of lymphatic filariasis.

Stage of Disease

All groups showed consensus at outcome albeit lesser in the control groups. In the reduced outcome model, consensus is highest in the portion of the sample experiencing more severe disease.

Table B31. Outcome Sample: Consensus Analysis Results by Group and Stage of Disease

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Less Severe	More Severe	Less Severe	More Severe	Less Severe	More Severe	Less Severe	More Severe
OMC-RM*	9	17	1.955	6.071	.611	1.789	3.198	3.393
OMI-RM	36	24	15.657	11.438	3.458	1.831	4.527	6.247
OMC-FM*	9	17	1.558	4.483	.338	1.423	4.615	3.151
OMI-FM	36	24	11.812	8.626	2.152	2.141	5.489	4.029

*One individual removed from analyses in the outcome control group due to missing data

In the outcome samples, hygiene and sandals are consistently identified as important elements of the cultural model across control and intervention groups as well as by age. Individuals in the intervention group believe that insect bites cause lymphatic filariasis and that elevation, massage, exercise, and herbal remedies aid in treating LF. Also, the younger and older intervention groups selected crème and pomade as well, respectively.

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Table B32. Culturally Correct Answer Keys for Intervention and Control Groups by Stage

Outcome Sample		OMC-RM N=9	OMC-RM N=17	OMI-RM N=36	OMI-RM N=24
		Answer(Weighted %)			
		Less Severe	More Severe	Less Severe	More Severe
Cause	Insect Bite	0(88%)	0(100%)	1(79%)	1(63%)
	Magic	0(100%)	0(95%)	0(98%)	0(94%)
	Sprain	0(100%)	0(100%)	0(93%)	0(100%)
	Worms	0(93%)	0(81%)	0(92%)	0(84%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(100%)	1(96%)	1(95%)	1(100%)
	Sandal	1(100%)	1(95%)	1(96%)	1(100%)
	Permanganate	0(100%)	0(90%)	0(68%)	0(88%)
	Crème	0(93%)	0(100%)	1(54%)	0(53%)
	Elevation	0(93%)	0(77%)	1(92%)	1(96%)
	Massage	0(93%)	0(100%)	1(67%)	1(65%)
	Exercise	0(93%)	0(100%)	1(92%)	1(85%)
	Bandage	0(93%)	0(94%)	0(79%)	0(82%)
	Medicine	0(66%)	0(51%)	0(73%)	1(56%)
	Herbal Remedy	0(65%)	0(55%)	1(53%)	1(64%)
	Pomade	0(80%)	0(63%)	0(68%)	1(52%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

*** One individual removed from analyses in the outcome control group due to missing data

In the outcome models including the additional outcome only items, hygiene and sandals remain key elements across all samples, and the intervention group continues to clearly identify insect bites as a cause of lymphatic filariasis. In addition to hygiene and sandals, intervention samples also identified the following as possible treatment options in varying circumstances: elevation, massage, exercise, medicine, herbal remedies, pomade, crème.

Table B33. Culturally Correct Answer Keys for Intervention and Control Groups that Include Additional Cultural Model Items only Present in the Outcome Sample by Stage of Disease

Outcome Sample		OMC-FM		OMI-FM	
		N=9	N=17	N=36	N=24
		Answer(Weighted %)			
		Less Severe	Most Severe	Less Severe	Most Severe
Cause	Insect Bite	0(82%)	0(100%)	1(79%)	1(67%)
	Magic	0(100%)	0(91%)	0(99%)	0(98%)
	Sprain	0(100%)	0(100%)	0(92%)	0(100%)
	Worms	0(99%)	0(93%)	0(90%)	0(80%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
	Hygiene	1(100%)	1(99%)	1(97%)	1(100%)
Treatment	Sandal	1(100%)	1(99%)	1(98%)	1(100%)
	Permanganate	0(100%)	0(94%)	0(72%)	0(89%)
	Crème	0(99%)	0(100%)	0(51%)	0(56%)
	Elevation	0(99%)	0(89%)	1(92%)	1(99%)
	Massage	0(99%)	0(100%)	1(69%)	1(62%)
	Exercise	0(99%)	0(100%)	1(93%)	1(93%)
	Bandage	0(99%)	0(91%)	0(82%)	0(82%)
	Medicine	0(72%)	0(67%)	0(74%)	1(51%)
	Herbal Remedy	0(85%)	0(80%)	1(52%)	1(63%)
	Pomade	0(94%)	0(80%)	0(68%)	1(54%)
Treatment (OC Only)	Hygiene	1(95%)	1(89%)	1(99%)	1(97%)

Table B33. *(continued)*

		OMC-FM		OMI-FM	
		N=9	N=17	N=36	N=24
		Answer (Weighted %)			
		Less Severe	Most Severe	Less Severe	Most Severe
What kinds of care can help your gwopye?	Sandal	1(86%)	1(85%)	1(87%)	1(69%)
	Permanganate	0(100%)	0(95%)	0(61%)	0(77%)
	Crème	0(99%)	0(91%)	0(55%)	1(53%)
	Elevation	0(99%)	0(80%)	1(88%)	1(99%)
	Massage	0(99%)	0(96%)	1(68%)	1(73%)
	Exercise	0(99%)	0(96%)	1(93%)	1(90%)
	Bandage	0(99%)	0(96%)	0(84%)	0(90%)
	Medicine	0(81%)	0(72%)	0(66%)	0(69%)
	Nothing	0(100%)	0(97%)	0(100%)	0(100%)
Treatment (OC Only)	Hygiene	1(77%)	1(72%)	1(92%)	1(84%)
What can you do to prevent acute attacks?	Sandal	1(77%)	1(72%)	1(80%)	1(75%)
	Permanganate	0(100%)	0(95%)	0(83%)	0(95%)
	Crème	0(100%)	0(95%)	0(80%)	0(77%)
	Elevation	0(100%)	0(85%)	1(65%)	1(82%)
	Massage	0(100%)	0(100%)	1(57%)	1(55%)
	Exercise	0(100%)	0(100%)	1(69%)	1(81%)
	Bandage	0(100%)	0(100%)	0(93%)	0(95%)
	Medicine	0(82%)	0(90%)	0(73%)	0(63%)
	Nothing	0(91%)	0(97%)	0(100%)	0(100%)
Treatment (OC Only)	Hygiene	1(77%)	1(78%)	1(81%)	1(77%)
What can be done to provide relief during an acute attack?	Sandal	1(77%)	1(75%)	1(60%)	1(60%)
	Permanganate	0(100%)	0(100%)	0(74%)	0(82%)
	Crème	0(99%)	0(100%)	0(81%)	0(70%)
	Elevation	0(99%)	0(89%)	1(60%)	1(78%)
	Massage	0(99%)	0(100%)	1(55%)	1(61%)
	Exercise	0(99%)	0(100%)	1(60%)	1(73%)
	Bandage	0(99%)	0(91%)	0(91%)	0(85%)
	Medicine	0(72%)	0(66%)	0(67%)	0(58%)
	Nothing	0(91%)	0(100%)	0(98%)	0(100%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

*** One individual removed from analyses in the outcome control group due to missing data

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Answer key comparisons within each group by stage revealed no significant differences in the elements comprising the cultural model by disease stage.

Table B34. Outcome Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Stage of Disease

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
OMC-RM: Less Severe vs More Severe	.0000	1	1.00	1.00*
OMC-FM: Less Severe vs More Severe	.0000*	1	1.00	1.00
OMI-RM: Less Severe vs More Severe	.1176*	1	.7316	1.00
OMI-FM: Less Severe vs More Severe	.3830*	1	.5360	.6802

* indicates which statistic was interpreted for significant differences between the answer keys

The level of cultural competency present in each sample by disease stage was also assessed. In the outcome samples, cultural competency was greater in the portion of the sample experiencing more severe symptoms. The differences in cultural competency within each group by stage were tested and no significant differences were present.

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Table B35. Outcome Sample: Cultural Competency Analysis Results by Group and Stage of Disease

	N		**Average Competency**	
	Less Severe	More Severe	Less Severe	More Severe
OMC-RM*	9	17	.42	.57
OMI-RM	36	24	.60	.64
OMC-FM*	9	17	.33	.44
OMI-FM	36	24	.50	.52

* One individual removed from analyses in the outcome control group due to missing data

Table B36. Outcome Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Stage of Disease

	df	**t**	**p<**
OMC-RM: Less Severe vs More Severe	24	-1.93	.0658
OMC-FM: Less Severe vs More Severe	24	-.95	.3537
OMI-RM: Less Severe vs More Severe	58	-.57	.5709
OMI-FM: Less Severe vs More Severe	58	-.28	.7768

In the outcome intervention model assessing general treatment options, consensus existed for individuals more severely impacted by LF. However, when specific treatment scenarios were introduced, the intervention model with additional items present in the outcome survey only, those with less severe disease indicated greater consensus. Additionally, there were changes in the cultural competency levels of both the baseline and outcome intervention groups for both conditions. Thus, it seems that both groups, severely and less severely afflicted, benefit from the support group program while people with less severe disease are better able to agree on what treatment options are appropriate in more specific scenarios.

Number of Acute Attacks

Consensus is present in all outcome groups, and is greater in the outcome intervention groups. Within the intervention groups, people with fewer attacks exhibited slightly more consensus than the portion experience more acute attacks.

Table B37. Outcome Sample: Consensus Analysis Results by Group and Number of Attacks

	N		**First Eigenvalue**		**Second Eigenvalue**		**Eigenvalue Ratio**	
	Fewer Attacks	More Attacks	Fewer Attacks	More Attacks	Fewer Attacks	More Attacks	Fewer Attacks	More Attacks
OMC-RM*	18	8	5.951	3.188	1.868	.418	3.187	7.620
OMI-RM	31	28	14.608	12.741	2.955	2.641	4.944	4.825
OMC-FM*	18	8	4.893	1.482	1.246	.429	3.927	3.452
OMI-FM*	31	28	10.518	10.138	2.178	2.153	4.828	4.710

*One individual removed from analyses in the outcome control group due to missing data

Answer keys in the outcome sample suggest that insect bites cause lymphatic filariasis in the intervention groups. Hygiene and sandals continue to be salient across all outcome models. Elevation, massage, crème, exercise, and herbal remedies are also present in intervention group cultural models. Pharmaceutical medicines are mentioned as well in the outcome control group experiencing more attacks.

Table B38. Culturally Correct Answer Keys for Intervention and Control Groups by Number of Attacks

Outcome Sample		OMC-RM		OMI-RM	
		N=18	N=8	N=31	N=28
		Answer(Weighted %)			
		Fewer Attacks	More Attacks	Fewer Attacks	More Attacks
Cause	Insect Bite	0(100%)	0(87%)	1(68%)	1(77%)
	Magic	0(95%)	0(100%)	0(96%)	0(97%)
	Sprain	0(100%)	0(100%)	0(97%)	0(94%)
	Worms	0(89%)	0(77%)	0(88%)	0(90%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(97%)	1(100%)	1(99%)	1(96%)
	Sandal	1(95%)	1(100%)	1(99%)	1(97%)
	Permanganate	0(90%)	0(100%)	0(60%)	0(94%)
	Crème	0(100%)	0(92%)	1(60%)	0(60%)
	Elevation	0(77%)	0(92%)	1(94%)	1(95%)
	Massage	0(100%)	0(92%)	1(79%)	1(52%)
	Exercise	0(100%)	0(92%)	1(95%)	1(80%)
	Bandage	0(94%)	0(92%)	0(81%)	0(79%)
	Medicine	0(68%)	1(65%)	0(56%)	0(67%)
	Herbal Remedy	0(54%)	0(62%)	0(56%)	1(73%)
	Pomade	0(62%)	0(78%)	0(55%)	0(64%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

*** One individual removed from analyses in the outcome control and intervention group due to missing data

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The answer keys for the outcome samples with additional items were also reviewed. Both intervention samples identified insect bite as the cause of lymphatic filariasis. Control groups believe that hygiene, sandals, and pharmaceutical medicines are the appropriate treatment choices in a number of different circumstances relevant to LF. Intervention groups, however, identified hygiene, sandals, elevation, massage, exercise, and herbal remedies in various circumstances.

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Table B39. Culturally Correct Answer Keys for Intervention and Control Groups that Include Additional Cultural Model Items only Present in the Outcome Sample by Number of Attacks

Outcome Sample		OMC-FM		OMI-FM	
		N=18	N=8	N=31	N=28
		Answer(Weighted %)			
		Fewer Attacks	More Attacks	Fewer Attacks	More Attacks
Cause	Insect Bite	0(100%)	0(81%)	1(72%)	1(76%)
	Magic	0(91%)	0(100%)	0(97%)	0(100%)
	Sprain	0(100%)	0(100%)	0(97%)	0(94%)
	Worms	0(97%)	0(89%)	0(85%)	0(86%)
	Chill	0(100%)	0(100%)	0(100%)	0(100%)
	Vitamin Deficiency	0(100%)	0(100%)	0(100%)	0(100%)
Treatment	Hygiene	1(100%)	1(100%)	1(99%)	1(98%)
	Sandal	1(100%)	1(100%)	1(100%)	1(99%)
	Permanganate	0(95%)	0(100%)	0(65%)	0(93%)
	Crème	0(100%)	0(97%)	1(54%)	0(61%)
	Elevation	0(91%)	0(97%)	1(94%)	1(97%)
	Massage	0(100%)	0(97%)	1(77%)	1(54%)
	Exercise	0(100%)	0(97%)	1(97%)	1(88%)
	Bandage	0(92%)	0(97%)	0(84%)	0(79%)
	Medicine	0(79%)	1(57%)	0(56%)	0(71%)
	Herbal Remedy	0(84%)	0(76%)	0(55%)	1(68%)
	Pomade	0(86%)	0(83%)	0(54%)	0(65%)
Treatment (OC Only)	Hygiene	1(92%)	1(92%)	1(99%)	1(98%)
What kinds of care can help your gwopye?	Sandal	1(89%)	1(80%)	1(73%)	1(87%)
	Permanganate	0(95%)	0(100%)	0(63%)	0(71%)
	Crème	0(92%)	0(97%)	0(51%)	0(53%)
	Elevation	0(83%)	0(97%)	1(92%)	1(94%)
	Massage	0(97%)	0(97%)	1(84%)	1(54%)
	Exercise	0(97%)	0(97%)	1(96%)	1(87%)
	Bandage	0(97%)	0(97%)	0(75%)	0(99%)
	Medicine	0(76%)	0(78%)	0(58%)	0(77%)
	Nothing	0(100%)	0(92%)	0(100%)	0(100%)
Treatment (OC Only)	Hygiene	1(82%)	1(53%)	1(87%)	1(91%)

		OMC-FM		OMI-FM	
		N=18	N=8	N=31	N=28
		Answer (Weighted %)			
		Fewer Attacks	More Attacks	Fewer Attacks	More Attacks
What can you do to prevent acute attacks?	Sandal	1(82%)	1(53%)	1(72%)	1(84%)
	Permanganate	0(95%)	0(100%)	0(81%)	0(95%)
	Crème	0(95%)	0(100%)	0(76%)	0(82%)
	Elevation	0(86%)	0(100%)	1(66%)	1(80%)
	Massage	0(100%)	0(100%)	1(69%)	0(60%)
	Exercise	0(100%)	0(100%)	1(73%)	1(76%)
	Bandage	0(100%)	0(100%)	0(89%)	0(99%)
	Medicine	0(91%)	0(81%)	0(66%)	0(71%)
	Nothing	0(98%)	0(87%)	0(100%)	0(100%)
Treatment (OC Only)	Hygiene	1(87%)	1(56%)	1(85%)	1(73%)
What can be done to provide relief during an acute attack?	Sandal	1(84%)	1(53%)	1(53%)	1(66%)
	Permanganate	0(100%)	0(100%)	0(71%)	0(85%)
	Crème	0(100%)	0(97%)	0(74%)	0(79%)
	Elevation	0(91%)	0(97%)	1(63%)	1(73%)
	Massage	0(100%)	0(97%)	1(68%)	0(55%)
	Exercise	0(100%)	0(97%)	1(68%)	1(63%)
	Bandage	0(92%)	0(97%)	0(83%)	0(95%)
	Medicine	0(79%)	1(57%)	0(51%)	0(77%)
	Nothing	0(100%)	0(87%)	0(98%)	0(100%)

*0=No response and indicates that this variable is not part of the cultural model when the threshold for consensus is met

** 1 = Yes response and indicates that this variable is part of the cultural model when the threshold for consensus is met

*** One individual removed from analyses in the outcome control and intervention group due to missing data

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Table B40. Outcome Sample: Comparisons of Culturally Correct Answer Keys for Intervention and Control Groups by Number of Attacks

	Chi-Square	**df**	**p<**	**Fisher's Exact Two-Tailed p<**
OMC-RM: Fewer Attacks vs More Attacks	.2345	1	.6282	1.00*
OMC-FM: Fewer Attacks vs More Attacks	.2749*	1	.6001	.7939
OMI-RM: Fewer Attacks vs More Attacks	.0000*	1	1.00	1.00
OMI-FM: Fewer Attacks vs More Attacks	.1722*	1	.6782	.8358

* indicates which statistic was interpreted for significant differences between the answer keys

In addition to analyzing the answer keys for differences, average levels of cultural competency were also assessed. In all the outcome samples, no significant differences were found between those with fewer and more attacks within each group.

Table B41. Outcome Sample: Cultural Competency Analysis Results by Group and Number of Attacks

	N		**Average Competency**	
	Fewer Attacks	More Attacks	Fewer Attacks	More Attacks
OMC-RM	18	8	.53	.62
OMI-RM	31	28	.65	.62
OMC-FM	18	8	.42	.40
OMI-FM	31	28	.53	.52

* One individual removed from analyses in the outcome control and intervention group due to missing data

Appendix B

Table B42. Outcome Sample: Comparisons of Cultural Competency for Intervention and Control Groups by Number of Attacks

	df	t	p<
OMC-RM: Fewer Attacks vs More Attacks	24	-1.06	.2999
OMC-FM: Fewer Attacks vs More Attacks	24	.15	.8810
OMI-RM: Fewer Attacks vs More Attacks	57	.44	.6603
OMI-FM: Fewer Attacks vs More Attacks	57	.22	.8302

For the outcome intervention group, people experiencing fewer acute attacks showed higher eigenvalue ratios than those with more attacks. The highest cultural consensus for individuals having fewer attacks was found in the outcome control sample, and the highest overall consensus was found in the outcome control sample for those with more attacks. Interestingly, while the highest cultural competence was found in the outcome intervention group for those having fewer acute attacks, the largest changes in cultural competence levels from baseline to outcome presented in the portion of the sample having more acute attacks. It seems that people experiencing more attacks were able to overcome the deficit in competency they expressed at baseline and quickly integrate support group materials into their knowledge base such that competency and consensus levels were approximately the same between the two segments in outcome intervention samples.

Appendix C

Appendix C

General demographic results from the cultural consonance analyses are presented in the body of Chapter 4. Specific results of the statistical analyses and comparisons summarized previously are captured in the tables below. Demographic dimensions reviewed here include: marital status, religion, literacy, wealth, age, stage of disease, and number of acute attacks.

Marital Status

Table C1. Cultural Consonance Results by Group and Marital Status

	N		**Average Consonance**	
	Single	Not Single	Single	Not Single
BMC	4	23	.56	.83
BMI	27	33	.56	.76
B-All	82	159	.54	.67
OMC-RM*	4	22	.69	.86
OMI-RM*	27	33	.53	.66

* One individual removed from analyses in the outcome control group due to missing data

Along the demographic dimension marital status, rates of consonance were higher for not single individuals than for those who were single. Average rates were the highest in the control groups.

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Table C2. Comparisons of Cultural Competency by Intervention and Control Groups and Marital Status

	df	t	p<
BMC: Single vs Not Single	25	1.28	.2116
BMI: Single vs Not Single	58	1.90	.0623
B-All: Single vs Not Single	239	3.30	.0011
OMI-RM: Single vs Not Single	58	2.41	.0193
OMC-RM: Single vs Not Single	24	1.09	.2884

Independent samples t-tests suggest that significant differences exist between individuals by marital status in the full baseline sample as well as the outcome intervention sample. Taken as a whole, it seems that people who participate in the support group program and are not single are more likely to engage in more treatment behaviors than their single counterparts.

Religion

Table C3. Cultural Consonance Analysis Results by Group and Religion

	N		Average Consonance	
	Catholic	Protestant	Catholic	Protestant
BMC	15	6	.87	.83
BMI	27	28	.51	.77
B-All	118	96	.64	.60
OMC-RM*	15	6	.90	.92
OMI-RM*	27	28	.66	.58

* One individual removed from analyses in the outcome control group due to missing data

Appendix C

For the religious dimension, control populations had the highest rates of consonance. In the intervention sample, Protestants showed higher consonance than Catholics at baseline and reversed the trend in the outcome sample. The controls samples showed the inverse of the intervention sample regarding average rates of consonance; Catholics had higher consonance at baseline and Protestants were slightly higher at outcome.

Table C4. Comparisons of Cultural Consonance for Intervention and Control Groups by Religion

	df	**t**	**p<**
BMC: Catholic vs Protestant	19	.22	.8296
BMI: Catholic vs Protestant	46.3	-2.89	.0059
B-All: Catholic vs Protestant	212	.94	.3479
OMI-RM: Catholic vs Protestant	53	1.45	.1533
OMC-RM: Catholic vs Protestant	19	-.13	.8968

The only group to display significant differences in consonance is the baseline intervention sample. At baseline, Protestants exhibited significantly higher rates of consonance, but, after participation in the support group, Catholics increased in consonance greatly; this shift eliminated any significant differences in the two groups at outcome. The data allow that Catholics effectively incorporated self-care practices into their treatment regimen at a rate much improved than was evidenced at baseline.

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Literacy

Table C5. Cultural Consonance Analysis Results by Group and Literacy

	N		Average Competency	
	Literate	Not Literate	Literate	Not Literate
BMC	15	12	.83	.75
BMI	38	22	.61	.73
B-All	137	104	.65	.60
OMC-RM*	15	11	.65	.91
OMI-RM	38	22	.68	.48

* One individual removed from analyses in the outcome control group due to missing data

Literate individuals in the intervention sample increased their consonance levels at outcome while the non-literate portion actually decreased in consonance from baseline to outcome. In this sample, literate individuals had lower consonance at baseline than non-literate participants; at outcome this finding reversed itself. The control sample yielded that non-literate individuals had lower consonance than their counterparts at baseline and higher at outcome.

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Table C6. Comparisons of Cultural Consonance for Intervention and Control Groups by Literacy

	df	t	p<
BMC: Literate vs Not Literate	25	.68	.5048
BMI: Literate vs Not Literate	30.6	-1.21	.2371
B-All: Literate vs Not Literate	239	1.39	.1655
OMI-RM: Literate vs Not Literate	58	3.52	.0008
OMC-RM: Literate vs Not Literate	24	-2.41	.0239

When independent samples t-tests were run, the only significant difference highlighted was found in the outcome intervention group. In this case, it looks as though, at outcome, non-literate individuals were not as receptive to adding additional treatment behaviors to their regimen as literate members of the sample population.

Wealth

Table C7. Cultural Consonance by Group and Wealth

	N		Average Consonance	
	Less Wealth	More Wealth	Less Wealth	More Wealth
BMC	24	3	.85	.58
BMI	35	25	.73	.54
B-All	172	69	.62	.55
OMC-RM*	23	3	.93	.5
OMI-RM	35	25	.55	.69

* One individual removed from analyses in the outcome control group due to missing data

When wealth was examined, consonance was higher for less wealthy individuals across all groups except for the outcome intervention sample. Less wealthy participants in this group decreased in consonance while more wealthy people increased after being in the support group program.

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Table C8. Comparisons of Cultural Consonance for Intervention and Control Groups by Wealth

	df	t	p<
BMC: Less Wealth vs More Wealth	25	1.30	.2064
BMI: Less Wealth vs More Wealth	56.6	2.13	.0374
B-All: Less Wealth vs More Wealth	239	1.78	.0767
OMI-RM: Less Wealth vs More Wealth	58	-2.61	.0114
OMC-RM: Less Wealth vs More Wealth	2.11	1.49	.2694

Through t-test comparisons, significant differences in consonance were revealed in both baseline and outcome intervention groups. This observation suggests that less wealthy people were less amenable to enacting the self-care practices, other than the ones present at baseline, they endorsed in the cultural model. In contrast, wealthier people were able to incorporate newly introduced self-care practices into both their belief and behavioral systems.

Age

Table C9. Cultural Consonance Analysis Results by Group and Age

	N		Average Consonance	
	Younger	Older	Younger	Older
BMC	14	13	.71	.79
BMI	28	32	.70	.59
B-All	121	120	.64	.61
OMC-RM*	13	13	.88	.88
OMI-RM	28	32	.58	.57

* One individual removed from analyses in the outcome control group due to missing data

A review of the age dimension in this sample population revealed that younger individuals at a higher and lower consonance rate at baseline for the intervention and control samples, respectively. However, at outcome consonance rates were virtually the same regardless of designation, younger or older.

Table C10. Comparisons of Cultural Consonance for Intervention and Control Groups by Age

	df	**t**	**p<**
BMC: Younger vs Older	18.6	.58	.5690
BMI: Younger vs Older	43.1	-1.08	.2856
B-All: Younger vs Older	239	-.66	.5097
OMI-RM: Younger vs Older	58	-.18	.8601
OMC-RM: Younger vs Older	24	.00	1.00

After looking at the consonance rates by age, t-tests comparisons support the finding that there are no significant differences between age categories within any of the samples tested. The data indicate that older individuals in the intervention sample increased in their willingness to enact treatment practices indicated in the CM after support group participation. Younger individuals in this sample, however, endorsed the beliefs present in the CM, but were not as quick to add additional behaviors to their treatment regimen as evidenced by their reduced rate of consonance at outcome.

Appendix C

Stage of Disease

Table C11. Cultural Consonance Analysis Results by Group and Stage of Disease

	N		**Average Consonance**	
	Less Severe	More Severe	Less Severe	More Severe
BMC	9	18	.64	.86
BMI	36	24	.65	.58
B-All	125	116	.65	.60
OMC-RM*	9	17	.89	.88
OMI-RM	36	24	.55	.56

* One individual removed from analyses in the outcome control group due to missing data

Along the dimension stage of disease, people with less severe disease enacted more behaviors in the CM on average than those with more severe disease in the baseline intervention sample; at outcome, both designations had approximately the same cultural consonance. At baseline, people with higher stage disease had a higher rate of consonance; however, at outcome, both portions of the control sample exhibited similar levels of consonance.

Table C12. Comparisons of Cultural Consonance for Intervention and Control Groups by Stage of Disease

	df	**t**	**p<**
BMC: Less Severe vs More Severe	25	-1.71	.1002
BMI: Less Severe vs More Severe	31.4	.61	.5485
B-All: Less Severe vs More Severe	239	1.31	.1902
OMI-RM: Less Severe vs More Severe	57.6	-.23	.8222
OMC-RM: Less Severe vs More Severe	24	.05	.9582

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Independent samples t-tests show no significant differences between the consonance rates of people with more or less severe disease within each of the samples. After a review of these data, it appears that people with less severe disease were less likely to include the additional self-care practices they endorsed, indicated in the culturally correct answer keys, after support group participation than support group participants with more severe disease.

Number of Attacks

Table C13. Cultural Consonance Analysis Results by Group and Number of Attacks

	N		**Average Consonance**	
	Fewer Attacks	More Attacks	Fewer Attacks	More Attacks
BMC	19	8	.87	.55
BMI	31	28	.84	.54
B-All	149	89	.65	.58
OMC-RM*	18	8	.83	.88
OMI-RM	31	28	.67	.56

* One individual removed from analyses in the outcome control group due to missing data

Across all samples, consonance rates were higher for individuals with fewer acute attacks in the past year. Within the control groups, consonance rates remained relatively static from baseline to outcome for people with fewer attacks while it increased for people with more acute attacks. Intervention group members saw a decrease in consonance over time for participants experiencing fewer attacks, and those with more attacks displayed the same level of consonance over time.

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Table C14. Comparisons of Cultural Consonance for Intervention and Control Groups by Number of Attacks

	df	**t**	**p<**
BMC: Fewer Attacks vs More Attacks	25	2.45	.0217
BMI: Fewer Attacks vs More Attacks	57	2.82	.0065
B-All: Fewer Attacks vs More Attacks	236	1.93	.0545
OMI-RM: Fewer Attacks vs More Attacks	57	1.98	.0524
OMC-RM: Fewer Attacks vs More Attacks	24	-.32	.7493

When examined for significant differences in consonance by number of acute attacks within the pas year, baseline controls, baseline intervention, and outcome intervention groups met the threshold for significance. Individuals with less acute attacks were more likely to enact self-care behaviors in the treatment regimen after support group participation.

Appendix D

UNIVERSITY OF SOUTH FLORIDA

June 15, 2007

Kelly Simpson, BA, MA
4800 University Dr., Apt. 7C
Durham, NC 27707

RE: **Expedited Approval** for Initial Review
IRB#: 105866E
Title: *Measuring Culture Change as an Evaluation Indicator: Applying Cultural Models of Lymphatic Filariasis in Haiti*
Study Approval Period: June 15, 2007 to June 13, 2008

Dear Ms. Simpson:

On June 15, 2007, Institutional Review Board (IRB) reviewed and **APPROVED** the above protocol **for the period indicated above.** It was the determination of the IRB that your study qualified for expedited review based on the federal expedited category number five (5).

Your Waiver of Informed Consent was also approved. Waiver of Informed Consent has been approved having met the following four criteria: the research will not involve greater than "minimal risk" to the subject; it is not practicable to conduct research without a waiver; waiving will not adversely affect subject's rights; and if appropriate, information will be provided to subject later.

Please note, if applicable, the **enclosed informed consent/assent documents are valid during the period indicated by the official, IRB-Approval stamp located on page one of the form.** Valid consent must be documented on a copy of the most recently IRB-approved consent form. Make copies from the enclosed original.

Please reference the above IRB protocol number in all correspondence regarding this protocol with the IRB or the Division of Research Integrity and Compliance. In addition, we have enclosed an Institutional Review Board (IRB) Quick Reference Guide providing guidelines and resources to assist you in meeting your responsibilities in the conduction of human participant research. Please read this guide carefully. It is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB.

OFFICE OF RESEARCH • DIVISION OF RESEARCH INTEGRITY & COMPLIANCE
INSTITUTIONAL REVIEW BOARDS, FWA NO. 00001669
University of South Florida • 12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-5618

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-9343.

Sincerely,

Paul G. Stiles

Paul G. Stiles, J.D., Ph.D., Chairperson
USF Institutional Review Board

Enclosures: (If applicable) IRB-Approved, Stamped Informed Consent/Assent Documents(s)
IRB Quick Reference Guide

Cc: Angie Reagan, USF IRB Professional Staff
Dr. Jeannine Coreil
FAO [Wenner-Gren Foundation]

SB-IRB-Approved-EXPEDITED-0601

USF
UNIVERSITY OF
SOUTH FLORIDA

May 30, 2008

Kelly M. Simpson
4800 University Dr., Apt 7C
Durham, NC 27707

RE: **Expedited Approval** for Continuing Review
IRB#: 105866
Title: *Measuring Culture Change as an Evaluation Indicator: Applying Cultural Models of Lymphatic Filariasis in Haiti*

Study Approval Period: May 30, 2008 to May 29, 2009

Dear Ms. Simpson:

On May 30, 2008, Institutional Review Board (IRB) reviewed and **APPROVED** the above protocol **for the period indicated above.** It was the determination of the IRB that your study qualified for expedited review based on the federal expedited category number 7. (Study is closed to enrollment; remains open for further analysis of data).

** Please update your class in human subject's protection and send a copy of the confirmation to our office.

Please note, if applicable, the **enclosed informed consent/assent documents are valid during the period indicated by the official, IRB-Approval stamp located on page one of the form.** Valid consent must be documented on a copy of the most recently IRB-approved consent form. Make copies from the enclosed original.

Please reference the above IRB protocol number in all correspondence regarding this protocol with the IRB or the Division of Research Integrity and Compliance. In addition, we have enclosed an Institutional Review Board (IRB) Quick Reference Guide providing guidelines and resources to assist you in meeting your responsibilities in the conduction of human participant research. Please read this guide carefully. It is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB.

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We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to the Human Research Protections Program. If you have any questions regarding this matter, please call 813-974-9343.

Sincerely,

Paul G. Stiles

Paul G. Stiles, J.D., Ph.D., Chairperson
USF Institutional Review Board

Enclosures: (If applicable) IRB-Approved, Stamped Informed Consent/Assent Documents(s)
IRB Quick Reference Guide

Cc: Various B. Menzel, CCRP, USF IRB Professional Staff
Jeannine Coreil, PhD

SB-IRB-Approved-EXPEDITED-0601

About the Author

Kelly Simpson is a Research Associate I at Family Health International in Durham, North Carolina. She has completed a BA in psychology & anthropology and an MA in medical anthropology in addition to the PhD in Public Health. Kelly is a member of Phi Kappa Phi Honor Society, and she has won several competitive awards: student honorary award for research and practice (2008), twice won a maternal and child health traineeship (2004-2005, 2005-2006), and the USF university graduate fellowship (2003-2004). Non-competitive awards received include a stipend from the conference presentation and grant program (2008) and an AmeriCorps*NCCC education award, after performing a year of community service within the AmeriCorps*NCCC program. Kelly also completed a study abroad program in Northern Ireland during her undergraduate tenure (1998). Finally, Kelly's key focus areas are cross-cultural health, cultural models, infectious disease (HIV, Hepatitis C, TB, Lymphatic Filariasis), disability, international health, and Haitian communities.