

2015

Identifying Cultural Themes in a Shared Experience of Water Hygiene Education Partners

Sarah M. Etheridge-Criswell
Walden University

Follow this and additional works at: <http://scholarworks.waldenu.edu/dissertations>

 Part of the [Public Health Education and Promotion Commons](#)

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Health Sciences

This is to certify that the doctoral dissertation by

Sarah Etheridge

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Vasileios Margaritis, Committee Chairperson, Public Health Faculty
Dr. Jacqueline Fraser, Committee Member, Public Health Faculty
Dr. Magdeline Aagard, University Reviewer, Public Health Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2015

Abstract

Identifying Cultural Themes in a Shared Experience of Water Hygiene Education

Partners

by

Sarah Etheridge

MA, California State University, Fullerton, 2008

BS, Texas A&M University, 2004

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Community Health Education

Walden University

August 2015

Abstract

Lack of safe drinking water and lack of water hygiene literacy contribute to a large disease burden in rural areas of Africa, and children suffer disproportionately more than adults from diarrheal diseases caused by nonpotable water. Research is needed to help merge education and water sanitation to provide more effective methods of preventing diarrheal diseases. The ecological model and hygiene improvement framework were used to guide the study. The purpose of this phenomenological study was to describe the shared experiences of people participating in the water hygiene education program provided by Lifewater International. Lifewater is a nonprofit organization focused on improving access to clean water and increasing water hygiene literacy in rural parts of developing countries. Individual interviews were conducted with six Lifewater program participants, using the Delphi sampling technique. After I transcribed and thematically analyzed data for codes, three main themes were identified that motivated Lifewater partners and members of their community to change behavior: improving their children's health, saving time and money, and being a better Christian. The most meaningful part of participating in the program is that they use the information to improve the lives of those in their communities. In addition to making curricula for the Lifewater organization and its partners more streamlined, if the lessons are more culturally relevant, people are more likely to accept the behavior changes being taught, which can also influence the behavior change. Culturally relevant curriculum could help increase the access to and knowledge of clean water in developing areas, which contributes to the United Nation's Millennium Development Goals, and thus promotes social change.

Identifying Cultural Themes in a Shared Experience of Water Hygiene Education

Partners

by

Sarah Etheridge

MA, California State University, Fullerton, 2008

BS, Texas A&M University, 2004

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Community Health Education

Walden University

August 2015

Dedication

I dedicate this dissertation to Theresa and Wilbert Kobersky for giving me all I have and always being there for me to offer their endless love and support.

Acknowledgments

This dissertation is a culmination of many years of hard work, and I could not have accomplished it without the support of many people. I would like to thank my chair, Dr. Margaritis, who provided guidance and motivation and who was always encouraging; Dr. Fraser, who provided invaluable assistance with my methodology; Dr Magdeline Aagard, who acted as URR and reviewed this study to ensure its quality; Patricia Etheridge, who has always given me love and support; Benjamin Etheridge, who provided me with his impeccable editing skills; and Aaron Criswell, who is always my rock and source of sanity. In addition, I want to give a heartfelt thank you and appreciation to Lifewater International and to Pamela Crane-Hoover and Julie Smith specifically for helping me craft and carry out this study.

Table of Contents

List of Tables	v
List of Figures	vi
Chapter 1: Introduction to the Study	1
Background.....	2
Purpose of the Study.....	5
Research Questions	6
Theoretical Framework	7
Conceptual Framework	8
Nature of the Study.....	8
Definitions	10
Assumptions	11
Scope and Delimitations.....	12
Limitations.....	13
Significance of the Study.....	15
Summary.....	16
Chapter 2: Literature Review	17
Introduction	17
Literature Search Strategy	18
Theoretical Foundation.....	20
Ecological Model.....	20
Hygiene Improvement Framework.....	22

Conceptual Framework	25
Literature Review	25
Lack of Potable Water and Health Concerns	26
Traditional Ways to Address Health Issue	28
Importance of Education in a Cultural Context.....	29
Use of Qualitative Methods to Address Health Issue.....	31
The History of the Lifewater Organization and its Impact on Waterborne Illnesses	33
Summary and Conclusion.....	35
Chapter 3: Research Method	37
Introduction	37
Research Design and Rationale	37
Research Tradition and Rationale for Chosen Tradition	37
Research Questions and Central Concepts of the Study	40
Role of the Researcher.....	41
Relationships With Participants and Researcher Bias	41
Methodology.....	42
Participant Recruitment Logic.....	43
Sampling Strategy and Justification for Number of Participants	44
Saturation and Sample Size	44
Instrumentation.....	45
Data Collection Instrument and Source.....	45

Source for Data Collection Instrument	46
How Instruments Efficiently Answer Research Questions	47
Criteria on Which Participant Recruitment is Based	48
Procedures for Recruitment, Participation, and Data Collection.....	48
Data Analysis Plan	50
Issues of Trustworthiness	52
Interexaminer Reliability	52
Credibility	53
Transferability	53
Confirmability and Dependability	54
Ethical Procedures	55
Summary.....	58
Chapter 4: Results.....	60
Introduction	60
Purpose and Research Questions	60
Expert Panel.....	61
Setting	61
Demographics and Participation Criteria	62
Data Collection	63
Data Analysis.....	64
Trustworthiness of Data	65
Results	66

Summary.....	87
Chapter 5: Discussion, Conclusions, and Recommendations	89
Introduction	89
Purpose and Nature of Study	89
Summary of Findings	90
Interpretation of Findings	91
Theoretical Interpretation	97
Limitations of the Study	99
Recommendations	99
Implications for Social Change	100
Conclusions	101
References	104
Appendix A: Interview Questions	117
Appendix B: Informed Consent.....	119
Appendix C: Expert Panel	122

List of Tables

Table 1. Codes for Research Question #1 (Themes of the Shared Experience).....67

Table 2. Codes for Research Question #2 (Most Meaningful Part of the Experience)81

List of Figures

Figure 1. The ecological model22

Figure 2. Hygiene improvement framework23

Chapter 1: Introduction to the Study

Lack of safe drinking water and lack of water hygiene literacy contribute to a large disease burden in rural areas of Africa, and children suffer disproportionately more than adults from diarrheal diseases caused by nonpotable water (Cairncross et al., 2010; Fotso, Ezeh, Madise, & Ciera, 2007). The most common method of addressing the health issue of waterborne illness is to install water sanitation systems, but this alone is not adequate to reduce waterborne illness or diarrheal disease and improve health; education is also necessary to address underlying factors of low health literacy and for interventions to be sustainable (Ejemot-Nwadiaro, Ehiri, Meremikwu, & Critchley, 2008; Prüss-Üstün, Bos, Gore, & Bartram, 2008).

Lifewater is a nonprofit organization focused on improving access to clean water and increasing water hygiene literacy in rural parts of developing countries (Lifewater, 2007). Lifewater's mission is based on the idiom "Give a man a fish, feed him for a day; teach a man to fish, feed him for a lifetime." Health programs conducted by this organization focus on making community members self-reliant by improving their health literacy and also helping connect them to clean water sources or teaching them how to sanitize water supplies (P. Crane, personal communication, March 17, 2014; Lifewater, 2007). Health programs that only install water sanitation systems or provide water purification resources do not have as high of a sustainability rate as those that focus on building infrastructure and increasing the health literacy of those in the community (Eder, Schooley, Fullerton, & Murguia, 2012).

Background

Lack of potable water in developing countries and low health literacy regarding water hygiene have been health issues targeted by health workers and nonprofit organizations primarily because these issues disproportionately affect children and the poor, thus making them social issues as well (Cairncross et al., 2010; Deal, Check, & Naaktgeboren, 2013; Fotso et al., 2007). In some developing nations in Africa and Asia, waterborne illnesses account for up to 90% of mortality rates in children under the age of 5, showing the desperate need to improve both the quality of water and health literacy in these countries; this statistic also shows the need to understand how knowledge influences behavior in terms of water hygiene and diarrheal disease so programs can enact behavior change interventions (Fisher, Kabir, Lahiff, & MacLachlan, 2011; Fotso et al., 2007).

Interventions that are designed to target behavior change through education (e.g., hand washing) are consistently more effective than interventions that only sanitize drinking water or build waste disposal systems (Cairncross et al., 2010). What is most germane to making interventions long-term and successful is for education to be a primary aspect of the health program (Prüss-Üstün et al., 2008). Little evidence exists that water infrastructure provided to rural communities as a sole method of addressing this health issue actually reduces health problems from waterborne illnesses; because of this, future research needs to focus on how education can improve the effectiveness and sustainability of interventions (Zwane & Kremer, 2007).

One important goal for researchers concerned with the health issue of diarrheal diseases from contaminated water is to try to understand to what extent knowledge influences behavior, especially regarding water hygiene practices; one study of diarrheal disease and water hygiene knowledge in rural parts of Bangladesh underscored the importance of understanding how the elements of knowledge and culture impact health behaviors (Fisher et al., 2011). Fisher et al. (2011) used the theory of reasoned action, which holds that people's intentions are shaped by their attitudes and subjective norms, and how people's perceptions of what is important to others in their culture can influence their motivation to comply with those norms. Cultural factors also affect health literacy because of preferences and cultural norms; therefore, cultural aspects (collected through qualitative methods) should be used alongside traditional types of data, usually quantitative statistics, such as prevalence rates (Deal et al., 2013).

An important aspect of creating communities that are self-reliant is to promote empowerment of community members through increasing their health literacy; by increasing their knowledge, they can take control of their health outcomes and improve the lives of themselves and their family members (Soriano, 2013). The nonprofit organization Lifewater, with whom I collaborated for this project, uses this aspect through what is called the bottom-up approach and actively includes villagers in disseminating learned hygiene knowledge; this then leads to community development, increased social justice, improved quality of life, and empowerment of the local community (Bracht, 1999; Kasmel & Tanggaard, 2011; Staples, 2012).

Problem Statement

Lack of safe drinking water and lack of water hygiene literacy (the ability to understand and properly use knowledge and practices to acquire and use clean water) contribute to a large disease burden in rural areas of East Africa, and children suffer disproportionately more from diarrheal diseases caused by nonpotable water (Cairncross et al., 2010; Fotso et al., 2007). The most common method of addressing this health issue is to install water sanitation systems, but this alone is not adequate to reduce waterborne illness and improve health; education is also vital to address underlying factors of low health literacy and for interventions to be effective long-term (Ejemot-Nwadiaro et al., 2008; Prüss-Üstün et al., 2008). Water sanitation systems can reduce diarrheal diseases by one-third, but combining this with improved hygiene and education can prevent almost two thirds of diarrheal cases (Pruss-Ustin et al., 2008). Therefore, more research is needed to help merge education and water sanitation to provide more effective methods of preventing diarrheal diseases. Additionally, education should be culturally relevant to the community in order to be effective, and, therefore, research needs to be conducted that focuses on how and what cultural elements impact health behaviors (Deal et al., 2013; Pruss-Ustin et al., 2008).

Cultural elements that may impact this health issue and health behaviors of communities with this health problem are not commonly studied. Cultural factors, such as social norms and social support, impact community members' attitudes, beliefs, and preferences, and therefore understanding these is vital in creating interventions that will be effective in specific communities and across different communities (Fisher et al.,

2011; Minkler & Wallerstein, 2012; Sibiyi & Gumbo, 2013; Wright, Yang, Rivett, & Gundry, 2012). The Lifewater organization creates and teaches water hygiene curricula to diverse cultural groups around the world; however, it is inefficient, expensive, and laborious to create unique lessons that are culturally relevant to each different cultural group. Therefore, identifying any shared themes from program participants that can help streamline the curriculum and allow for more efficient and wider reaching water hygiene lessons would help Lifewater save time, expenses, and work more efficiently. I chose a qualitative approach, specifically phenomenology, for my dissertation because I analyzed the shared experience of participants in a water hygiene education program in order to identify themes that could help create effective health lessons for different communities (Davidsen, 2013).

Purpose of the Study

The purpose of this qualitative, phenomenological study was to describe the shared experiences (from the partners' perspectives) of participating in the water hygiene education program provided by Lifewater. A partner is a person who works with a nongovernmental organization in the community that Lifewater serves, and who is seen to be an influential member of the community. The goal of the research was to identify common themes and patterns from the data that could help Lifewater understand how to work with partners from different cultural backgrounds and how to make curricula development more culturally relevant. In this project, water hygiene is defined as behaviors and knowledge regarding (a) identifying clean water sources, (b) hand washing, and (c) sanitation of water before usage.

Research Questions

There are two central questions for the study:

1. What are common themes experienced by culturally diverse partners who have completed water hygiene educational lessons through the Lifewater organization that could be used to make future curricula relevant cross-culturally?
2. What aspects of the program were most meaningful or valuable to the partners?

Partners were defined as influential community members (usually those who work in some capacity with nongovernmental organization) who were selected and trained by Lifewater to learn water hygiene curriculum and then disseminate the curricula throughout their home community. The goal was to analyze data from interviews with these partners to identify common themes from this shared experience.

The main objectives for the interview included:

1. To better understand the experience (from the partners' point of view) of participating in the Lifewater education program.
2. To identify common themes in the shared experience of these participants who are from different cultural backgrounds; these common themes (e.g., how the Lifewater education can help them economically, or how it can help make their children healthier) could hopefully be used to make future curricula relevant cross-culturally.
3. To identify what aspects of the program were most meaningful to the participants.

4. To better understand this knowledge in a cross-cultural framework.

Theoretical Framework

The ecological model was used for this project; this multilevel model focuses on the interplay of the social, political, and physical environment of a community as well as different levels of interaction in order to change behavior (Sallis, Owen, & Fisher, 2008). Because trying to understand behaviors in a cultural context is a complex process that is influenced by these different levels, the ecological model will help guide the creation of interview questions and also provide guidelines for data analysis (Richard, Gauvin, & Raine, 2011). Additionally, because the concept of health literacy is also complex and influenced by personal, social, and environmental factors, such as individual health knowledge, social norms regarding health behaviors, and rural environments with lack of access to resources, the ecological model allowed me to analyze health literacy in a multilevel context (McDonald, Bailie, Grace, & Brewster, 2010). For this study, the model also helped guide interview questions that aimed to identify themes or patterns that emerged at the individual level (from the individual partners interviewed) as well as the community level (with information from the partner on how the lessons were viewed or accepted by their community members) and cross-culturally.

Additionally, the hygiene improvement framework, which allows a researcher to look at the interplay of access to clean water, knowledge of hygiene literacy, and level of social support, all in a participatory framework, was also used because it was developed specifically to address the health issue of diarrheal diseases in children and because it is a multilevel and community-based approach; it also worked well with the ecological model

and showed the importance of combining water access with water education (Storti, 2004). The hygiene improvement framework is used to help create interventions that integrate water sanitation technology, hygiene education, and social support to enact behavior change (Storti, 2004).

Conceptual Framework

The conceptual framework chosen for this project was interpretivism, which holds that humans use their perceptions to create their realities, and these perceptions are shaped by their experiences; therefore, a researcher must analyze context and experiences to try to understand the meanings people have created in their interpretation of the world (Patton, 2002a). This includes the phenomenological approach in which a focus is placed on shared experiences (Creswell, 2013a; Patton, 2002a). In the study, I also included the framework of constructivism, in which the way that people create their realities and how they construct their worldviews is examined (Patton, 2002a). Constructivism was used supplementally with interpretivism to help analyze meanings in the context of people's worldviews and views of reality (Creswell, 2013a; Patton, 2002a).

Nature of the Study

A qualitative method, specifically phenomenology, was chosen to allow me to focus on identifying shared themes from interviews of partners from different cultural backgrounds (Creswell, 2013a; Patton, 2002a). A partner is defined as a person who works with a nongovernmental organization in a community that Lifewater serves.

Using qualitative methods, I constructed a thick description of the phenomenon studied, and in this case, how cultural factors shaped the perceptions and meanings of the

experience of participating in the Lifewater training program from the view of participants (Bradley, Curry, & Devers, 2007; Patton, 2002a). The phenomenological approach was selected because I focused on analyzing the shared experiences of partners who participated in the water hygiene training program; the intent is that I can provide Lifewater with an understanding of the way culture and experiences shape how the partners view the program and how they disseminate their new knowledge to their communities (Patton, 2002a). This will hopefully help streamline future lessons for diverse cultures by creating a common foundation that can be taught in different cultural communities. In-depth, semistructured interviews allowed me to create a deeply descriptive summary of the partners' shared experiences and to identify pertinent themes of this experience (Creswell, 2013b; Diccico-Bloom & Crabtree, 2006). The semistructured approach was best for this project because it provided an outline for action but also allowed for flexibility (Dicicco-Bloom & Crabtree, 2006). The central phenomenon being studied was the experience of participating in Lifewater's hygiene education program in which all interviewees had participated.

I collected data through open-ended interviews with six Lifewater partners in different regions Africa and Asia, all located in rural villages. The hygiene education program through Lifewater was implemented in 2014, and therefore only a small number of partners had completed the program by the time of data collection in early 2015, and thus led to this study having a small sample size. The recruitment of a small sample size comes from Delphi sampling; I chose this technique because I am interviewing only those who meet specific criteria (i.e., partners of Lifewater) and as the original population

of people who meet these criteria is small, a small sample size is valid (Hanson & Keeney, 2000). I was able to interview six partners and justify my sample size through the Delphi sampling technique.

Interviews were conducted via Skype or phone and consisted of one primary interview that was between 30 and 45 minutes, and one follow up between 15 and 30 minutes, conducted within 2 weeks after primary interviews take place. Data were collected and analyzed with the social constructivist, ecological model, and hygiene improvement framework as guides, and I used G-Recorder to record data and Dragon Dictate software to transcribe the interviews. Data were analyzed and coded for themes using the NVivo software package (Bergin, 2011; Bradely et al., 2007; Hoover & Koerber, 2011; Patton, 2002b).

Definitions

Cultural relevance: The attempt to make something fit with the cultural norms, general worldview, and social networks found in a particular community (Carolini, 2012).

Potable water: Water that is free from contamination and parasites and is safe to drink and wash with (Denslow et al., 2010).

Sustainability (of a health promotion program): A demonstration of the use of behaviors and information learned from a health education program years after the program is completed (Eder et al., 2012).

Waterborne illnesses: Illnesses caused when a person consumes water contaminated with pathogens; these are also referred to as diarrheal diseases (Joshi & Amadi, 2013).

Water hygiene: Defined as behaviors and knowledge regarding (a) identifying clean water sources, (b) hand washing, and (c) sanitation of water before usage (Fisher et al., 2011).

Water sanitation practices: Actions that purify water sources and make them safe for consumption; these include boiling, using filtration, adding chlorine, and using UV decontamination technology (Denslow et al., 2010).

Assumptions

The assumptions for this study included that, through Delphi sampling, I collected meaningful data from a small number of participants, and that those recruited to be interviewed were honest and truthful with their answers. In addition, I assumed that the Lifewater organization would help me contact and communicate with their participants so that I could recruit relevant people to interview for my study. In order to increase reliability and validity (discussed more in Chapter 3), I used confidentiality while collecting, analyzing, and reporting data, and I used stringent methods to increase the validity and reliability of the study's results; additionally, I used proper methods in trying to identify shared themes from a diverse set of individuals, such as writing interview questions based on the phenomenological approach, using software techniques to analyze data, and connecting the qualitative methods used to the theoretical and conceptual

frameworks discussed above. Member checking and intermember agreement were also used to increase data validity.

Scope and Delimitations

The scope of this study was to understand the shared experience of partners who completed a Lifewater training course in water hygiene and also to identify any common themes shared among these participants. I interviewed six partners, who all came from different villages in East Africa or Asia. These partners were chosen by Lifewater as important members of their communities and underwent water hygiene education in order to disseminate what they have learned to their communities (P. Crane, personal communication, March 17, 2014). The purpose of this study was not to conduct an evaluation of the Lifewater education program, but rather to see if any shared themes existed among culturally diverse participants in order to streamline future curricula and make curricula writing and editing more efficient. Any partners who had not completed the program or who did not have necessary technological access were not interviewed. All partners spoke and understood English, and the program managers at Lifewater were available to help connect me to partners in order to conduct interviews and follow-up interviews (P. Crane, personal communication, March 17, 2014).

The delimitations were that I did not use common purposeful sampling techniques and instead used Delphi sampling and a very small sample size (6) because of a small population size and such specific selection criteria (Hanson & Keeney, 2000). Additionally, I used a semistructured interview technique instead of an unstructured technique so that I could make sure to guide interviews to find shared themes but to also

allow open-ended questions to gain thick description from the interviewees (Dicicco-Bloom & Crabtree, 2006).

Limitations

Limitations exist when using qualitative data, including data results that are not generalizable, and the researcher acting as the data collection instrument reference (Creswell, 2009). While qualitative data can be trustworthy and reliable, because they are collected to answer a specific research question and are impacted by cultural factors, results from these studies tend to not be generalizable to other studies or communities (Creswell, 2009). However, because I aim to identify shared themes across cultural groups, the results will hopefully be able to be used to shape curriculum for multiple communities, though the specific results of this study may not directly apply to other studies or communities.

Additionally, because the researcher is the data collection instrument in qualitative studies, there can be researcher bias; while ideally the researcher should aim to be completely objective, this is not always easy to do, and the individual background of the researcher may cloud how he or she perceives the data collected (Creswell, 2009; Patton, 2002b). To limit researcher bias, I needed to address how my background may have contributed to my particular interpretation of the data (Maxwell, 2013). For example, having a background in anthropology and having lived in rural parts of Uganda and Indonesia gave me a unique perspective in interpreting the data for cultural themes. One way I addressed this as a limitation was through member checking (or respondent validation), in which I provided the participants with conclusions I had drawn from their

interviews to see if I had interpreted their responses reliably (Cohen & Crabtree, 2008; Creswell, 2013; Maxwell, 2013).

Possible limitations arise when using data collected via the Internet and include privacy issues (both of participants, their information, and responses); in addition, the choice of using these data assume that participants will have skills to read, write, and use a computer as well as have access to the technology (Creswell, 2013b). Interviews conducted in person must use recording devices and note-taking to collect data, but interviews conducted via Skype can automatically save a recording of the interview, which can save time and increase efficiency (Janesick, 2011). However, taking brief notes during the interview were practiced because it helped illuminate follow-up questions, record insights, and was a good backup for technology issues; these notes also helped the transcription process (Creswell, 2013; Patton, 2002).

While Internet interviewing may have limitations of not seeing a person's body language or not establishing rapport with the participants, Skype helped address some of these because I could see the facial and body cues of the participant, which helped me identify if the person was comfortable and if follow-up questions should be asked (Kazmer & Xai, 2008). Skype was a viable option for my study because I could not physically travel to many different countries to conduct in-person interviews (Kazmer & Xai, 2008).

To increase confirmability, I was clear and forthcoming with my selected methods and procedures as well as the rationale for selecting these; I also needed to consider alternative explanations for my conclusions (Miles et al., 2014). To address reliability in

my project, I provided clear research and interview questions and explained the role of myself as the researcher to the data and its interpretation; I also used thick description for my interview data (Miles et al., 2014; Patton, 2002). To increase external validity, I explained and justified the sampling procedures and connected the data with the theoretical foundation discussed above.

Significance of the Study

The study may be important because identifying themes that can help water hygiene curricula to be more effective and culturally relevant could lead to more people participating in programs that are culturally relevant to them. The study may also lead to enhanced understanding and retention of information by participants in these programs. Identifying common themes held by community members with different cultural backgrounds could help create a collective foundation for water hygiene curricula that would not have to be rewritten for every new community. In addition to making curricula for the Lifewater organization and its partners more streamlined and culturally relevant, use of this curriculum could help increase the access to and knowledge of clean water for community members in developing areas, which contributes to one of the United Nation's Millennium Development Goals, and thus promotes social change; it may also help empower community members and may help improve knowledge and behaviors that could lower rates of waterborne illnesses in specific communities (Bracht, 1999; Kasmel & Tanggaard, 2011; Ruger, 2010; Staples, 2012; United Nations, 2010). In addition to benefitting the communities that participate with the Lifewater organization, the

organization itself would benefit by receiving feedback from its partners that could directly shape future curricula to be more culturally accepted in diverse communities.

Summary

The health issue of waterborne illnesses is a global problem that mainly impacts the health of people (especially children) in rural communities in developing countries. Traditional approaches to improve water quality and health outcomes have focused on installing water sanitation technology, but current research shows that education must also be part of a health intervention to make a large and sustainable impact. To help improve the effectiveness of water hygiene education curriculum, my analysis of this qualitative, phenomenological study helped me identify common themes held among water hygiene program participants from diverse cultural backgrounds. This may help guide future curricula development and hopefully provide a common core to make curriculum relevant in different cultural communities. In Chapter 2, I will explore current research in detail and identify gaps that this study may help address.

Chapter 2: Literature Review

Introduction

There exists a large disease burden, particularly in developing countries, from lack of safe drinking water and lack of water hygiene literacy, and health outcomes from these, specifically diarrheal diseases, disproportionately affect children in these communities (Cairncross et al., 2010; Fotso et al., 2007). Along with respiratory diseases, diarrheal diseases are the most common cause of death in these countries for children under age 5 (Rabi & Dey, 2013). The most effective way to prevent these deaths is by practicing proper hand washing behaviors, but many people in developing nations lack the health literacy to do this (Rabi & Dey, 2013). Each year, 65% of cases, or over 2 million diarrheal deaths, could be prevented with proper hygiene behaviors, and hand washing alone could reduce cases of diarrheal disease by up to 40% (Patel et al., 2012). These statistics show the pressing need for water hygiene and sanitation education in these countries. In this literature review, I demonstrate how addressing cultural issues in this type of educational intervention is vital for communities to accept behavior change and for sustainable change to take place, but there exists a lack of qualitative studies to identify what cultural aspects to include. Therefore, the purpose of this qualitative, phenomenological study was to describe the shared experiences (from the partners' perspectives) of participating in the water hygiene education program provided by Lifewater so that I could identify common themes and patterns from the data that could help Lifewater understand how to work with partners from different cultural backgrounds and how to make curricula development more culturally relevant. In this project, water

hygiene is defined as behaviors and knowledge regarding (a) identifying clean water sources, (b) hand washing, and (c) sanitation of water before usage.

In this chapter, I will discuss relevant literature and theoretical and conceptual foundations connected to this study to show the need for education-driven interventions and how interventions that fail to use education are not as effective or sustainable as those that do (Ejemot-Nwadiaro et al., 2008; Prüss-Üstün et al., 2008). I will also discuss why education should be culturally relevant to the community in order to be effective and also why research needs to be conducted that focuses on identifying how and what cultural elements impact specific health behaviors regarding water hygiene (Deal et al., 2013; Pruss-Ustin et al., 2008).

Literature Search Strategy

The primary search engines used in conducting the literature review were CINAHL and MEDLINE (as a simultaneous search), accessed through the Walden University's library page. PubMed was also used, and Google Scholar was useful as a means of a first search on a new topic or keyword; most articles found through this search engine could also be obtained on the Walden library page. The six categories of the literature review (discussed below) are (a) lack of potable water, (b) traditional intervention methods, (c) the importance of education, (d) the role of culture in people's understanding of educational interventions, (e) the use of qualitative methods to address the health issue, and (f) the history of the Lifewater organization and its impact on waterborne illnesses.

For Category A, keyword searches included *potable water*, *diarrheal diseases*, *rates of diarrheal diseases*, and *waterborne illness*. This search helped me identify prevalence rates and statistics to show how nonpotable water is a health concern and what types of health outcomes result from drinking unclean water. For Category B, keyword searches included *waterborne illness intervention*, *water sanitation*, and *water sanitation technology*. This search helped me identify what common means have been used to address the health issue, including installing water sanitation systems and pit latrines. For Category C, terms included *water hygiene education*, *water hygiene literacy*, *water hygiene knowledge*, *water and sanitation education*, *WASH curriculum*, *water education intervention*, and *hand washing education*, and this search allowed me to identify other studies similar to mine that demonstrate how much more effective interventions are that use education paired with technology and not water sanitation technology alone. I tried to include studies from the same or similar areas in which the Lifewater program is carried out, specifically Bangladesh and parts of eastern or southern Africa. For Category D, keywords included *water hygiene behavior; knowledge, attitudes, and preferences (KAP)*; *water hygiene beliefs*, and *water behavior and culture*. The role of culture in addressing waterborne illnesses is a major focus of this dissertation, and this search allowed me to find studies that have addressed cultural aspects as part of interventions, as well as to identify gaps in current research. For Category E, I searched for *waterborne illness qualitative*, *water education qualitative*, *waterborne illness quantitative*, and *water hygiene intervention qualitative*. Finally, for Category F, keywords included *Lifewater organization*, *Lifewater organization research*, and *Lifewater organization results*. This

search allowed me to see that the majority of studies focused on this health concern have been quantitative, but in order to address cultural aspects of behavior change, qualitative studies are needed as well. Articles were only selected in full document format and only if they were published since 2009, with some exceptions for older material that was pertinent to this topic (Denslow et al., 2010; Patel et al., 2012; Prüss-Üstün et al., 2008; Sibiya & Gumbo, 2013).

Theoretical Foundation

Ecological Model

Many theories exist that focus on behavior change, including the ecological model and hygiene improvement framework. The ecological model was used for this project because it focuses on the interplay of the social, political, and physical environment of a community as well as different levels of interaction (e.g., personal or community) in order to change behavior (Sallis et al., 2008). As is shown in Figure 1, the heart of the model is the essence of the shared experience (which I tried to capture through the phenomenological approach), and this can be viewed as being shaped or influenced by other environmental factors that occur at different levels; the four constructs of the model are health literacy; cultural attitudes; knowledge, attitudes, and preferences; and social norms (Taylor, n.d.). Health literacy refers to the amount of knowledge people hold regarding health behaviors and water hygiene; cultural attitudes include the social norms of the community and the amount of social support within the community; knowledge, attitudes, and preferences refer to the way that the intersection of people's beliefs, opinions, preferences, and knowledge can motivate them to or prevent them from

participating in specific health behaviors; and social norms refers to the expected behaviors of people in the community (Sallis et al., 2008; Taylor, n.d.). These different levels of influence overlap and contribute to how people decide in what health behaviors to participate and also color the experience they have participating in specific health behaviors.

For example, all partners that I interviewed who had participated in the Lifewater water hygiene education course came from a different cultural background, and therefore many different parts of their environment, as well as their interaction in learning the lessons and then disseminating those lessons to a larger community, could have impacted the experience I tried to capture. By using the ecological model, I identified cultural themes that emerged at the individual level (from the individual partners interviewed) as well as the community level (with information from the partner on how the lessons were viewed or accepted by their community members) and cross-culturally.

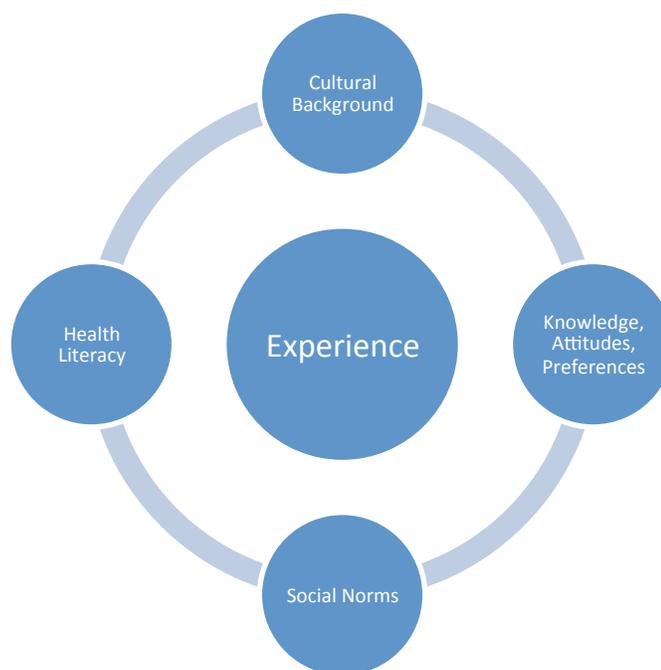


Figure 1. The ecological model (figure created by author).

Hygiene Improvement Framework

The hygiene improvement framework was developed specifically to address diarrheal diseases in children globally and to be applicable as a multilevel approach that is also community-based (Storti, 2004). As shown in Figure 2, the main components of the framework are that the community members have access to hardware (e.g., water sanitation technology), that they receive hygiene promotion training (i.e., education), and that their environmental surroundings promote the behavior change of improved water hygiene (Storti, 2004). The four constructs of this framework are access to health resources (i.e., clean water and sanitation technology), knowledge of health issue (i.e., water hygiene behaviors, and hygiene literacy), and support (in the form of social norms and support from community members; Storti, 2004). These constructs also show the

overlap of health knowledge and social norms and how these impact health behaviors; what is unique about this framework is that it also stresses the need to merge resources with education in order to foster healthy behaviors (Storti, 2004). This is a central tenet in my literature review; these overlapping constructs also helped guide my identification of shared themes held by those who participated in the health intervention through Lifewater.

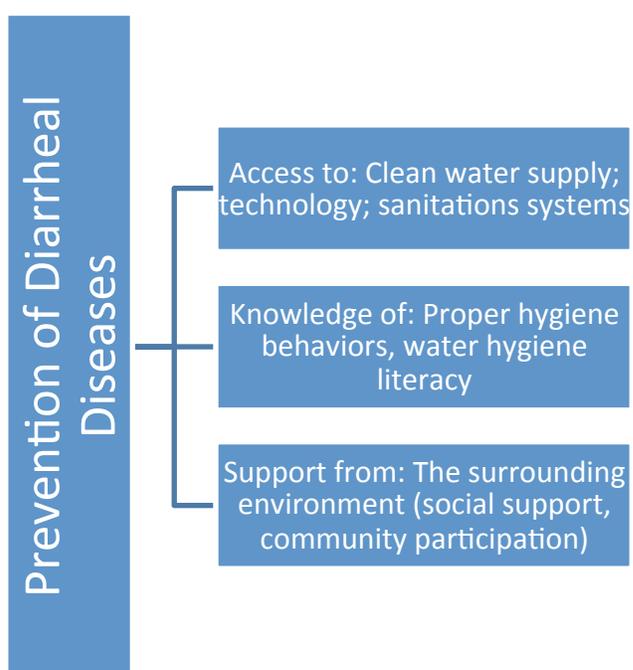


Figure 2. The hygiene improvement framework (figure created by author).

This framework works well with the ecological model and also fosters community participation. McDonald et al. (2010) stressed that interventions that aim to improve water hygiene behaviors must be conducted in an ecological framework, and they also

employed the hygiene improvement framework to identify underlying factors that caused poor water hygiene behaviors in an aboriginal community. My aim in this study was to identify common themes from a shared experience and to examine both how partners experienced the water hygiene program and how they disseminated the information back into the community; by using the hygiene improvement framework, I created interview questions related to the personal, environmental, and community aspects that affected the partners' experiences. I also chose the hygiene improvement framework because one goal I set for this study was to show that water sanitation technology alone is not enough to address the health issue of waterborne diarrheal diseases and that education must also be used to make the interventions effective; proponents of this framework hold that behavior change is only possible when all aspects of the issue are addressed, which involves education paired with technology (Storti, 2004). In fact, for hygiene promotion to work as an intervention, Kleinau, Post, and Rosenweig (2004) stated that five components were necessary: communication strategy, social mobilization, social marketing, community participation, and advocacy. For the communication strategy specifically, any intervention must involve an increase in hygiene knowledge paired with access to water hygiene facilities and resources, again showing the interplay of access to technology and education. For my study, any common themes that emerged from the partners' shared experience will hopefully be used to guide future water hygiene curriculum lessons by Lifewater by showing what cultural aspects can be used as a foundation for lessons; using the hygiene improvement framework also helped me to create interview questions that identified similarities between partners' water hygiene knowledge and social and physical

environments, which also helped me formulate a holistic picture to identify the essence of their shared experience.

Conceptual Framework

The conceptual framework chosen for this project was interpretivism, which is the idea that humans use their perceptions to create their realities, and these perceptions are shaped by their experiences (Davidsen, 2013); therefore, a researcher must analyze context and experiences to try to understand the meanings people have created in their interpretation of the world (Patton, 2002a). This includes the phenomenological approach that focuses on shared experiences (Creswell, 2013a; Davidsen, 2013; Patton, 2002a).

In this study, I also used social constructivism, supplemental to interpretivism, which is a construct that holds that people create their worldviews to help construct their realities, and since people's views of their world differ, there exist multiple realities, all with different meanings attached (Creswell, 2013a; Patton, 2002a; Thomas, Menon, Boruff, Rodriguez, & Ahmed, 2014). Reality is people's perceptions; therefore, reality is an ontological relativity because their worldview determines perception (Patton, 2002a).

Literature Review

There are myriad studies showing the need for interventions to improve water quality and access to clean water in developing countries around the globe. Many newer studies have moved from focusing on this health problem to focusing on what types of interventions are needed to not only address the health issue of diarrheal diseases from unclean water but also how to address underlying factors that cause this health concern as well as how to effectively change behavior (Patel et al., 2013; Pruss-Ustin et al., 2008;

Sibiya & Gumbo, 2013). Five constructs were analyzed in this literature review: (a) lack of potable water, (b) traditional intervention methods, (c) the importance of education and the role of culture in people's understanding of educational interventions, (d) the use of qualitative methods to address the health issue, and (e) the history of the Lifewater organization and its impact on waterborne illnesses.

Lack of Potable Water and Health Concerns

Many communities in developing nations lack access to clean water, which violates the basic right that all people should have access to resources necessary for survival (Ruger, 2010). Lack of potable water leads to negative health outcomes, including diarrheal diseases and high child mortality rates; an estimated two billion people lack access to sanitation facilities, and diarrheal diseases are one of the top two causes of mortality for children under five in developing countries (Patel et al., 2012; Sibiya & Gumbo, 2013). Waterborne diseases are a large contributing factor in morbidity and mortality rates worldwide, with poverty-stricken communities in developing nations and children in these nations disproportionately carrying this burden (Deal et al., 2013). Water quality tests conducted by Deal et al. (2013) showed that most, if not all, water sources in rural Honduras were contaminated with a variety of pathogens. Rabi and Dey (2013) also found that changing one behavior (hand washing) could prevent 40% of diarrheal cases in developing and/or rural areas. While these statistics are helpful in understanding the health concern and need for water quality interventions, further research is needed to identify water hygiene literacy at the community level, as most studies so far have focused on country or regional data collection, and also to used

qualitative methods to analyze cultural factors that affect both health literacy and health behaviors (discussed more below).

Children bear a large amount of the disease and mortality burden from waterborne illnesses, especially in sub-Saharan Africa; in these countries diarrheal diseases account for the majority of deaths in children under 5. The focus of the United Nation's Millennium Development Goal number 5 is on reducing child mortality globally, and goal number seven focuses on reducing the number of people without sustainable access to potable water and basic sanitation facilities by half by 2015 (Sibiya & Gumbo, 2013). However, these goals are not being met in many African nations (United Nations, 2014). In fact, globally, all nations except those in sub-Saharan Africa and Oceania have reduced child mortality rates by at least half, but 750 million people in these areas still lack access to clean water resources (United Nations, 2014). Sub-Saharan countries suffer from negative health outcomes because their populations (especially in rural areas) lack both access to the aforementioned resources necessary for survival and quality of life and the health literacy needed to practice healthy water hygiene behaviors (Fotso et al., 2007).

Fotso et al. (2007) focused on three underlying factors that, if improved, could significantly reduce childhood mortality: urbanization, safe drinking water, and low health utilization. Fotso et al. (2007) demonstrated a significant correlation between these three factors and child mortality, showing that if these are addressed, many lives could be saved. There are many underlying factors that contribute to high rates of child mortality, but for this dissertation, only one could be analyzed in depth. Access to clean water and increasing clean water hygiene literacy can at least address the main cause of death in

children under 5; increasing healthy water hygiene behaviors and health literacy of villagers in rural areas that have high rates of diarrheal diseases from unclean water can hopefully lead to behavior change and to villagers disseminating learned health literacy information to their family members and friends.

Traditional Ways to Address Health Issue

There are a wide variety of methods to sanitize water in developing nations in order to reduce the prevalence of diarrheal diseases; some common techniques include water filtration systems, chlorination, and installation of pit latrines (Denslow et al., 2010). Traditionally, water filtration and water sanitation methods and excrement disposal (e.g., installing pit latrines) have been touted as the best way to reduce the prevalence of diarrheal diseases, but results have been mixed or not significant regarding their effectiveness in preventing waterborne illness, showing that in some cases this may not be the best approach to address the health issue (Carincross et al., 2010). In northern Nicaragua, in 2009, the mortality rate from diarrheal diseases is over seven percent, compared to only two percent in other areas of the country (Denslow et al., 2010). In this region, traditional techniques for intervention have been used, including chlorination and filters for drinking water, and the installation of latrines; however, none of these traditional methods resulted in a reduction of diarrhea prevalence, and latrine overflow (caused by insufficient knowledge of how to use and clean the device) actually led to an increased prevalence of diarrheal diseases (Denslow et al., 2010).

Studies show that interventions that use water sanitation technology alone are not as effective as those that also use educational components (Carincross et al., 2010; Pruss-

Ustin et al., 2008). Cairncross et al. (2010), through a systematic review of existing studies, advocated that changes in hygiene behavior (specifically hand washing) combined with water sanitation technology and waste disposal is a more effective method for reducing and preventing diarrheal diseases. Studies also show that the installation of pit latrines is not an effective method of prevention without accompanying hygiene education, specifically targeting fecal-oral transmission of illness and healthy behaviors; studies have shown that improved health behavior such as hand washing can prevent more than a third of childhood diarrhea in countries with both high and low incomes (Deal et al., 20013; Ejemot-Nwadiaro et al., 2008; Zwane & Kremer, 2007). This is why in my dissertation, I focus on identifying aspects of the shared experience of participating in a water hygiene educational program; because education is so important in addressing the health issue of diarrheal diseases, the more effective the lessons are and the more culturally relevant the lessons are, the greater chance they have of being accepted by and preventing illness in the communities that use them.

Importance of Education in a Cultural Context

Additionally, researchers need to assess how a community's knowledge, attitudes, and preferences (KAP), all influenced by cultural factors, can affect their water hygiene literacy and health behaviors. This type of analysis has been conducted in schools and has shown that, while children may have a high rate of knowledge of waterborne illnesses, they have little to no knowledge about transmission or prevention of these illnesses, elucidating an area of water hygiene education that needs to be addressed (Sibiya & Gumbo, 2013). Sibiya and Gumbo (2013) concluded that "...even if the infrastructure is

there, there is no guarantee that people will use it accordingly all the time” and that “In addition to the provision of safe community water supply and sanitation services, there is a need for education on hygiene” (p. 8). The most effective way to improve this knowledge and increase healthy behaviors is to have lessons that teach healthy practices, such as hand washing, and that also explain why healthy behaviors prevent diseases, but, most importantly, these lessons must be culturally relevant in order for participants to accept them (McDonald et al., 2010; Rabi & Dey, 2013). A common educational model used to accomplish this is the WASH (water, sanitation, and hygiene) program, which was used by both Rabi and Dey (2013) to address diarrheal diseases in rural areas of Bangladesh, by Patel et al. (2012) to address diarrheal diseases in schools in Kenya, and by Freeman et al. (2012) to analyze WASH curriculum’s effect on student absenteeism in Kenya; the WASH model is also used currently by the Lifewater organization with which I collaborated for this study. One beneficial aspect to this type of curriculum is that it has the ability, when taught in schools, to improve student water hygiene knowledge and practice of proper hygiene behaviors and to decrease days of school missed due to diarrheal illnesses (Freeman et al., 2012). Another benefit of the curriculum is that it is participatory and involves members of the community, which can also lead to empowerment and community self-reliance (Rabi & Dey, 2013). Deal et al. (2013) showed that interventions at the community level that also focus on community development and participation are more successful in reducing morbidity and mortality from diarrheal diseases than interventions that do not have an educational and/or community-based foundation.

The results from these studies show that simply installing technology to improve water quality and sanitation is not effective unless it is paired with water hygiene education; additionally, the education must be culturally relevant in order for participants to accept the behavior change, and there is a need for more community-level studies on this health topic and interventions to address the health issue (McDonald et al., 2010; Patel et al., 2012; Rabi & Dey, 2013). My goal was to add to this portion of growing knowledge by identifying pertinent cultural themes from a shared water educational experience to make health lessons in different communities culturally relevant and also streamlined across cultures and to involve community participants in order to conduct a community-level study on water hygiene education. McDonald et al. (2010) also pointed out that KAP interventions can only be successful if they are built within an ecological framework, which is why the ecological model and hygiene improvement framework were chosen for this study.

Use of Qualitative Methods to Address Health Issue

Overall, quantitative methods were used most often in studies that addressed the health issue of diarrheal disease as a result of unclean water sources (Denslow et al., 2010; Freeman et al., 2012; Patel et al., 2012; Prüss-Üstün et al., 2008; Sibiya & Gumbo, 2013). In some studies, quantitative methods were used not only to address traditional statistical measures such as prevalence rates, but also KAP and rates of healthy behaviors such as hand washing (Patel et al., 2012). However, some studies found no statistical impact from water sanitation interventions and would have benefitted from qualitatively analyzing underlying factors contributing to diarrheal diseases, including lack of health

literacy of water hygiene and possible cultural influences on beliefs and behaviors (Denslow et al., 2010).

Denslow et al. (2010) and Patel et al. (2012) found no significant difference in rates of diarrheal diseases after quantitative analysis of interventions, thus showing that (a). collecting statistical data from a water sanitation study does not give insight into underlying factors or cultural influences on hygiene knowledge and behavior, and (b). simply installing hygiene equipment is not effective unless education is also used. Patel et al. (2012) did find a significant increase in hand washing behaviors in a rural community in Bangladesh, but also found that self-reported answers did not match the actual behaviors observed; this limitation of the study could be addressed by also utilizing qualitative methods to not only measure knowledge, but also more deeply analyze beliefs and social or cultural influences surrounding actual behaviors of community members.

Sibiya and Gumbo (2013) also used quantitative methods in their study of KAP in South African schools, but their results showed that, while students have knowledge of what causes diarrheal disease, they lack knowledge in *how* diarrheal diseases are transmitted. In order to effectively study KAPs, qualitative methods are needed to give insight into the cultural and environmental factors that shape knowledge, attitudes, and preferences of a community. Using qualitative methods in this dissertation that target the cultural preferences and behaviors held by certain communities would allow me to add to the literature by showing where interventions need to target behavior change and also culturally relevant and sensitive ways to introduce behavior change through educational interventions. By collaborating with Lifewater, future research could be conducted in a

mixed methods approach that bridges the common quantitative methods already employed along with a qualitative analysis to provide a more holistic picture of how to effectively improve health outcomes in developing countries.

The History of the Lifewater Organization and its Impact on Waterborne Illnesses

Lifewater is a non-profit organization started in 1977 to address the global issue of water scarcity and waterborne illnesses; it is also a Christian organization that merges science and gospel to teach people in need about water hygiene (Lifewater, 2014a). The goal of those working with Lifewater is to provide communities with simple, low-tech water solutions because interventions should focus not only on installing water sanitation technology, but also on empowering community members through water education and solutions that are culturally relevant and therefore self-sustaining (Lifewater, 2014a). The model used by Lifewater to achieve this goal focuses on water (deep wells, sand filters, hand wells, pump repair, etc.); hygiene (hygiene education in schools, awareness campaigns, and health promotion programs); capacity building (community development, monitoring and evaluating technology and education, collaborating with national partners, and training local community members); and sanitation (household and school demonstrations, pit latrines, and composting) (Lifewater, 2014a). mWASH, an adapted approach to water access, sanitation, and hygiene curriculum, can decrease waterborne illness by 65% by increasing people's water hygiene literacy; in addition this curriculum seems to be culturally accepted because it also includes missional (or gospel) information supporting proper water hygiene behaviors and therefore uses cultural (in this case, religious) aspects that are relevant to the community (Lifewater, 2014b).

Since its inception in 1977, the Lifewater organization's interventions have resulted in over 2.3 million people improving their access to clean water resources and water hygiene knowledge (Lifewater, 2014c). Programs have been completed in many parts of Africa, including Ghana, Nigeria, Ethiopia, Kenya, Tanzania, and Zimbabwe, and current programs are being conducted in the Democratic Republic of the Congo, Malawi, and Kenya (Lifewater, 2014d). In Asia, completed programs have occurred in the Philippines, Papua New Guinea, Cambodia, and Laos, and current programs are being conducted in Bangladesh, Laos, and Vietnam (Lifewater, 2014d). There is also one current program in Brazil (Lifewater, 2014d).

A Lifewater program begins with the program manager selecting a region and a partner, and then collecting baseline information on the region's health (the region is usually between 10,000-30,000 people who live in rural villages) (Lifewater, 2014e). Program managers and their team then create a customized two-year program that targets community assets and actors that can help enact behavior change; these include local leaders, churches, health workers, teachers, and students (Lifewater, 2014e). The program's focus is not on sanitation technology but rather on identifying and understanding the community members' worldview and knowledge of water hygiene. This helps the program team create community mobilization and a strategy to enact behavior change through changing people's perceptions and practices (Lifewater, 2014e). Sanitation hardware (e.g., pit latrines, water filtration systems, or hand washing stations) are also developed and funded within the village, so community members own and maintain their own clean water supplies. Finally, a survey is conducted after the program

to evaluate the intervention, and the team continues to monitor the community for three to five years after the program ends; feedback and evaluation data are then used to improve the next intervention in another region (Lifewater, 2014e).

Because each program is tailored to each specific region, the program development team puts in a painstaking amount of work to craft culturally appropriate curriculum for each mWASH lesson. It was my goal for this study to identify common themes the partners hold from participating in water hygiene educational training so that these themes shared cross-culturally can be used to streamline curriculum development and make the process more efficient.

Summary and Conclusion

There exists a large need for creating effective interventions to address the global health issue of diarrheal diseases from unclean water, especially since these cause such high mortality rates in children in developing countries (Patel et al., 2012; Sibiya & Gumbo, 2013). The majority of studies conducted on this health issue have been quantitative, population-based, and focused on only installing water filtration and sanitation technology, while an emerging theme in this field shows the need for qualitative, education-based and community-level interventions in order to make successful and sustainable changes (Cairncross et al., 2010; Denslow et al., 2010; & Prüss-Üstün et al., 2008).

The main conclusions drawn from this review of current literature are that when people focus on the role that education plays in the health issue of diarrheal diseases, they create more successful interventions that improve health literacy and healthy behaviors;

people should focus on how the educational components of an intervention can be culturally relevant in order to facilitate behavior change; and that a qualitative or mixed methods design should be used in order to effectively analyze KAPs (Cairncross et al., 2010; Deal et al., 2013; Patel et al., 2012; Prüss-Üstün et al., 2008; & Sibiya & Gumbo, 2013). The aim of this dissertation was to fill gaps in current research by addressing these conclusions. By utilizing qualitative methods, I identified shared experiences that people from different cultural backgrounds hold when discussing their participation in water hygiene education; this puts education as the focus of the study and shows how important it is in water hygiene interventions. These methods also allowed me to add to the literature by creating a community-level study that was participatory and involved community members, and qualitative methods allowed me to examine shared themes cross-culturally in order to identify common elements that could be used to make future curriculum through the Lifewater organization more streamlined and both culturally relevant and relevant cross-culturally.

In Chapter 3 I will discuss the selected research design and methodology of this study in order to further demonstrate how qualitative methods and the phenomenological approach will allow me to identify pertinent themes from the partners' shared experience. I will also discuss my interviewing techniques and explain how data will be collected and analyzed, and also what steps will be taken to ensure reliability and trustworthiness of the data.

Chapter 3: Research Method

Introduction

The purpose of this qualitative, phenomenological study was to describe the shared experiences of partners participating in a water hygiene education program in order to identify common themes and patterns that could help the Lifewater organization understand how to build curricula for culturally diverse partners. Therefore, the research design and method needed to align with these goals, as well as the theoretical foundations of the ecological model and hygiene improvement framework, in order to have produced meaningful results. The design and rationale for conducting this study will be discussed in this chapter, including the research questions, data collection methods, methodology, discussion and justification of sample size, the role of the researcher, potential threats to validity, and possible ethical issues that may arise.

Research Design and Rationale

The focus of this dissertation study (water hygiene knowledge and behavior) required that a qualitative approach be used in order to analyze the issue in a cultural context; further, the phenomenological approach was employed in order to identify common themes of a shared experience among participants (Creswell, 2013a; Patton, 2002a). Data were collected through interviews conducted via Skype or telephone.

Research Tradition and Rationale for Chosen Tradition

The research tradition chosen for this study was the phenomenological approach; this approach was selected because I focused on analyzing the shared experiences of partners' participating in the water hygiene training program. Phenomenology is used

when one wants to analyze and describe the meaning of a specific shared experience; the core assumption is that there is an essence of the shared experience that can be identified by interviewing those who have experienced it (Marshall & Rossman, 2011).

Understanding this shared experience is the goal of the research and was discovered after in-depth interviews and detailed coding analysis of the data. A qualitative method was chosen because my aim in this study was to analyze a shared experience through a cultural framework and to identify shared themes cross-culturally; using interviews in a qualitative framework allowed me to obtain more detailed or thick information than could be obtained through statistical analysis (Creswell, 2006; Groenewald, 2004).

Husserl stated that the relationship between an object and a person's perception of it is an active one; therefore, human consciousness is always active (as cited in Holstein & Gubrium, 2005). Husserl wanted to "investigate the structures of consciousness that make it possible to apprehend the empirical world" (as cited in Holstein & Gubrium, 2005, p. 485). In other words, a phenomenon experienced is a real event and has a real existence and a real meaning for those who lived it, and it is this meaning that is the focus of phenomenological studies. Phenomenology is qualitative science because it replaces statistics with descriptions and lived experiences for causal relationships (Sadala & Adorna, 2002). Therefore, through empirical analysis, a researcher can analyze what has meaning and what the meaning is to those who experience the central phenomenon (Holstein & Gubrium, 2005).

While Husserl mainly focused on descriptive phenomenology, in which one analyzes the interpretations of a shared experience, Heidegger focused on interpretive

phenomenology and used hermeneutics to go beyond description and into interpreting the meanings held by those with a shared experience (as cited in Reiners, 2012). For this study, the Husserl approach was more appropriate because Heidegger did not believe in bracketing, while I emphasized addressing researcher bias to increase the rigor of the study's results (as cited in Reiners, 2012). My aim in this study was to provide Lifewater with an understanding of the meaning being shared by participants in its program; I aimed to identify the way culture and experiences shape how the partners view the program and what they find most meaningful about their participation in the program. The intent is for the results to be used to help streamline future lessons for diverse cultures by creating a common foundation that can be taught in different cultural communities.

Ethnography was not chosen as an approach because this technique involves long periods of observation or participant observation, and in this study I identified cross-culturally shared themes and did not describe the behavior of only one group inside a cultural context (Corbin & Strauss, 2008). Grounded theory is an approach that is used when one wants to generate a theory based on collected data, and this approach was not appropriate for the current study, as I did not intend to create theory from the data collected (Corbin & Strauss, 2008; Walker & Myrick, 2006). While the narrative approach is similar in terms of the goals of my study, it was not chosen because it focuses on telling the story of one individual's or one group's experience and does not analyze across different cultural groups; I also wanted to focus more on themes derived from data and using quotes as a supplement, instead of focusing on direct quotations (Creswell,

2006). Finally, the case study approach was also not appropriate because it analyzes a group in a bounded system and does not focus on interpreting meaning from a shared experience of the group members (Creswell, 2006).

Research Questions and Central Concepts of the Study

Using the phenomenological approach, the research question was written to address finding common themes from a shared experience of a small group of people. For this study, there are two research questions: What are common themes experienced by culturally diverse partners who have completed water hygiene educational lessons through the Lifewater organization? and What aspects of the program were most meaningful or valuable to the partners? A partner is defined here as an individual from the community who works in some capacity with a nongovernmental organization and who has completed a training course by Lifewater to learn water hygiene curriculum and then disseminates the curriculum throughout his or her home community. The goal was to analyze data from interviews with these partners to discover common themes from this shared experience in order to help identify what content should be included in future water hygiene curriculum. More in-depth discussion of the specific interview questions and how they align with the main objectives for the study will be discussed below.

Since the goal of the research questions was to understand what aspects of the water hygiene program were most meaningful to participants in a cultural context, the idea of culture needs to be defined and discussed. The concept of culture is difficult to define as it encompasses any learned and transmitted human behavior. However, in this study culture is related to health, and since health is “a complete state of physical, mental

and social well-being, and not merely the absence of disease or infirmity” (World Health Organization, 2005, p.1), I analyzed only aspects of culture that related to this idea of health. During the literature review, I found that the most frequent concepts of culture in studies relating to this health topic focused on the knowledge, attitudes, and preferences (KAP) or beliefs of participants (McDonald et al., 2010; Rabi & Dey, 2013; Sibiya & Gumbo, 2013). Therefore, the interview questions (discussed below and found in Appendix A), used these terms to refer to cultural aspects of the participants.

Role of the Researcher

In qualitative research, the researcher acts as the data collection instrument (Creswell, 2009). This must be taken into account to avoid researcher bias and to ensure that the data collected are reliable and valid; I, therefore, needed to explain the role of myself as the researcher and how this could impact collected data and its interpretation; I also used thick description for my interview data (Miles et al., 2014; Patton, 2002).

Relationships With Participants and Researcher Bias

While I did not have a personal or professional relationship with any of the participants, I do have a relationship with the program manager and some of the field trainers working at the Lifewater organization who conduct the training of potential participants (i.e., the partners). I have been interning with the Lifewater organization since 2013 and have helped to write and revise current water hygiene curriculum for them. I work closely with the program manager, and she was the person who provided me with contact information of program graduates who were eligible to be in my study,

after I received approval from Walden's IRB. However, I am not a paid staff member of the organization and did not know any of the potential participants.

Additionally, I have lived in Africa and Asia and have been personally affected by waterborne illness. While my relationship with Lifewater staff and previous experiences with the health issue of focus could have led to researcher bias, I strived to be open and honest about whether my background could color the collection and interpretation of data during collection and analysis (Creswell, 2009; Patton, 2002b). Researchers cannot be completely objective, but they should try to reduce bias as much as possible. To limit researcher bias, I addressed how my specific personal experiences may have contributed to my particular interpretation of the data (Maxwell, 2013). For example, my anthropological background, training, and experiences, and having previously lived in rural parts of Uganda, may have given me a unique perspective to interpret the data collected for cultural themes. One way I addressed this potential limitation is through using member checking (or respondent validation), in which I provided the participants with conclusions I drew from their interviews to see if I had interpreted their responses reliably (Cohen & Crabtree, 2008; Creswell, 2013; Maxwell, 2013). Additionally, I used an interexaminer approach with my dissertation chair (V.M.) acting as my second examiner to ensure the reliability of my coding analysis.

Methodology

The method of inquiry for this study was qualitative and the phenomenological approach was selected to identify meaningful common themes from a shared experience. Phenomenology is used when a researcher aims to understand how participants in a

shared experience make sense of that experience, and what was meaningful for them from that experience. It was my hope that by using this approach I could find common themes that could be built into future water hygiene curriculum to make the lessons more effective and culturally relevant (Creswell, 2013a; Groenewald, 2004; Holstein & Gubrium, 2005).

Participant Recruitment Logic

In this study, I interviewed Lifewater partners to identify meanings from a shared experience of participating in a water hygiene educational training course. These partners are influential people in their communities who work in some capacity with a local nongovernmental organization; examples include health workers, field trainers, or program managers (P. Crane, personal communication, September 12, 2014). In 2014, water education trainings (specifically using the mWASH curriculum) occurred in Malawi, Bangladesh, and the Democratic Republic of the Congo; training also occurred in early 2015 in Ethiopia (P. Crane, personal communication, September 12, 2014). The criteria to recruit participants were partners who had completed the training through Lifewater and who were now in charge of disseminating the new information to their communities. All participants spoke and read English fluently, regardless of their ethnicity or cultural background. Because Lifewater staff and volunteers have been working with these partners, I confirmed prior to data collection that all partners did speak English and had access to the Internet and teleconferencing technology.

Sampling Strategy and Justification for Number of Participants

The sampling strategy selected for this study was purposeful sampling and specifically Delphi sampling. I had planned to interview at least five partners by the spring of 2015 and was able to interview a total of six. The selection of such a small sample was justified through the use of Delphi sampling and because I interviewed only those who met specific criteria (Lifewater partners who have completed water educational training). Additionally, because the original population of people who met these criteria was small, a small sample size was valid (Hanson & Keeney, 2000).

Saturation and Sample Size

As discussed above, using the Delphi technique, my sample was justified at a sample size of six participants, but methods were also taken to increase the validity and reliability of data (Hanson & Keeney, 2000). While quantitative methods involve using large samples to achieve generalizability of study results, qualitative methods involve the goal of representativeness, which can be achieved with as small a sample size as three (Englander, 2012). This means, according to Englander (2012), that results from a phenomenological study with small samples may not be generalized in a broad sense, but the results can be applied to other studies by applying the meaning of the phenomenon to other similar cases. Therefore, even with a small sample size, I am confident that my data collection techniques gathered a holistic portrait of available data that allowed me to analyze and have confidence about the conclusions I drew from these data.

Instrumentation

This qualitative, phenomenological study involved instruments for the entire process of data collection and the instruments used to form specific research questions for the interviews. The instrument for the entire study was myself, as the researcher (discussed more below), and the interview questions (found in Appendix A) were based on the theoretical orientation and existing instruments that were tailored to fit this specific study.

Data Collection Instrument and Source

The researcher is the data collection instrument in qualitative research because of the naturalistic environment of this type of research (Creswell, 2013c). The researcher collects data through behavioral observations, direct questioning, or examining documents; even when researchers use a protocol for collecting data, they are still the key instrument and do not rely on instruments created by others to collect or analyze data (Creswell, 2013c). When using interviewing as a data collection technique, the researcher is using a subject-subject or subject-phenomenon format, in contrast to the usual subject-object format of quantitative methods (Englander, 2012). As the data collection instrument, I gathered data through in-depth interviews with Lifewater partners (including a primary and follow-up interviews), and I took notes, recorded these interviews, used member checking, and used intermember agreement to increase the reliability of data (Cohen & Crabtree, 2008; Creswell, 2013; Maxwell, 2013).

Source for Data Collection Instrument

For interview questions, I employed a similar format of existing instruments from Englander (2012) and Groenewald (2004). The focus of interview questions should be to discover the meaning of a specific phenomenon in order to then compare interview data to find shared meanings (Englander, 2012). This is best done through a semistructured interview technique (Dicicco-Bloom & Crabtree, 2006; Englander, 2012). I used an expert panel, comprised of two staff members of Lifewater, to pretest and measure the accuracy of the research questions before conducting the actual interviews for the study. Because I have a small potential sample size, this step increased the rigor of research and increased my confidence in my interview questions and data analysis (Edwin & Hundley, 2002). The two staff members of the Lifewater organization were involved in the water hygiene program as community health educators but were not identified as partners and were not part of the study sample.

Interview questions were constructed based on Englander's (2012) interview questions from a phenomenological psychological study, but that were modified for this specific study. Additionally, Question #5 is based off of an instrument used by Groenewald (2004). The interview questions connected to the two research questions and to the phenomenological approach by analyzing for meaning from a shared experience (Holstein & Gubrium, 2005). In the interview questions themselves, the aspect of culture was represented by the discussion of attitudes, preferences, or beliefs the participants hold.

How Instruments Efficiently Answer Research Questions

When responding to the interview questions, participants discussed their experience and what was meaningful to them from participating in that experience. This shows the phenomenological approach. Additionally, the information collected and the shared themes drawn from data analysis were consistent with the theoretical foundations for this study. For example, the ecological model holds that cultural aspects and knowledge, attitudes, and preferences shape a person's experience and this was a major factor in identifying and analyzing emerging themes from the interviews (Sallis et al., 2008). The hygiene improvement framework also holds that knowledge is a contributor to disease prevention, and that community participation and support play a key role in the prevention process (Storti, 2004). By gathering data on the perceptions of and meanings obtained from a shared experience, themes shared across participants also aligned with this theoretical foundation and led to meaningful conclusions.

All of the interview questions were written in a way to help me identify aspects that were meaningful for participants, or that had the most value, and these answers were compared across cultural groups to find shared themes. The open-ended structure of interview questions, along with the opportunity for follow-up questions allowed me to obtain thick descriptive data (Patton, 2002a). This technique also aided me in describing the partners' experiences, which may help to streamline future curriculum to focus on aspects that are regarded as most important to those participating (Patton, 2002a).

Criteria on Which Participant Recruitment is Based

The specific criteria that participants must have had in order to participate included 1). completion of a Lifewater education course on water hygiene education; 2). completion of the program by the spring of 2015; 3). ability to speak English; and 4). ability to communicate via teleconferencing and Internet technology (e.g., Skype, telephone, and email). The program manager at Lifewater assisted me in contacting and communicating with partners, and also to them the benefit of participating in the study (i.e., it benefits the Lifewater program and therefore will be more effective in improving health in their communities and communities like theirs). However, it was stressed that participation was completely voluntary and the partners were in no way be penalized if they did not participate in this study. The program manager established the initial contact for me, and then I communicated via email and teleconferencing with the six participants to explain the study, obtain informed consent, and establish rapport.

Procedures for Recruitment, Participation, and Data Collection

Data were collected through interviews with Lifewater partners who had completed the Lifewater training program. Educational programs were conducted in 2014 in the countries of Malawi, Bangladesh, Democratic Republic of the Congo, and one program was conducted in Ethiopia in early 2015 (P. Crane, personal communication, September 15, 2014). Participants in these programs are the partners who were contacted to participate in this study. The program manager for Lifewater made the initial contact with potential participants and explained to them the study I wanted to conduct. She asked their permission for me to contact them via phone or email (whatever was more

convenient for the partner). Once I contacted I explained the study in detail and also obtained informed consent via email and/or faxed documents. After this form was received, I scheduled the primary interview with each partner based on his or her availability and access to teleconferencing software. I also scheduled a time for a follow-up interview at the end of the first interview. I remained flexible and open to the possibility that interviews might have needed to be rescheduled to fit with the partners' availability. I use Skype technology to conduct the interviews, when possible, and interviewed by telephone if weather or connection problems made Skype not an option. I took brief notes during interviews to help in the transcription process. Interviews consisted of the primary interview that lasted between 30-45 minutes, depending on the detail interviewees give and the follow-up questions asked, and one 30-minute maximum follow up, conducted within two weeks of completing primary interviews. Data were collected and analyzed with the social constructivist, ecological model, and hygiene improvement framework as guides (Sallis, Owen, & Fisher, 2008; Storti, 2004).

I used an expert panel of Lifewater staff members to calibrate my interview questions before I interviewed any partners. This involved interviewing two Lifewater staff members who act as community educators in the field but who are not identified as partners or included in the sample for this study. These staff members teach the water hygiene curriculum in the field and the use of this panel helped ascertain if the interview questions were easily understood, if they identified cultural themes, and if they were unbiased. With their feedback I made some changes to the interview questions before I interviewed the actual partners.

Data Analysis Plan

Data were analyzed using the ecological model and hygiene improvement framework, as well as the interpretive and constructivist approaches as guides (Creswell, 2013a; Patton, 2002a; Richard et al., 2011; Storti, 2004). The data collected were first transcribed and then analyzed for meaning and coded in order to find common themes. These theoretical and conceptual approaches allowed me to analyze the data collected via the interview questions in a way to interpret the perception of the shared experience by each partner, and to look for the essence of meaning that partners shared in participating in the experience. Data were analyzed using NVivo to identify themes that showed what aspects of the water education program were most meaningful to the participants, including the overall experience from the partners' perspectives; the specific aspects of the program the partners found meaningful; how the program impacted their attitudes, preferences, and behaviors; and the common themes identified across partners from different cultural backgrounds. Using member checking allowed me to determine if I had interpreted participants' responses accurately, which will increase the reliability of the results (Cohen & Crabtree, 2008; Creswell, 2013d; Maxwell, 2013a). Interexaminer agreement was also used to increase the validity and reliability of codes, with my dissertation chair (V.M.) acting as the second examiner (discussed more below).

Interviews and interview notes were transcribed immediately after the interviews to ensure accuracy in recall of the information (Janesick, 2011). When analyzing data with NVivo software, I wrote memos in the columns to help identify possible patterns or themes; I use categorizing (e.g., developing nodes to help in coding) and I color-coded

data to preliminarily identify themes or patterns (Bergin, 2011; Bradely et al., 2007; Maxwell, 2013a). Analysis included applying nodes in the transcribed interviews, which helped create codes, which then helped create categories and finally themes (Miles et al., 2014a). Instead of using pre-coded strategies, I agreed with Maxwell's (2013a) suggestion of using substantive and theoretical categories that develop during analysis and cannot be predetermined. These follow inductive coding and emerge as the researcher identifies patterns, then categories, and finally themes while transcribing and initially analyzing the data (Miles et al., 2014a; Patton, 2002). I waited for codes to become apparent as I begun analysis because I wanted to stay flexible during the analysis and data collection processes.

NVivo software was selected for analysis because it allows a researcher to record memos into transcribed field notes, code for themes, and visually present relationships between variables (QSR International, 2013). During the coding process, I first coded the data to try to separate any possible bias from the data, including my assumptions or interpretations that may color how I saw the data; this can also be referred to as bracketing and is the reason I am using the Husserlian and not the Heideggerian phenomenological approach (Groenewald, 2004; Reiners, 2012). I then extricated units of meaning connected to the phenomenon being analyzed. Once identified, the units of meaning were highlighted in the software program and notes entered for each unit. I then arranged codes into relevant themes (Centers for Disease Control, 2013; Creswell, 2013d; Merriam, 2009). Specifically, I used the manual coding option in NVivo, which allowed me to select and code content from entered text (i.e., transcribed interview responses); I

also created nodes, or collections of specific areas of interest, coded these nodes and organized them in a hierarchy, and used these to create final themes from the data (QSR International, n.d.). For example, one node was ‘motivation to change behavior’ and this led to the category of ‘children’s health.’

Issues of Trustworthiness

Qualitative studies do not yield the same results as quantitative studies in terms of validity because samples cannot be randomized and because results have not been statistically analyzed in order to be generalized; however, that does not mean that qualitative methods do not lead to important, usable study results (Creswell, 2013c). Validity refers to how well the instrument used in a study measures what it was intended to measure, and reliability refers to how consistent these measurements are (Creswell, 2013e). The use of the aforementioned expert panel helped me gauge the accuracy of my interview questions, in order to increase the confidence of my instruments and findings. However, methods cannot guarantee validity; validity is a separate part of the research process and evidence is needed to ensure that threats to validity have been addressed (Maxwell, 2013b).

Interexaminer Reliability

One way to do this is to limit researcher bias, which is addressed below; another way to increase validity and reliability occurred during data analysis when my dissertation chair (V.M.) acted as the second examiner for interexaminer agreement for codes. This type of agreement involves two raters who check off what categories the codes created fall into; they set up a percentage that they must agree (e.g., 85%), which

shows a high level of agreement between different coders (Trochim, 2006a). Steps must also be taken in these types of studies to increase data credibility, transferability, dependability, conformability, and reliability.

Credibility

Credibility includes the rigor of data collection techniques, the reliability of the researcher, and the alignment of qualitative theory and methods. It is thought of as the equivalent of internal validity in quantitative methods (Trochim, 2006a). To increase the credibility of results, I needed to limit researcher bias and show that I was aware of how my specific background may have impacted the interpretation of study results (Maxwell, 2013b). This was especially important during the interview process, as I was acting as the instrument of the study; while I could not remove my background from the study, I needed to address how my background gave me a particular interpretation of the data (Maxwell, 2013b). One way I limited this bias was by using member checking (also known as respondent validation), in which I had participants review conclusions I had drawn from their interviews to see if I had interpreted their responses reliably (Creswell, 2013c; Maxwell, 2013b). Another technique was interexaminer reliability, which was discussed above.

Transferability

Transferability refers to the relevance and soundness of study results (Trochim, 2006b). This is similar to the idea of generalizability in quantitative studies, although true generalizability cannot be reached in qualitative methods. To increase transferability, I thoroughly explained the context of the research study and any assumptions made during

the study; while not all of the results may be applicable to other studies or communities, the hope is that some part of the results may be used in the future in other projects (Trochim, 2006b).

Confirmability and Dependability

To increase confirmability, or the degree to which the results obtained can be confirmed or verified by others, I was clear and forthright with my methodology and procedures to obtain and analyze data, and I also discussed how my choice of methods and theory influenced the study results (Miles et al., 2014b; Trochim, 2006a). For example, the focus on culture and meaning led me to choose qualitative methods, and the focus on a shared experience led me to the phenomenological approach, which then led to ecological models to interpret how knowledge and preferences affect what is meaningful, as interpreted by participants; this led to using an interpretive approach to identify themes in interview data (Patton, 2002a; Taylor, n.d.).

To increase dependability, or the measure of how reliable data are in when using methods that cannot control for factors and that can change in their context, I provided clear research and interview questions and explained the role of myself as the researcher to the data and its interpretation; I also used thick description for my interview data (Miles et al., 2014b; Patton, 2002b; Trochim, 2006a). I justified the sampling procedures through the use of Delphi sampling to legitimize a small sample size and aligned the data with the theoretical foundations discussed above (Miles et al., 2014).

Ethical Procedures

Ethical considerations for this study included that the data collected through interviews included information on people who live in marginalized areas in developing countries. Ethical considerations must focus on protecting the participants; this involves taking measures to keep data anonymous and confidential, and ensuring that the study and its results will benefit the participants and their communities (Creswell, 2013e). Results will also be disseminated to the participants and communities in order to have the participants share in the applied use of the results (Walden University, 2014).

In qualitative research it is often difficult to keep data confidential while also providing thick description of what participants said during interviews; however, addressing this issue during the informed consent stage before data are collected can prevent ethical dilemmas, such as deductive disclosure, from arising during data analysis and presentation (Kaiser, 2010). Action must be taken to prevent anyone from identifying a study participant through the descriptive data in the dissertation. This was a challenge with so few participants, but these participants come from different cultural backgrounds and have not interacted with one another, and I am confident that, using techniques discussed below, I ensured confidentiality of the data responses collected. One approach to promote this was to have measures during data collection and dissemination of study results that prevented the disclosure of participants' identities (Kaiser, 2010). During data collection, I provided proper informed consent and built trust with my participants; during data cleaning I removed information such as names, addresses, occupations,

ethnicities, etc. from the data; and I ensured that all information that could identify participants was not included in the study results (Kaiser, 2010).

Kaiser (2010) noted that obtaining complete confidentiality of qualitative data is very difficult and therefore researchers could also achieve confidentiality by explicitly describing to participants (during informed consent) what data will be collected and how collected data will be used. Additionally, the participants should have a say in how the study results should be disseminated, and these results can be first shared with participants in a form of member checking to ensure that the participants are satisfied with the level of confidentiality; in other words, this adapted version of member checking would ensure that participants feel comfortable that they cannot be identified by the data taken from their interviews (Kaiser, 2010). I did not collect personal health information in this study. I also only interviewed adults; no children or other protected people were participants in this study. I collected data through in-depth interviews utilizing Skype and telephone, and so my main ethical focal points included keeping any personal data confidential, obtaining proper informed consent prior to any interviews, and disseminating the information appropriately to those who participated (Walden University, 2014a).

My dissertation proposal was approved in April of 2015, and the Institutional Review Board (IRB) number and expiration date are included in Appendix B. The submission for IRB approval included ways to ensure confidentiality of data collected, procedures for dealing with emergencies, and informed consent documents (Walden University, 2014b). Once approval was granted, I ensured IRB standards in data

collection and analysis. Part of this was providing informed consent to all participants, which included describing the study and how it intended to benefit the participants; stressing that participation was voluntary and could be terminated at any time, that data would be kept confidential, and that the data were available for the participants to see both during and after the research process, including during the member checking process (Creswell, 2013e). This is discussed more below.

One key aspect in the treatment of human subjects is to provide informed consent, which is an agreement obtained from each participant stating that nothing may be done to the subject (physically, emotionally, or mentally) without them first being told what is happening, why it is happening, and having them fully agree to participate (Walden University, 2014b). To obtain this consent, first the researcher must fully explain the study to each participant, including its potential benefits or harm to participants, as well as that participation is completely voluntary and can be withdrawn at any time (Creswell, 2013e; Emporia State University, 2014).

According to IRB protocol, participants should be debriefed about the voluntary nature of participating in the study during the informed consent process (Walden University, 2014b). This involves informing participants that their participation can be withdrawn at any time, and that they can decline to answer any part of the interview questions (University of Maryland, 2010). Therefore, the informed consent document for this study included the following elements of (a). A statement of the study that describes its purpose, expectations, and duration, (b). A description of any possible risks or harmful elements of the study, (c). A description of the possible benefits for participants and their

communities, (d). A statement that discusses how data will be kept confidential, (e). A statement with information on who is running the study, along with contact information for the researcher(s) and the university, and (f). A statement that participation is voluntary and that participants can refuse to answer any questions or participate in any portion of the study; they may also withdraw their participation at any time (Walden University, 2014b). This document can be found in Appendix B.

Also included in the informed consent document was contact information for myself and the University, as well as information about the IRB approved study, including the IRB approval number. During and at the end of the study I also asked about the participants' reactions to or feelings about the study, if anything during the study felt confusing or uncomfortable, and if there were any part of the study they would like to improve via their feedback and suggestions (Walden University, 2014b). Follow-up interviews were conducted within two weeks of the initial interviews, and I also sent out an email to participants one week after the follow-up interview to thank them for their participation and to discuss means of sharing the study results with the partners.

Summary

Data collection is a very detailed process that must align with the study's theoretical framework and also ensure the ethical treatment of participants and the confidentiality of disseminated results. For this study, I collaborated with the Lifewater organization to identify and contact potential participants. Because the original population I drew from was very small and comprised of people with specific knowledge and experiences, the Delphi technique justified a small sample size of 6 (Hanson &

Keeney, 2000). Data were collected through interviews conducted with Skype technology or telephone and consisted of one primary interview and one follow-up interview.

Interview notes were transcribed and member checking and interexaminer agreement were used to increase validity; data were computer coded to identify meaningful themes of a shared experience (Trochim, 2006a). Participants were asked for their input in how to disseminate study results and informed consent and IRB approval ensured ethical treatment of subjects and confidential information (Kaiser, 2010).

In Chapter 4 I will discuss the process of selecting actual participants, as well as their demographic backgrounds, the specific technique for collecting data, and how data will be analyzed. More detailed focus will be on the confidentiality, validity, and trustworthiness of the data. Ways to display the study's results will also be discussed.

Chapter 4: Results

Introduction

The goal for this qualitative study was to interview partners of the Lifewater organization in order to identify what themes were shared by members, as well as what was held as most meaningful by the members, in order to use this information to make future lessons for the Lifewater organization more applicable cross-culturally. Here I will discuss my data collection methods, study results, and interpretation of these findings.

Purpose and Research Questions

The purpose of this qualitative, phenomenological study was to describe the shared experiences (from the partners' perspectives) of participating in the water hygiene education program provided by Lifewater. To do this, my goal was to conduct interviews with at least five partners, and I was able to conduct individual qualitative interviews with six partners. The goal of the study was to identify common themes from the data that can help staff at Lifewater understand how to work with partners from different cultural backgrounds, which can hopefully help streamline future water hygiene curricula. Identifying common themes held by community members with different cultural backgrounds could help create a collective foundation for water hygiene curriculum that would not have to be rewritten for every new community.

There were two research questions for the study: What are common themes experienced by culturally diverse partners who have completed water hygiene educational lessons through the Lifewater organization that could be used to make future curricula relevant cross-culturally? and What aspects of the program were most

meaningful or valuable to the partners? Partners are defined as influential community members (usually those who work in some capacity with an NGO) who are selected and trained by Lifewater to learn water hygiene curriculum and then disseminate the curricula throughout their home community.

Expert Panel

Since I used a small sample (six participants) due to the specific criteria needed to qualify someone to be a participant, I used an expert panel as a stand-in for a pilot study. Before collecting data, I had a panel of experts (Lifewater staff members) review and provide feedback for my interview questions in order to calibrate the questions before asking participants (please see Appendix C). By taking this step, I was able to pretest and measure the accuracy and comprehensibility of the interview questions before conducting the actual interviews for the study. Because I had a relatively small sample size, this helped to increase the rigor of research and increase my confidence in my interview questions and data analysis. The panel was comprised of two staff members of the Lifewater organization who are involved in the water hygiene program as community health educators but who are not identified as partners and who are not part of the study sample.

Setting

The interviews were conducted via Skype teleconferencing, when possible, but two were conducted via telephone and recorded on my computer because of connection or weather issues. I interviewed six people who work in and/or live in diverse countries, such as Ethiopia, Uganda, Malawi, Cambodia, and Bangladesh. My setting stayed the

same as I conducted the interviews from my home, but I interviewed people from a variety of countries, and therefore the interviews did not take place in one specific setting. Factors that may have influenced the interviews include availability of Internet connection or electricity in the participants' home countries, weather conditions, and availability of participants due to work schedules and time differences of countries. However, I was able to interview each partner on the first try, even though for some of them I had to call back several times due to disconnection.

Demographics and Participation Criteria

There were no data collected on the specific demographic characteristics or health information of the participants. The criteria used to select participants consisted of (a) completion of a Lifewater education course on water hygiene education, (b) completion of the program by the spring of 2015, (c) ability to understand and speak English, and (d) ability to communicate via teleconferencing and Internet technology (e.g., Skype, or similar technology, and email) or phone. The only possible exclusion criterion would be not speaking English fluently. However, all participants from the Lifewater course spoke fluent English because the course they completed was conducted in English, so this did not affect the study. Because the sample was relatively small, I will not include specific demographic information on each participant in this chapter for confidentiality reasons. Both males and females were interviewed, and partners worked in (or had previously worked in) diverse cultural settings of Ethiopia, Uganda, Malawi, Cambodia, and Bangladesh. The partners held a variety of positions, including senior program officer, country director, lead field trainer, and program manager.

The participants were all currently working for an NGO in the area, and therefore were not incarcerated, and were mentally and physically healthy enough to be working full-time in the field. To address these issues, the initial portion of the interview was focused on making the participant comfortable with the process. If there were mental, emotional, or physical barriers, the participants would have been asked if they would like to continue, terminate the session, or reschedule for another time. Interview questions were not related to any of the aforementioned characteristics.

Data Collection

Interviews were conducted via Skype or phone, and I used a program called G-Recorder, which records audio on a computer (g-recorder, n.d.). The audio file was saved as an mp3 on my iTunes application, and a copy was also saved to a folder on my desktop. The files on my laptop are stored under a password and will only be accessed by me. I also took notes during interviews to help with transcription. All participants were informed of the recording, and all had returned a signed informed consent form that included information related to recording audio and storing files under password protection. Once each interview was completed, I used a software program called Dragon Dictate to transcribe the data (Nuance, 2015). Using a headset/microphone, I played the mp3 audio file through headphones and spoke aloud what I heard; the software program transcribed into text what I said aloud. The program was very accurate, and I completed a training program before using the software that helped it calibrate to my voice and vocal inflections, thereby helping accuracy.

Data Analysis

Once the interviews were transcribed, I input the text files into the NVivo qualitative software program. I then used the editing function to go through the transcripts and take out any names and replace these with a coded name, such as “Partner 1.” I also added indicators for who was speaking at each line. For example, if I were speaking, I would put S (for Sarah) followed by the text, and if the partner were speaking, I would put Partner 1 and then the text. This helped the text read like a play and kept clear who was speaking each line of text.

I then began creating nodes in the text; the first nodes I created were either what motivated partners or their community members to enact behavior change or barriers to behavior change. These are what I hoped to use to develop the shared themes that are integral to answering my first research question. Inside the nodes, I created different categories such as “Motivation: Health,” “Motivation: Financial,” or “Motivation: Capacity Building.” The barrier categories included “Barrier: Open Defecation” and “Barrier: Belief Child’s Feces Cannot Make you Ill.” I highlighted text and placed nodes in the text, which the NVivo program saved as quotations for each node created. Table 1 below (Research Question 1) shows the codes created from the node categories and how many examples were found for each, or what types of examples I included to create the codes. I also found a maxim that was used by more than one partner, and I created nodes regarding shared beliefs about water. The saying was “There is no bad water, just as there is no bad mother.” This quote will be analyzed later.

Trustworthiness of Data

Follow-up interviews were conducted to help me clarify any questions I had regarding answers I received to interview questions, and through email, I sent each participant a summary of the main points I had drawn from their interview to check that I had interpreted their answers accurately. The participants could at that time change, add, or delete any information to make my interpretation as accurate as possible. These email exchanges served as member checking to ensure that participants felt they could not be identified from the information I included in my study (Kaiser, 2010). By doing this, I also increased the credibility of the study results and minimized researcher bias (Creswell, 2013c; Maxwell, 2013b). Additionally, to increase credibility and validity, I used intermember agreement, with my chair acting as my second member. During this process, both my chair and I independently coded data that I had collected. After I had analyzed the data, I sent him the themes I had created from my coding and the transcribed interviews so that he could independently analyze for themes to see if our results matched at least 85% (Cohen & Crabtree, 2008; Creswell, 2013; Maxwell, 2013).

While true generalizability cannot be reached in qualitative studies, I clearly explained the context of the study and any assumptions made during data collection and analysis. I also discussed study results and conclusions made from the results in relation to other similar studies in order to make the results more widely applicable. While not all results of this particular study may apply to other studies, my hope is that some parts of these results could be used in future studies or projects or could add to the literature to help address current gaps (Trochim, 2006b).

Through alignment of theory with methodology, I increased the confirmability of the study's results. I attempted to clearly explain my choice of the phenomenological approach and the selection of the ecological model and hygiene improvement model in data collection and interpretation (Patton, 2002a; Taylor, n.d.). Interpretation of results through the chosen theoretical frameworks will be discussed more in Chapter 5. Finally, through the use of the Delphi technique, I justified my small sample size; I also used thick description for interview data and explained the role of myself as the researcher in data collection and analysis (Miles et al., 2014b; Patton, 2002b; Trochim, 2006a). Through these techniques I attempted to increase the dependability of the data and its interpretation.

Results

Results for Research Question 1

For Research Question 1, (themes from the shared experience of partners), I focused on identifying themes that were shared among different partners. There were two categories of themes that I found; the first was motivation, or what acted as a motivating factor for people to engage in behavior change. I also identified a second category, called uniform beliefs about water, in which I coded for commonly held beliefs about water that actually act as barriers to behavior change. Going through transcribed interviews in NVivo, I added a code each time I found a different motivating factor or barrier; I then used these codes to develop five general themes of what motivated partners during the water hygiene lessons and one theme of what acted as a barrier to behavior change.

Table 1

Codes for Research Question #1

Code	No. times in interviews
Children's health	9
Christian message	10
Community/Social support	20
Displacement	3
Empowerment/ Pride	6
Health	8
Holistic approach	5
Saves time	12
Financial	11
Adaptable lessons	3
Children's feces is not dangerous	3
Saying about how water does not harm you	3

From these codes, I then grouped similar codes and used these to develop themes that connected to the first research question regarding shared themes; I then found that the themes could be divided into the two categories of (a) what motivated people to change behavior and (b) what presented barriers to behavior change. The themes I created were as follows.

Shared Themes of Motivations to Behavior Change

1. Health
 1. Children's Health
 2. Displacement
 3. Community Members' Health
2. Christian Message
 1. Being a Better Christian
 2. Merging Spiritual and Scientific Approaches
3. Economical
 1. Saves Time
 2. Saves Money
4. Community
 1. Community/Social Support
 2. Community Capacity Building
 3. Empowerment/Pride
5. Holistic Approach

1. Adaptable Lessons
2. Holistic Lessons

Shared Theme of Barriers to Behavior Change

1. Uniform Beliefs About Water (Barriers)
 1. Idiom
 2. Beliefs About Children's Feces

Shared Themes of Motivations to Behavior Change

Theme 1: Health. The goal of the Lifewater organization is to create and teach water hygiene lessons to people in order to improve their health (Lifewater, 2014a). However, several aspects of health served as motivating factors, including the community members' health, the health of their children, and the health of their entire family, including preventing displacement.

Subtheme: Children's health. For the theme of children's health I included codes that I interpreted as demonstrating how people were motivated to enact behavior change once they learned the change could improve the health of their children or keep their children from becoming sick. Partners' answers regarding this included the following:

And look at the motivation you have when it's their children! You're commenting on their abilities as a father or mother (P5).

You know, the most important factor for them is the lives of their children. They value the lives of their children first (P1).

One thing they've done with this fee [fee for a safe water resource] is also to help build primary schools in the village for the children. This really motivated them

because they saw the changes and they saw the way they get good health and they are really motivated to participate in the program (P2).

Subtheme: Displacement. Displacement refers to the occurrence of family groups becoming separated when searching for resources needed for survival. In developing nations, this usually means that mothers and children become separated from fathers because the former group focuses on obtaining resources such as water, food, and materials for shelter, while the latter group focuses on finding employment to earn money (United Nations Educational, Scientific, and Cultural Organization, 2015). I included the code for displacement in this theme because partners discussed that one motivating factor was that finding a clean water source or learning how to make a local water source safe to drink prevented displacement of families. Without the safe water source, the mothers and children would leave to other areas to find clean water while the fathers remained behind to work. In this way, learning the water hygiene lessons kept the family together:

And when they are affected by drought, the second motivating factor is minimizing displacement, this type of internal displacement. If there is water they stay; children can go to school, mothers can work at home, and fathers can go away to work, but most of the family stays around water points so those are the most important things for them (P1).

Subtheme: Community members' health. The third part of this theme is the community members' health. This is controversial as a motivating factor people use to enact behavior change because it came up as both a shared motivating factor and as a barrier to facilitate behavior change. When health was seen as a motivating factor, it was

primarily because people either saw a direct decrease in illness after changing behavior, or because people in one village who did not receive the lessons saw that another village that did receive the lessons did in fact have lower rates of illnesses. This comparative aspect led some villagers to want to learn the Lifewater lessons to disseminate it to other areas:

People see those villages who got a chance to get safe water and the other people, they bring their application for such services (P4).

They understand now that this can affect their health. And now they are really using the knowledge; they are covering the water when they collect it and bring it home and, really, it's a nice improvement to their health (P2).

However, two partners also expressed that sometimes the Lifewater lessons that focus only on health as a motivational approach to change behavior are not very effective. Just as in American culture, people in other cultures are motivated to enact behavior change because of their knowledge, attitudes, behaviors, and social/physical environment, and many times improving their own health is not a motivating factor; this is why the ecological model works well in this study to address the different levels of factors that can influence behavior change (EFIC, 2014; Sallis et al., 2008). These partners felt that other aspects (e.g., status or pride) were more effective motivators, or that other factors were being used in conjunction with health promotion to enact actual behavior change in the communities:

The employees we are training were taught that you have to teach people that this change is good for your health, but we have seen in the research that this is

not always the case for what motivates people. Health is not a huge motivator.

There are other factors that are more motivating. Pride, their position the community, economic things, these are all huge motivators (P5).

We know scientifically it is not always health that promotes people, a lot of times it is not health that promotes people (P6).

Theme 2: Christian message. The Lifewater organization uses mWASH curricula (missional water, sanitation, and hygiene), which includes aspects of Christianity in addition to traditional water hygiene education in its lessons (Lifewater, 2014b). Many partners found the inclusion of the Christian message to be a motivating factor to behavior change. This included merging the scientific and spiritual approaches and motivating people by showing that the lessons make them better spiritually; in chapter five I will discuss how some partners also used the Christian message to address certain behaviors that were difficult to change, such as open defecation.

Subtheme: Merging the science and spiritual message. The second theme was the Christian message Lifewater includes in its mWASH lessons. These lessons merge scientific and spiritual aspects, which allow a biocultural approach to teaching villagers about safe water and water hygiene practices. Partners discussed that some people were convinced to change by learning about the fact that water is contaminated, or how water can cause diarrheal diseases. However, others were motivated more by hearing that proper water hygiene practices are a spiritual concern. Therefore, some people were motivated when they are presented the information in a way that made them feel that they were improving themselves spiritually, or when information was presented in both a

scientific and spiritual way, therefore merging the scientific and spiritual aspects of the lessons.

So the pastors, they support it, they love it and they [community members] say, “we learn a lot because of this training.” They say you know, you didn't read about this in the Bible, we didn't understand it this way, but now they use it and they apply it and this is a very important aspect (P1).

Subtheme: Becoming a better Christian. Other partners discussed that the mWASH lessons motivated people by showing them that improving their health and hygiene behaviors would make them better not only physically but also spiritually. This was reinforced when people would go to religious services and hear the same message. For example, some people became convinced to change behaviors once they learned the lessons and then heard their pastor discuss the same ideas during a church service:

I remember there is one lesson, I think it's from Deuteronomy, where the Jews are told by Moses to go to the bathroom outside of camp because God walks around in the camp and doesn't want to step on that (laughing). We did that in Ethiopia and people were just floored. They reacted really strongly and said, “if it's in the Bible and God says we have to do this then we have to do it” (P5).

They [community members] are not experiencing health the way God intends them to, and it doesn't have to be that way. You can take specific steps to become healthier and that God loves them and desires them to be healthier (P6).

Theme 3: Economical The third theme I created from the data is economical, including that the lessons save the participants both time and money, and these can be seen as motivating factors to change behavior.

Subtheme: Saves time. As partners pointed out, people in these communities spend every waking hour just trying to survive. If Lifewater staff appeared to add extra time or energy to the people's day, the community members would not be accepting of the behavior changes being taught. One approach in the Lifewater lessons is to teach the idea of investment, whether this pertains to time or money. From talking to partners I learned that when they are teaching people, if it seems to people that washing hands or boiling water is an extra step, the staff have to show that these practices will actually save time or money in the future and make the people's lives easier if they want people to accept the change.

Subtheme: Saves money. Partners discussed that saving money was also a huge motivator in getting people to participate in behavior change taught through Lifewater lessons. Once villagers saw that they or their children were sick less often, or that they were saving money in not needing to travel to a doctor or take medicine, they began to realize that proper sanitation and hygiene does make their lives better and easier:

We know scientifically it is not always health that promotes people, a lot of times it is not health that promotes people, and time, absolutely is one thing that we use. We have a specific tool and a specific demonstration to show how time and money are affected when you wash your hands, how you get more time and money when you do this (P6).

And what is meaningful about these lessons is that we're teaching them new ways to do things and they are saving them time and they are more effective. If you're teaching someone something that is very time-consuming, you know, this method to sanitize water that takes three days, why would they do that? That is not worth their time. It's ridiculous to teach something that is not convenient to do (P5).

Just as some people are motivated by the spiritual aspect, others are motivated when they see evidence of the behavior change working, or when they can actually calculate their savings:

We have calculated with them a mathematical way why you should support this [behavior change]. And our baseline survey, lots of people, we have found that they're spending lots of money for their treatment. So that's what we discuss with the community people. If you do that change we believe you will save, you will be able to save your money. So that's one point of view that they want to save their money, and on the other hand, there are lots of working days they have lost due to their sickness. So that's why, calculating with them, we have inspired them (P3).

Theme 4: Community. The fourth theme that emerged from the data is community, which involves several aspects, including having the support of the community to inspire or facilitate behavior change, fostering capacity building, empowering the community, and having pride in one's actions. Behavior change is very difficult to bring about, and one aspect that expedites this is having a supportive

environment. The ecological model has as one of its aspects the social environment, which is imperative in not only bringing about behavior change, but also sustaining it (Sallis et al., 2008). Additionally, the hygiene improvement framework merges aspects of the physical environment, knowledge, and social environment all in a participatory framework, showing how important social acceptance and support are to enacting sustainable change (Storti, 2004).

Subtheme: Community/social support. Partners felt that people were inspired to change because of a supportive environment and that adopting novel and (to them) strange behaviors was aided when the community supported and promoted the changes:

And you receive a lot of support and cooperation. And the work goes fast, the change goes fast because you are in their hearts and minds (P1).

Yes! Those people [who go through the program] force others to do it and this has a lot of value (P4).

Subtheme: Community capacity building. Partners also felt that the aspect of capacity building, which is a goal of the Lifewater program, helped create an environment that facilitated healthy behaviors:

And they know this is hard because of the cost, but they have in their mind themselves the need to do it, their sanitation system needs to be developed. Their system for maintaining their hygiene they are changing by themselves the use of unclean water to wash their hands (P3).

In the software part, even though they are not health extension workers, they can see that they can make real changes in the community to change risky behaviors into healthy ones (P4).

Our community has benefited a lot from the lesson and it's changed their lives really through capacity building, access to safe water, and sanitation (P2).

Subtheme: Empowerment and pride. One of the most important aspects for the partners was that the lessons created a sense of empowerment for the community, which was a huge source of inspiration for the community members to sustain the behavior change, and for other communities to see the benefits the change brought and to also want to adopt healthy behaviors. This sense of self-confidence from learning information that would make them in control of their health also instilled a sense of pride in community members. The main idea was that the people themselves decided what to do and came together to make it happen:

Yes, you know with open defecation we use the total sanitation approach; this approach gives ways for collective decisions by the communities themselves and we create various forums so the community members themselves can decide what behaviors to do (P4).

They have learned this in a very simple way and practical way in a way that they can really go out and do everything on their own and that has opened her eyes (P1).

The community people are eager and by themselves they will tell the people what they need to change. And so for your other question about the community, it has been benefiting through change made by themselves (P3).

There are other factors that are more motivating. Pride, their position the community, economic things, these are all huge motivators (P5).

Theme 5: Holistic approach. The fifth theme I found was that people were motivated by the holistic approach of the program, which included the adaptability of the lessons and that the lessons merged the scientific and spiritual approaches (also discussed above).

Subtheme: Adaptable lessons. While the Lifewater lessons are written with a Christian perspective, one partner discussed how those lessons are modified to fit with Muslim communities:

...they have to adapt to different situations and adapt the lessons to the community, so that's one good thing about the curriculum too, is that it's a little less scripted and that way they don't feel like it's just being read but they have something to direct them (P6).

Subtheme: Holistic lessons. Partners also discussed the holistic aspects of the lessons, including merging the spiritual and scientific approaches (discussed above), as being a motivating factor in helping enact behavior change in communities. They discussed that it helped them to have both scientific and spiritual approaches to use with different people because some people were motivated by one approach and others by the second approach. This holistic angle was especially helpful in addressing behaviors that

are difficult to change, such as open defecation. This will be discussed more in chapter five.

And another compliment about it is its holistic aspect, which enhances the commitment of the people (P1).

And people are motivated because of the holistic approach (P1).

Discrepant cases.

Addresses community's attitudes, beliefs, and preferences. One surprising outcome of these data is that only one partner discussed that addressing the community's attitudes, beliefs and preferences could be a motivating factor, even though this is widely cited as an important component of interventions to facilitate behavior change (Deal et al., 2013; Fisher, et al., 2011; Minkler & Wallerstein, 2012; Sibiya & Gumbo, 2013). Multiple partners mentioned that these aspects of the lesson helped them learn successful ways of presenting the material to diverse groups and increased the community's chances of connecting with, but only one directly mentioned attitudes and beliefs. This gap will be addressed more in chapter five in the recommendations section.

I think one influencing factor just for my personal opinion is the fact that we address attitudes and culture and beliefs in addition to just knowledge. I don't know why but I just feel that, yes I know they want to be healthier, but most people have heard this message before and they know that theoretically hand washing will help them, but an underlying factor that might make that impactful is getting to the root of the barriers and approaching from that angle (P6).

Shared Theme of Barriers to Behavior Change

A second type of theme that emerged during data was not what motivated people to accept behavior change but rather what acted as a barrier to behavior change. This theme still connects to the first research question because it is a theme shared across the partners, but it focuses on uniformly held beliefs regarding water and how water can make people ill.

Theme: Uniform beliefs about water. Two sub-themes emerged from the data, including a common idiom regarding how people view water, and a shared belief about children's feces.

Subtheme: Idiom (Saying about how water does not harm you). The first sub-theme is the common saying about water being unable to harm someone. The idiom is “there is no bad water like there is no bad mother,” and it refers to the idea that water is essential to life, so just as a mother cannot be ‘bad’ for her child because she is vital for his or her life, water cannot be ‘bad’ for a person either:

There is a saying, “there is no bad water, like there is no bad mother” (P1 & P2).

Subtheme: Beliefs about children's feces. The second shared belief that creates a barrier to behavior change centers around a commonly held idea that infant and children's feces cannot harm anyone because children are innocent and incapable of harming people:

On the other hand, in sanitation there is the great belief that in children's feces there is no germs (P3).

There is one other thing I wanted to mention, there is one area where I got a lot of pushback from people and that was the children and infant feces in both Africa and Cambodia. They would not believe me that children's feces is as dangerous as adults. They did not think that children and baby's feces is dangerous and can make you sick (P5).

What can be interpreted from these findings is that it is vital to both address clean water and water hygiene in these areas and to address the underlying cultural beliefs and attitudes in order to change people's minds and behaviors, especially when those beliefs or attitudes create barriers to enacting healthy behaviors.

Results for Research Question 2

For the second research question, I focused on identifying what was held as most meaningful from the experience of partners participating in the water hygiene program given by Lifewater. Through the phenomenological approach I wanted to identify shared experiences, and the Lifewater program manager had expressed interest in discovering what was held as meaningful by partners who spent so much time and effort teaching the organization's lessons to people in vastly different cultures, as well as what was meaningful to the people receiving the lessons.

Table 2

Codes for Research Question 2

Code	No. times in interview
Inspiring change to happen	5
Saving people time and money	6
Capacity building	3
It takes effort to make change habitual	2
Holistic approach reaches more people	2

The themes that became apparent were:

1. People Felt they Made a Difference
 - a. They inspired change to happen in communities
 - b. They saved people time and money
 - c. They increased capacity building
2. People Felt the Change was Sustainable
 - a. The program was holistic and reached more people
 - b. The program made change habitual

Shared Meaningful Themes

For the second research question, I analyzed codes for what was most meaningful for the Lifewater program participants and developed two categories: (a) what the partners felt was most meaningful to them in going through the program and (b) what they felt was held as most meaningful by the people they were teaching.

Theme: People felt they made a difference. The first theme that became apparent is that people identified that what was meaningful to them from participating in the Lifewater program was that they made an actual difference to people in the communities in which they worked. This included inspiring change, making behavior change efficient and beneficial to community members, and increasing capacity building.

Subtheme: *They inspired change to happen in their communities.* Referring to the first shared meaningful theme, what I concluded is that partners found that the program inspired change in the communities in which they worked, and what was most meaningful to them from their experience of participating in the program was that they felt they had actually made a difference in their community. This included that the people who were taught the lessons actually used what they learned, which led to improved health outcomes or lower rates of diarrheal disease, or that people felt empowered to take charge of their own health. Partners also mentioned that the people to whom they taught the lessons also frequently cited that the most valuable part of their educational process was being better informed and better able to make health decisions:

They have learned this [the water hygiene lessons] in a very simple way and practical way, in a way that they can really go out and do everything on their

own and that has opened her eyes. Their thinking has really changed and that has really ignited a lot of changes among the community (P1).

Lifewater program is very community-oriented and comprehensive.

Communit[ies] that sustain change...and community people will [be] inspired to desire to change and take action (P3).

Subtheme: They saved people time and money. This theme also included that partners felt they made people's lives easier by saving them time and money. As partners discussed, people will not accept change if it required more effort or expense on their part, and the partners felt the Lifewater lessons were meaningful because they demonstrated to people that change would benefit them and actually save them resources.

And that is what is meaningful about these lessons is that we're teaching them new ways to do things and they are saving them time and they are more effective (P5).

Subtheme: They increased capacity building. The third aspect of this theme regarding the most meaningful aspect of participating in the program was that the program helps promote capacity building and social development, and this also makes it easier for partners to teach the materials to different groups, and for community members to pass on what they have learned to others.

Lifewater program is very community-oriented and comprehensive.

Communit[ies] that sustain change through triggering is most useful, where the community people will [be] inspired to desire to change and take action (P3).

Normally almost all portions and objectives of the Lifewater program is special to me but community capacity building is meaningful for me. That was really interesting to me because it has changed our community's life, it's well organized, and it has spiritual and scientific approach (P2).

You know, this training, even beyond the benefits in regard to water sanitation and hygiene, has a lot of value for the people because the content of the training is unique, actually, when we compare it to the other training other people are using in this country. It is unique, you know because it contains relevant information to the locals' situation. It addresses the gaps in knowledge, that's one. It has also the social development aspect, the community organization, the community participation (P4).

Theme: People Felt the Change was Sustainable. The second theme of what was most meaningful in the shared experience of program participants was that they felt the change they enacted was sustainable. Often, interventions focus only on installing technology that will provide people with purified water, but research has shown that these interventions are not as successful long-term when compared with those that include educational components to address underlying factors (Cairncross et al., 2010; Prüss-Üstün et al., 2008; Zwane & Kremer, 2007).

Subtheme: *The program was holistic and reached more people.* What was interpreted from this theme's data was that people felt that the change that took place because of the Lifewater lessons was sustainable. Several partners attributed the program's sustainability on the holistic aspect of the lessons, including merging the

scientific and spiritual approaches. This helped them reach more people and gave them more tools to address behaviors that were difficult to change. Partners also discussed that the people they taught were more accepting of the lessons and found more value in the lessons because of this holistic approach:

[What was most meaningful to me] is to know that their [the community members'] experiences are not, you know, they are not experiencing health the way God intends them to, and it doesn't have to be that way. You can take specific steps to become healthier and that God loves them and desires them to be healthier (P6).

I really think the holistic aspect has inspired the staff, the front-line workers. Lifewater designs the curriculum and prepares people, trained people, but unless they really put it into practice it will not bring any change. And people are motivated because of the holistic approach (P3).

Subtheme: The program made change habitual in communities. Secondly, partners felt that what was meaningful from their shared experience was that the changes they enacted were sustainable and became habitual for community members. They felt that their efforts were not meaningful unless they could leave the community and be confident that the community members were well equipped to continue to engage in the healthy behaviors they were taught.

You know, this training, even beyond the benefits in regard to water sanitation and hygiene, has a lot of value for the people because the content of the training is unique, actually, when we compare it to the other training other

people are using in this country. It is unique, you know because it contains relevant information to the locals' situation. It addresses the gaps in knowledge, that's one. It has also the social development aspect, the community organization, the community participation (P4).

We want to make sure that the people are accepting those changes and they are accepting different attitudes towards water after this education (P6).

But, the efforts, the knowledge they got from the trainings the communities made this change a habitual thing (P4).

Summary

After analyzing data from interviews with partners regarding their shared experience of participating in Lifewater's water hygiene program, three main conclusions emerged. The first included themes that partners shared during the experience, especially in regard to what they felt motivated people to engage in behavior change through the water hygiene lessons (RQ1). Regardless of cultural background, participants cited very similar motivating agents, including the health of themselves and their children, saving time/money, empowering the community, and being a better Christian. In addition to this, I also found cross-cultural beliefs about water that could be barriers to healthy behaviors, including the belief that water is essential for life and therefore cannot make a person ill, and that children's feces is not harmful; (RQ1). These beliefs will be addressed more in chapter five, in which I will also explore other potential barriers to behavior change and some suggestions of how to remove these barriers.

The third conclusion from these data is what partners found most meaningful from their shared experiences (RQ2). The two areas that partners consistently discussed were that the Lifewater lessons helped change people's lives and that the program bettered the community. These are very positive responses from people with very diverse backgrounds, and I think this conclusion will be helpful in developing future curricula for different cultural groups. In Chapter 5 I will summarize this study and its findings and will offer suggestions for how these data can be disseminated and used by the Lifewater organization to improve cross-cultural curricula development.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

Purpose and Nature of Study

The purpose of this qualitative, phenomenological study was to describe the shared experiences (from the partners' perspectives) of participating in the water hygiene education program provided by Lifewater. For this study, I interviewed six partners with the goal to identify common themes that can help staff at Lifewater understand how to work with partners from different cultural backgrounds. I also hope that the results can be used to help streamline future water hygiene curricula and make it more culturally relevant to participants, and therefore more easily accepted and implemented. Identifying common themes held by community members with different cultural backgrounds could help create a collective foundation for water hygiene curricula that would not have to be rewritten for every new community.

I used qualitative methods, specifically phenomenology, that allowed me to focus on identifying shared themes from interviews of partners from different cultural backgrounds (Creswell, 2013a; Patton, 2002a). A partner is defined as a person who works with an NGO in a community that Lifewater serves. Using qualitative methods, I interpreted how cultural factors shaped the perceptions and meanings of the experience of participating in the Lifewater training program from the view of participants (Bradley et al., 2007; Patton, 2002a). I used the semistructured approach for this project because it provided me with an outline for action but also allowed for flexibility during the interview process (Dicicco-Bloom & Crabtree, 2006).

I collected data through interviews with six Lifewater partners in different regions of Africa and Asia, all located in rural villages. The small sample size comes from Delphi sampling technique; I chose this technique because I interviewed only those who met specific criteria (i.e., partners of Lifewater) and as the original population of people who meet these criteria is small, a small sample size is valid (Hanson & Keeney, 2000).

Summary of Findings

Research Question 1: Shared Motivating Themes and Barriers to Behavior Change

After analyzing data collected from six partners with diverse cultural backgrounds, I concluded that the most motivating elements in implementing behavior change were (a) improving the health of community members and their children, (b) saving people time and/or money, (c) being a better Christian, (d) having social support, and (e) the holistic approach of the Lifewater lessons. These themes pertain to the community members that the Lifewater partners teach using the Lifewater information and materials they learned in the training program. In other words, the partners' interviews allowed me to identify these themes as the most frequent and effective strategies partners used when trying to enact behavior change in those they teach. Regarding Research Question 1, I also discovered cross-cultural beliefs that could create barriers to behavior change, including the idea that water is vital for life and therefore cannot make a person sick, and that children's feces is not dangerous and cannot cause illness.

Research Question 2: Shared Meaningful Theme

For the second research question regarding what partners found most meaningful from their shared experience, I analyzed two aspects: (a) what the partners felt was most meaningful to them from the Lifewater program and (b) what they felt was meaningful to those they taught. I concluded that what partners found to be most meaningful was that they made a difference in their community by improving people's lives and that they felt this change was sustainable. This included saving people time, money, increasing capacity building, and making behavior change habitual.

Interpretation of Findings

Costs and benefits do not only pertain to money or time; people make decisions about their actions based on other cost-benefit analyses, including how behavior change can improve the health of themselves or their family members (Pruss-Ustin et al., 2008). One theme identified in this study is that showing people they can improve their children's health is a useful, motivating tool to encourage behavior change. Pruss-Ustin et al. (2008) estimated that improved sanitation and hygiene could lead to an extra 1.5 billion healthy days for children under 5, which is the demographic most impacted by waterborne illnesses (Cairncross et al., 2010; Deal et al., 2013). One suggestion for future curricula is to incorporate these economic and health statistics into lessons so that partners have this information readily available to use as a way to underscore the benefits of proper hygiene and sanitation. Another suggestion would be to incorporate data from local villages that show how many fewer cases of diarrheal disease followed the Lifewater program or to compare rates of disease from a village with the program to one

without it. Montgomery and Elimelech (2007) suggested creating simple health indicators that the community members could track as a way to provide them with quantifiable evidence that their behavior change is actually benefiting the community. They also suggested focusing the indicators on specific subgroups, such as children, to underscore how the behavior change would directly improve children's health.

According to these findings, it was suggested that, across cultures, there are similar motivating factors that the Lifewater organization should focus on to make implementation of health behaviors more efficient and effective. Another identified theme is that showing people they can save time and/or money can be used to motivate them to change their behaviors. This is an important finding because many times people may not readily think that making changes to their behavior will actually benefit them in terms of financial gains or efficiency of chores. Cairncross and Valdmanis (2006) found that many rural populations do not make the connection that improved water hygiene and sanitation is economically beneficial. They also stated that few studies exist that identify how improved water hygiene can also lead to time-saving benefits for those living in rural areas. The focus for this theme, then, is on what people value and how to use this as a strategy to convince them to accept behavior change as something that will benefit their lives. Some partners discussed that the community members to whom they teach the lessons wanted actual evidence of savings. Pruss-Ustin, Bos, Gore, and Bartram (2008) provided estimates of benefits from improved hygiene and sanitation: People targeted by WASH programs could save 320 million productive days each year (people aged 15-59), 272 million school attendance days, 20 billion working days per year, and \$63 billion per

year. These statistics are based on a global estimate, but they are powerful numbers that could help convince people of the economic benefit of behavior change.

Finally, the third motivating theme identified is that partners focused on the spiritual component in encouraging behavior change, especially when addressing barriers such as beliefs about children's feces or attitudes toward open defecation. The Lifewater lessons are distinctive in that they merge the scientific and spiritual approaches. While this mainly focuses on the Christian religion, some communities (e.g., Muslim) still use this approach and adapt the lessons to fit their spiritual beliefs. Merging religious and cultural factors into scientific interventions is an effective way to address behavior, lifestyles, and attitudes toward health (Allegranzi, Memish, Donaldson, & Pittet, 2009). One suggestion for future curricula is to create lessons that treat hand washing as both a hygienic practice and a religious or cultural ritual. For example, hand washing could be introduced as a way to make hands clean before eating to reduce disease and as a ritual done before eating a meal as a way to keep the body clean, as directed in scripture. Partners also discussed that behaviors such as open defecation can be addressed by teaching people that this practice causes illness and that Biblical passages teach that people should only defecate in designated areas because this is more pleasing to God. The focus here is that the lessons would merge science and religion; this could potentially make people more comfortable with accepting behavior change because they would learn that it would make them both physically and spiritually healthy. In addition, the lessons could be written to include a more generic wording of spirituality instead of Christianity so they can more easily be adapted to work in other cultures with different religious

backgrounds. Two partners did convey that they were able to easily adapt the Christian message into a usable message for Muslim communities, but having either more broad language about spirituality instead of specific religious views, or creating lesson extensions for the toolbox that have lessons written for different religious backgrounds could help the curricula be more widely applicable and effective across cultures.

Behavior change needs to be sustainable in order to really improve a community's health, and hopefully targeting these motivating factors can lead to sustainability (Ejemot-Nwadiaro et al., 2008; Prüss-Üstün et al., 2008).

Additionally, the partners all seemed to find it meaningful that the lessons they learned and then disseminated to communities actually led to making a difference in the lives of people in terms of saving them time and money, helping them grow spiritually, and increasing empowerment and capacity building. This shared feeling of enacting positive social change in one's own community could be a driving force in getting more people to accept these water hygiene lessons; this shared meaningful theme also connects to the motivating factors because the way in which people feel they are changing community members' lives includes improving the health of their children, making health behaviors more efficient, and helping people reach their full spiritual potential. If Lifewater could incorporate these ideas (e.g., making a positive impact in a partner's community, improving children's health, or making health changes sustainable, for example) into future lessons, this could make people more motivated to change because they would see the benefits they could receive from the Lifewater lessons. Since these themes are valid cross-culturally, they could also help the staff design lessons that are

applicable in many different cultures, which would streamline curricula development and make lessons more efficient.

Possible Barriers to Behavior Change

One interesting outcome of this study is that I identified possible barriers to people accepting or enacting behavior change. While some beliefs were identified as a shared theme of barriers to behavior change (Research Question 1), another was not common enough to elicit the creation of separate themes; however, I feel that because it is also a significant impediment to behavior change, all barriers are important to consider for future curricula development so that they can be addressed and overcome. The barriers identified focused on either practices or beliefs that are deeply culturally ingrained, turning education into practice, and limitations of resources to enact the interventions.

Both barriers regarding the practice of open defecation and the belief of children's feces are best addressed through a deeper understanding of a community's KAPs. As discussed earlier, the strategy employed by many partners when facing a barrier of KAP is to focus on the spiritual aspect of the lessons and emphasize the theme of being a better person spiritually. The barrier of lack of resources is, sadly, a common one, especially in rural areas of developing countries. As partners discussed, and as I have stressed throughout this study, hardware (i.e., wells, hand pumps, water filtration systems) only works when paired successfully with education (Cairncross et al., 2010). Dreibelbis (2013) found that WASH interventions implemented in primary schools in Kenya were severely limited by the staff's knowledge of and ability to maintain the infrastructure of

the resources provided to them. Additionally, to be sustainable, these interventions must also employ education as a way to empower participants so that they accept behavior change and disseminate this information to others. However, no intervention can be sustainable if the necessary resources are not available to participants, as happened in the Kenyan WASH study (Dreibelbis, 2013). This is a barrier that will need to be further analyzed by Lifewater to ensure that participants have access to every component they need to successfully implement these interventions. I suggest that the Lifewater staff create and implement a self-evaluation that can be given to the partners so that they can measure if behavior change is indeed sustainable. This would reduce the chance in partners being biased in reporting that interventions are working by comparing this qualitative data with quantitative evaluation data.

This also connects to the last barrier of moving from education to practice; it is not sufficient to merely teach people about water hygiene and sanitation, they must also be able to use this information to take action to change their behavior. In order to do this, my suggestion is that the KAPs of people must be aligned with the behavior change by using culturally relevant lessons. Then, there must be readily available resources to ensure that people make the behavior change habitual. As this study's data also showed, only one partner directly discussed KAPs as a motivating factor to behavior change; because of this surprising result, I recommend that the Lifewater organization also place more emphasis on this in the training of partners so that they can more adequately address underlying factors that affect barriers to health promotion.

Theoretical Alignment

Because the Husserlian approach is interpreted to mean that a phenomenon experienced is a real event and has a real existence and a real meaning for those who lived it, the search for shared meaning was the focus of this study (Holstein & Gubrium, 2005; Sadala & Adorna, 2002). The shared meaning I identified was making a positive impact on the lives of community members, which is a powerful shared meaning for people from diverse cultures to hold. Using the ecological model, I was able to create an interview guide and research questions that allowed me to consider the interplay of different environmental elements and different levels of interactions (Sallis et al., 2008). Some partners were local health workers, some worked for outside NGOs, and some were directors of large health projects who held a lot of power; however, the different social and cultural environments as well as the different levels of status of the partners still yielded answers that were shared cross-culturally. Additionally, the constructs of this model (health literacy; cultural attitudes; knowledge, attitudes, and preferences; and social norms) played a key role in identifying shared themes that motivated people to enact behavior change (Taylor, n.d.). Therefore, I tried to align the ecological model throughout the study, using it to form my methodology and also using it during data analysis to identify themes from the shared experience from individuals, communities, and across cultures.

The hygiene improvement framework also helped in formulating interview questions specifically regarding water quality and diarrheal diseases in communities (Storti, 2004). The constructs of this model include access to hardware, hygiene

promotion training, and supportive environments that promote behavior change (Storti, 2004). Many partners discussed the interplay of these factors by saying that installation of hardware (e.g., well or filtration system) is useless unless proper training (e.g., water hygiene lessons) teach people why water becomes contaminated and how it should be purified:

In some of these areas you can't just brainstorm and train the barrier away, but it is the relationship between the lessons and then the program and the hardware. So the hardware makes the training possible and the training makes the hardware sustainable (P6).

This also reinforces the point discussed in Chapter 2 that education must be an active component in addressing this health issue if change will be accepted and sustainable (Prüss-Üstün et al., 2008). Additionally, social support to enact and keep behavior change is also a vital component to these types of interventions (Storti, 2004). Most partners discussed how people would spread the water hygiene knowledge they received from the lessons to their friends and families, how neighboring villages would see health improvement in people who participated in the program, and therefore also wanted to participate in the program, and that spiritual leaders reiterated lessons during services so that people would feel more comfortable in making behavior change possible in their own lives. Therefore, I also tried to align the hygiene improvement framework by using it to address a gap in the literature, to create interview questions, and to create recommendations from the study results.

Limitations of the Study

One possible limitation is that qualitative data do not yield results that are generalizable; however, since I interviewed people with diverse backgrounds and was able to identify shared themes, I think the results are at least generalizable to other communities served by the Lifewater organization, or possibly to other groups that provide similar educational lessons in similar communities (Creswell, 2009).

Additionally, researcher bias is always a threat in qualitative studies; however, the use of member checking and interexaminer agreement increased the validity of the findings, and the use of the Delphi sampling technique justified a small sample size of six individuals (Cohen & Crabtree, 2008; Creswell, 2013; Hanson & Keeney, 2000; Maxwell, 2013).

Finally, as briefly discussed above, there could be a tendency for partners to report that behavior change is sustainable, since they know this is the desired outcome of the intervention. Using a self-evaluation for partners could help reduce this potential bias by comparing qualitative data to quantitative analysis data.

Recommendations

While this project focused on identifying shared themes that could motivate behavior change, barriers are also important to identify so that they can be addressed or at least known about when staff are creating curricula. The partners who discussed the problem of open defecation stated that this is an especially difficult behavior to change, but that the spiritual component of the lessons is a good tool to overcome this barrier. Therefore, I would recommend that Lifewater focus on spiritual aspects of lessons dealing with this specific behavior. Secondly, the curricula need to address the beliefs,

attitudes, and preferences of the community in order to avoid barriers such as the belief that children's feces cannot cause illness. To overcome this obstacle, I suggest Lifewater focus on the shared motivating theme of how behavior change can improve children's lives, which includes incorporating statistics on children's health into lessons; this way if people refuse to believe children's feces is dangerous, they can at least be motivated to engage in hand washing and water sanitation in order to prevent illness in their children.

Several partners discussed that change must be sustainable and that it is difficult to make behavior change habitual, or to turn learned information into action. For this barrier I suggest that staff create curricula that focus on the shared theme of what partners found most meaningful, which is that the lessons improve people's lives and benefit the community. If people see a benefit (whether it is improved children's health or saved time/money) they will be more likely to engage in that behavior. I suggest incorporating economic statistics into lessons so that partners can show people actual quantified evidence of how the behavior change can benefit them by saving them time and money. Finally, in some areas the necessary resources to enact the desired behavior change simply do not exist. For example, in some communities there is hardly enough water to drink, so teaching hand washing is seen as a waste of time. I think this problem refers back to the idea of knowledge and hardware working cooperatively; these communities are the ones that most desperately need hardware, such as water purification filters or deep-water wells, but again this technology will only work if the corresponding education is also given to the community.

Overall I believe that if the Lifewater organization incorporates lessons from the themes into specific water hygiene curricula, staff can create a foundational curriculum that can be used across varying cultures, therefore saving time and resources the organization would usually spend creating separate water hygiene lessons for each individual community. With this foundation in place, the staff can then create more specific examples or lesson extensions that can be pooled into a toolbox and accessed if needed in a particular situation. For example, if the topic of high salinity needs to be addressed in a community in Bangladesh, the team can still use the foundational materials and then just pull the specific lesson on salinity from the toolbox. This will save the organization time and money, and will hopefully lead to the creation of more streamlined curricula that can be used cross-culturally in a more efficient manner.

Implications for Social Change

Social change is a vital aspect of a Walden dissertation study. My main goal was to help the Lifewater organization to more easily and effectively write curricula so that they can more efficiently teach people about water hygiene and therefore increase the health of the community. Also, if the lessons are more culturally relevant, people are more likely to accept the behavior changes being taught, which can also make the behavior change and the health intervention sustainable. In addition to making curricula for the Lifewater organization and its partners more streamlined and culturally relevant, use of this curriculum could help increase the access to and knowledge of clean water for community members in developing areas, which contributes to one of the United

Nation's Millennium Development Goals, and thus to social change (United Nations, 2010).

The Lifewater organization also focuses on using capacity building in its interventions; this then leads to community development, increased social justice, improved quality of life, and empowerment of the local community (Bracht, 1999; Kasmel & Tanggaard, 2011; Staples, 2012). While this study is just one component of what the Lifewater organization does, the results may help create lessons that can directly improve knowledge and behaviors, which lower rates of waterborne illnesses in specific communities, therefore leading to an overall increase in people's quality of life in these developing areas (Kasmel & Tanggaard, 2011; Ruger, 2010; Staples, 2012).

Conclusions

Nonpotable water continues to be a global health issue that affects almost one seventh of the human population; unfortunately, those living in poverty and young children suffer the most from diarrheal diseases caused by drinking contaminated water (Sibiya & Gumbo, 2013). To address this issue, technology must be merged with education so that people are empowered by knowledge and given the resources they need to take control of their health. While this is a complex issue, I attempted to contribute to the solution by conducting this qualitative study to find what themes were shared by culturally diverse people who participated in a water hygiene program. The shared themes I discovered, including what participants found meaningful and what motivates them to engage in behavior change, can hopefully be used by the Lifewater

organization's staff to create more focused curricula that can help improve the health of more communities and begin to make a real impact on solving this global health crisis.

References

- Allegranzi, B., Memish, Z. A., Donaldson, L., & Pittet, D. (2009). Religion and culture: Potential undercurrents influencing health promotion in health care. *American Journal of Infection Control*, 37(1), 28-34.
<http://dx.doi.org/10.1016/j.ajic.2008.01.014>
- American University. (2014). *What is the IRB's mission?* Retrieved from <http://www.american.edu/irb/>.
- Bergin, M. (2011). NVivo 8 and consistency in data analysis: Reflecting on the use of a qualitative data analysis program. *Nurse Researcher*, 18(3), 6–12.
<http://dx.doi.org/10.7748/nr2011.04.18.3.6.c8457>
- Bracht, N., & Rissel, C. (1999). Assessing community needs, resources, and readiness: Building on strengths. In N. Bracht (ed.). *Health promotion at the community level 2: New advances* (pp. 59-71). Thousand Oaks, CA: Sage Publications.
- Bradley, E. H., Curry, L. A., & Devers, K. J. (2007). Qualitative data analysis for health services research: Developing taxonomy, themes, and theory. *Health Services Research*, 42(4), 1758–1772.
- Cairncross, S., Hunt, C., Boisson, S., Bostoen, K., Curtis, V., Fung, I. C. H., & Schmidt, W. P. (2010). Water, sanitation and hygiene for the prevention of diarrhea. *International Journal of Epidemiology*, 39 (suppl 1), i193-i205.
<http://dx.doi.org/10.1093/ije/dyq035>
- Cairncross, S., & Valdmanis, V. (2006). Water supply, sanitation, and hygiene promotion. In D. T. Jamison, J. G. Breman, A. R. Measham, M. C. Alleyne, D.

- B. Evans, ,... P. Musgrove (Eds.) *Disease control priorities in developing countries*. (2nd ed., pg. 57-65). Sudbury, MA: Jones and Bartlett Publishers.
- Carlsen, B., & Glenton, C. (2011). What about N? A methodological study of sample-size reporting in focus group studies. *BioMed Central Medical Research Methodology*, *11*, 26. doi:10.1186/1471-2288-11-26
- Carolini, G. Y. (2012). Framing water, sanitation, and hygiene needs among female-headed households in periurban Maputo, Mozambique. *American Journal of Public Health*, *102*(2), 256-261. <http://dx.doi.org/10.2105/AJPH.2011.300399>
- Centers for Disease Control & Prevention. (2013). *CEC EZ-Text overview*. Retrieved from <http://www.cdc.gov/hiv/library/software/ezttext/index.html>.
- Cohen, D. J., & Crabtree, B. F. (2008). Evaluative criteria for qualitative research in health care: Controversies and recommendations. *Annals of Family Medicine*, *6*(4), 331-339. <http://dx.doi.org/10.1370/afm.818>
- Corbin, J., & Strauss, A. (2008). Strategies for qualitative data analysis. In *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed., pp. 65-87). Thousand Oaks, CA: Sage Publications, Inc.
- Creswell, J. (2006). Five qualitative approaches to inquiry. In *Qualitative inquiry and research design: Choosing among five approaches* (pp. 53-84). Thousand Oaks, CA: Sage Publications.
- Creswell, J. (2009). Qualitative procedures. In *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed., pp. 173-203). Thousand Oaks, CA: Sage Publications.

Creswell, J. W. (2013a). Five qualitative approaches to inquiry. In *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed., pp. 69-110).

Thousand Oaks, CA: Sage Publications, Inc.

Creswell, J. (2013b). Data collection. In *Qualitative inquiry and research design:*

Choosing among five traditions (3rd ed., pp. 145-178). Thousand Oaks, CA: Sage Publications.

Creswell, J. (2013c). Qualitative methods. In *Research design: Qualitative, quantitative,*

and mixed method approaches. (4th ed., pp. 183-215). Thousand Oaks, CA: Sage Publications.

Creswell, J. (2013d). Data analysis and representation. In *Research design: Qualitative,*

quantitative, and mixed method approaches. (4th ed., pp. 179-213). Thousand Oaks, CA: Sage Publications.

Creswell, J. (2013e). Standards of validation and evaluation. In *Research design:*

Qualitative, quantitative, and mixed method approaches. (4th ed., pp. 243-269).

Thousand Oaks, CA: Sage Publications.

Davidson, A. S. (2013). Phenomenological approaches in psychology and health

sciences. *Qualitative Research in Psychology*, 10(3), 318-339.

<http://dx.doi.org/10.1080/14780887.2011.608466>

Deal, J. L., Check, D., & Naaktgeboren, C. (2013). A multidimensional measurement of

the health impact of community based water treatment systems in Uganda. *Water Missions International*. Retrieved through personal communication.

- Denslow, S. A., Edwards, J., Horney, J., Pena, R., Wurzlemann, D., & Morgan, D. (2010). Improvements to water purification and sanitation infrastructure may reduce the diarrheal burden in a marginalized and flood prone population in remote Nicaragua. *BioMed Central International Health and Human Rights*, *10*(30), 1-7. doi:10.1186/1472-698X-10-30
- DiCicco-Bloom, B., & Crabtree, B. F. (2006). Making sense of qualitative research. *Medical Education*, *40*, 314-321. doi:10.1111/j.1365-2929.2004.02024.x
- Dreibelbis, R. (2013). Water, sanitation, and hygiene in primary schools: Determining health and educational impacts and developing a model for sustained service delivery in Kenya. *Johns Hopkins University*.
<http://search.proquest.com/docview/1432270870>
- Eder, C., Schooley, J., Fullerton, J., & Murguia, J. (2012). Assessing impact and sustainability of health, water, and sanitation interventions in Bolivia six years post-project. *Revista Panamericana de Salud Pública*, *32*(1), 43-8.
<http://dx.doi.org/10.1590/S1020-49892012000700007>
- Edwin, v. T., & Hundley, V. (2002). The importance of pilot studies. *Nursing Standard*, *16*(40), 33-6. Retrieved from
<http://search.proquest.com/docview/219814873?accountid=14872>.
<http://dx.doi.org/10.7748/ns2002.06.16.40.33.c3214>
- Ejemot-Nwadiaro, R., Ehiri, J. E., Meremikwu, M. M., & Critchley, J. A. (2008). Hand washing for preventing diarrhea. *Cochrane Infectious Diseases Group*, (3), 1-42.

- Englander, M. (2012). The interview: Data collection in descriptive phenomenological human scientific research. *Journal of Phenomenological Psychology, 43*, 13-35. doi: 10.1002/14651858.CD004265
- European Food Information Council. (2014). *Motivating behavior change*. Retrieved from <http://www.eufic.org/article/en/expid/Motivating-behaviour-change/>.
- Fisher, S., Kabir, B., Lahiff, E., & MacLachlan, M. (2011). Knowledge, attitudes, practices and implications of safe water management and good hygiene in rural Bangladesh: Assessing the impact and scope of the BRAC WASH programme. *Journal of Water Health, 9*(1), 80-93. <http://dx.doi.org/10.2166/wh.2010.023>
- Fotso, J-C., Ezeh, A. C., Madise, N. J., & Ciera, J. (2007). Progress towards the child mortality millennium development goal in urban sub-Saharan Africa: The dynamics of population growth, immunization, and access to clean water. *Baylor College of Medicine, 7*, 218. doi: 10.1186/1471-2458-7-218
- Freeman, M. C., Greene, L. E., Dreibelbis, R., Saboori, S., Muga, R., Rheingans, R., & Rheingans, R. (2012). Assessing the impact of a school-based water treatment, hygiene and sanitation programme on pupil absence in Nyanza Province, Kenya: A cluster-randomized trial. *Tropical Medicine and International Health, 17*(3), 380-391. doi: 10.1111/j.1365-3156.2011.02927.x
- G-recorder. (n.d.). *More than just a skype recorder*. Retrieved from <http://g-recorder.com>.

- Groenewald, T. (2004). A phenomenological research design illustrated. *International Journal of Qualitative Methods*, 3(1), 1-26.
http://www.ualberta.ca/~iiqm/backissues/3_1/pdf/groenewald.pdf
- Hanson, F., & Keeney, S. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing*, 32(4), 1008-1015. doi: 10.1046/j.1365-2648.2000.t01-1-01567.x
- Holstein, J. A., & Gubrium, J. F. (2010). Interpretive practice and social action. In N. K. Denzin & Y. S. Lincoln, eds.) *The Sage handbook of qualitative research*. (3rd ed., pp. 483-507). Thousand Oaks, CA: Sage Publications.
- Hoover, R. S., & Koerber, A. L. (2011). Using NVivo to answer the challenges of qualitative research in professional communication: Benefits and best practices tutorial. *Institute of Electrical and Electronics Engineers Transactions on Professional Communication*, 54(1), 68–82. doi: 10.1109/TPC.2009.2036896
- Janesick, V. J. (2011). The analysis and writing habit: Making sense of the data, ethics, and other issues. In "*Stretching*" *exercises for qualitative researchers* (3rd ed., pp. 175-204). Thousand Oaks, CA: Sage Publications.
- Joshi, A. & Amadi, C. (2013). Impact of water, sanitation, and hygiene interventions on improving health outcomes among school children. *Journal of Environmental and Public Health* 2013, 1-10. <http://dx.doi.org/10.1155/2013/984626>
- Kaiser, K. (2010). Protecting respondent confidentiality in qualitative research. *Qualitative Health Research* 19(11): 1632-1641. doi: 10.1177/1049732309350879

- Kasmel, A., & Tanggaard Anderson, P. (2011). Measurement of community empowerment in three community programs in Rapla (Estonia). *International Journal of Environmental Research and Public Health*, 8(3), 799–817. doi: 10.3390/ijerph8030799
- Kazmer, M.M. & Xai, B. (2008). Qualitative interviewing in internet studies: Playing with the media, playing with the method. *Information, Communication & Society* 11(2), 257-278. doi: 10.1080/13691180801946333
- Kleinau, E., Post, M., & Rosensweig, F. (2004). Advancing hygiene improvement for diarrhea prevention: Lessons learned. *Environmental Health Project* (10). Retrieved from www.ehproject.org/PDF/Strategic.../SR-10%20HI%20LL%20Format.pdf.
- Lifewater. (2014a). *Lifewater: Providing water, health, and hope since 1977*. Retrieved from <http://lifewater.org/about/>.
- Lifewater. (2014b). *mWASH is the tool we use to show the poor that the Church cares for them*. Retrieved from <http://lifewater.org/mwash/>.
- Lifewater. (2014c). *Since 1977, Lifewater has served around the globe to end water-borne diseases*. Retrieved from <http://lifewater.org/programs/>.
- Lifewater. (2014d). *Our current projects*. Retrieved from <http://lifewater.org/region/africa/>.
- Lifewater. (2014e). *Our program process*. Retrieved from <http://lifewater.org/programs/process/>.

- Lifewater. (2007). *Transforming communities: Lifewater international review '07*.
Retrieved from
<http://www.lifewater.org/resources/documents/07AnnualReviewforscreen.pdf>.
- Marshall, C. & Rossman, G.B. (2011). Qualitative research genres. In *Designing Qualitative Research* (5th ed., pp. 17-37). Thousand Oaks, CA: Sage Publications.
- Maxwell, J. A. (2013a). Methods: What will you actually do? In *Applied Social Research Methods Series: Vol. 41. Qualitative research design: An interactive approach* (3rd ed., pp. 87-120). Thousand Oaks, CA: Sage Publications.
- Maxwell, J. A. (2013b). Validity: How might you be wrong? In *Applied Social Research Methods Series: Vol. 41. Qualitative research design: An interactive approach* (3rd ed., pp. 121-138). Thousand Oaks, CA: Sage Publications.
- McDonald, E., Bailie, R., Grace, J., & Brewster, D. (2010). An ecological approach to health promotion in remote Australian aboriginal communities. *Health Promotion International* 25(1), 42-53. doi: 10.1093/heapro/daq004
- Merriam, S. B. (2009). Qualitative data analysis. In *Qualitative research: A Guide to Design and Implementation* (pp.169-209). San Francisco, CA: John Wiley & Sons.
- Miles, M. B., Huberman, A. M. & Saldana, J. (2014a). Fundamentals of qualitative data analysis. In Miles, M.B., Huberman, A.M., & Saldana, J., (eds.) *Qualitative data analysis: A methods sourcebook* (3rd ed., pp.69-104). Thousand Oaks, CA: Sage Publications.

- Miles, M. B., Huberman, A. M. & Saldana, J. (2014b). Drawing and verifying conclusions. In Miles, M.B., Huberman, A.M., & Saldana, J., (eds.) *Qualitative data analysis: A methods sourcebook* (3rd ed., pp. 275-322). Thousand Oaks, CA: Sage Publications.
- Minkler, M. & Wallerstein, N. (2012). Improving health through community organization and community building: Perspectives from health education and social work. In Minkler, M. (ed.) *Community organizing and community building for health and welfare* (3rd ed., pp. 37-58). New Brunswick, NJ: Rutgers University Press.
- Montgomery, M.A., & Elimelech, M. (2007). Water and sanitation in developing countries: Including health in the equation. *Environmental Science and Technology* 41(1), pg. 17-24. doi: <http://dx.doi.org/10.1021/es072435t>
- Nuance. (2015). *Dragon dictate for mac*. Retrieved from <http://www.nuance.com/for-individuals/by-product/dragon-for-mac/dragon-dictate/index.htm>.
- Patel, M.K., Harris, J.R., Juliao, P, Nygren, B., ...& Quick, R. (2012). Impact of hygiene curriculum and the installation of simple hand washing and drinking water stations in Kenyan primary schools on student health and hygiene practices. *American Journal of Tropical Medicine* 87(4), 594-601. doi: 10.4269/ajtmh.2012.11-0494
- Patton, M. Q. (2002a). Designing qualitative studies. In *Qualitative research and evaluation methods* (3rd ed., pp. 209-258). Thousand Oaks, CA: Sage Publications, Inc.

- Patton, M. Q. (2002b). Qualitative analysis and interpretation. In *Qualitative research and evaluation methods* (3rd ed., pp.431-525). Thousand Oaks, CA: Sage Publications, Inc.
- Prüss-Üstün, A., Bos, R., Gore, F., & Bartram, J. (2008). *Safer water, better health: Costs, benefits and sustainability of interventions to protect and promote health*. Geneva: World Health Organization. Retrieved from http://whqlibdoc.who.int/publications/2008/9789241596435_eng.pdf.
- QSR International. (n.d.). *NVivo 9 Help*. Retrieved from http://help-nv9-en.qsrinternational.com/nv9_help.htm#procedures/more_manual_coding_techniques.htm.
- QSR International. (2013). *NVivo: Features and benefits*. Retrieved from http://www.qsrinternational.com/products_nvivo_features-and-benefits.aspx.
- Rabi, S.E. & Dey, N.C. (2013). Exploring the gap between hand washing knowledge and practices in Bangladesh; A cross-sectional comparative study. *BioMed Central* 13(89), 1-7. doi: 10.1186/1471-2458-13-89
- Reiners, G.M. (2012). Understanding the differences between Husserl's (descriptive) and Heidegger's (interpretive) phenomenological research. *Journal of Nursing Care* 1:5. doi: 10.4172/2167-1168.1000119
- Richard, L., Gauvin, L., & Raine, K. (2011). Ecological models revisited: Their uses and evolution in health promotion over two decades. *Annual Review of Public Health* 32, 307-326. doi: 10.1146/annurev-publhealth-031210-101141

- Ruger, J.P. (2010). Health and social justice. *The Lancet*, 364, 1075–1080.
[http://dx.doi.org/10.1016/S0140-6736\(04\)17064-5](http://dx.doi.org/10.1016/S0140-6736(04)17064-5)
- Sadala, M., & Adorno, R. (2002). Phenomenology as a method to investigate the experience lived: a perspective from Husserl and Merleau Ponty's thought. *Journal Of Advanced Nursing*, 37(3), 282-293. doi:10.1046/j.1365-2648.2002.02071.x
- Sallis, J.F., Owen, N. & Fisher, & E.B. (2008). Ecological models of health behavior. In (Glanz, K., Rimer, B.K., & Viswanath, K, eds.) *Health Behavior and Health Education: Theory, Reason, and Practice* (4th ed., 465-485). San Francisco: Josey-Bass.
- Sibiya, J., & Gumbo, J. (2013). Knowledge, attitude and practices (KAP) survey on water, sanitation and hygiene in selected schools in Vhembe District, Limpopo, South Africa. *International Journal Of Environmental Research And Public Health*, 10(6), 2282-2295. doi: 10.3390/ijerph10062282
- Soriano, F. I. (2012). Qualitative assessment methods. In *Conducting needs assessment: A multidisciplinary approach* (2nd ed., pp. 121-135). Thousand Oaks, CA: Sage Publications.
- Staples, L. (2012). Selecting and “cutting” the issue. In Minkler, M. (ed.) *Community organizing and community building for health and welfare* (3rd ed., pp. 187-210). New Brunswick, NJ: Rutgers University Press.

- Storti, C. (2004). The hygiene improvement framework: A comprehensive approach for preventing childhood diarrhea. *Environmental Health Project Joint Publication 8*. Retrieved from www.ehproject.org/PDF/Joint_Publications/JP008-HIF.pdf.
- Taylor, C. (n.d.). Core competency 1: Identify basic theories, concepts and models from a range of social and behavioral disciplines that are used in public health research and practice. *Boston University*. Retrieved from <http://catherinetaylor.myefolio.com/sbcompetencies>.
- Thomas, A., Menon, A., Boruff, J., Rodriguez, A.M., & Ahmed, S. (2014). Applications of social constructivist learning theories in knowledge translation for healthcare professionals: A scoping review. *Implementation Science* 6(9), 54. doi: 10.1186/1748-5908-9-54
- Trochim, W.M.K. (2006a). Qualitative validity. *Research Methods Knowledge Base*. Retrieved from <http://www.socialresearchmethods.net/kb/qualval.php>.
- Trochim, W.M.K. (2006b). Types of reliability. *Research Methods Knowledge Base*. Retrieved from <http://www.socialresearchmethods.net/kb/relytypes.php>.
- UNESCO. (2015). *Displaced person/displacement*. Retrieved from <http://www.unesco.org/new/en/social-and-human-sciences/themes/international-migration/glossary/displaced-person-displacement/>.
- United Nations. (2010). Keeping the promise: United to achieve the millennium development goals. *United Nations General Assembly, Sixty-Fifth Session*. Retrieved from http://www.un.org/en/mdg/summit2010/pdf/outcome_documentN1051260.pdf.

- University of Maryland. (2010). *Office for research protections and compliance: Consent and assent guidelines*. Retrieved from http://www.umbc.edu/research/ORPC/IRB_consentassent.html.
- Walden University. (2014a). *Research ethics and compliance: Application & general materials: Research ethics planning worksheet*. Retrieved from <http://academicguides.waldenu.edu/researchcenter/orec/application>.
- Walden University. (2014b). *Institutional Review Board*. Retrieved from <http://catalog.waldenu.edu/content.php?catoid=62&navoid=9379>.
- Walker, D. & Myrick, F. (2006). Grounded theory: An exploration of process and procedure. *Qualitative Health Research* 16(4), pg. 547-559. doi: 10.1177/1049732305285972
- World Health Organization. (2005). *Basic documents: Constitution of the World Health Organization*, 45th ed. Retrieved from http://www.who.int/governance/eb/who_constitution_en.pdf.
- Wright, J., Yang, H., Rivett, U., & Gundry, S. (2012). Public perception of drinking water safety in South Africa 2002-2009: a repeated cross-sectional study. *BioMed Central Public Health*, 12, 556. doi: 10.1186/1471-2458-12-556
- Zwane, A.P. & Kremer, M. (2007). What works in fighting diarrheal diseases in developing countries? A critical review. *International Bank for Reconstruction and Development*, 22, 1-24. <http://www.jstor.org/stable/40282334>

Appendix A: Interview Questions

Question #1: Please describe, in your own words, what the Lifewater program was like. What part of the program was most meaningful to you? Why do you think that particular part of the program was so meaningful for you?

Question #2: Has the experience of participating in the Lifewater program affected your life? If so, how? (Regarding culture change) Has it changed your attitudes or preferences for using water?

Question #3: Would you say that participating in the education program has changed your (cultural) beliefs about water and how it affects your health? If so, how?

Question #4: Would you say that participating in the education program has benefitted or not benefitted your life? Please explain.

Question #5: Would you consider the impact of the program to be positive or negative on your community? (The community refers to the one in which the partner lives and disseminates the learned educational materials).

Question #6: Do you think the water education program has impacted your behavior at all? If so, how?

Question #7: If you could choose one aspect of the program as most important, what would it be and why?

Question #8: Do you think the educational program has any value in your life? Why or why not?

Question #9: Do you think that the community members you teach this education to find any value in it? Why or why not?

Question #10: Did any aspects of the program fit easily with (cultural) preferences for water hygiene behavior that you already held? Did any aspects conflict with your preferences?

Question #11: Did any aspects of the program fit easily with (cultural) preferences for water hygiene behavior held by community members? Did any aspects conflict with their preferences?

Appendix B: Informed Consent

CONSENT FORM

You are invited to take part in a research study to help us to understand the experience you had in participating in the Lifewater water hygiene education program; The researcher of this study will also try to identify what aspects of the program were most meaningful to you. The researcher is inviting people identified as “partners,” or those who work in some capacity with a nongovernmental organization (such as the one you work with) in a community served by the Lifewater organization. Partners are people who have completed the Lifewater water hygiene education course and plan to teach this information to their own community members. This form is part of a process called “informed consent” to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Sarah Etheridge-Criswell, who is a doctoral student at Walden University. She does not work for Lifewater, but has voluntarily helped the organization make and edit lessons, and is working with it to obtain information for her study. She does not hold any authority with the Lifewater organization. Participation in this study is strictly voluntary and no negative consequences will come to anyone who decides not to participate.

Background Information:

The purpose of this study is to understand the experience you had in participating in the Lifewater water hygiene education program, and also to identify what aspects of the program were most meaningful to you, with the goal of helping make future program materials for Lifewater more culturally relevant to participants.

Procedures:

If you agree to be in this study, you will be asked to:

- Participate in one main interview conducted through teleconferencing, which should last between 30 minutes to one hour
- Participate in one follow-up interview for an estimated 15-30 minutes that will take place within a few weeks of the initial interview

Here are some sample questions:

- Please describe, in your own words, what the Lifewater program was like. What part of the program was most meaningful to you? Why do you think that particular part of the program was so meaningful for you?
- Do you think the water education program has impacted your behavior at all? If so, how?

Did any aspects of the program fit easily with preferences for water hygiene behavior that you already held? Did any aspects conflict with your preferences?

Voluntary Nature of the Study:

This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at the Lifewater organization will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time. No compensation or reimbursement will be offered to participants, but a copy of the results will be given to all who participate.

Risks and Benefits of Being in the Study:

Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as the time to complete interviews, and any expenses to use the Internet or teleconferencing technology. No personal health information will be collected. Being in this study would not pose risk to your safety or wellbeing.

Possible benefits to participating include helping identify how this type of education is viewed in a cultural context, and helping determine what important elements should be included in future curricula. This will help the Lifewater organization write curricula that is more culturally relevant and more efficient, and will possibly help Lifewater create more effective programs for future use.

Privacy:

Any information you provide will be kept confidential. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. I will allow you to read the conclusions I draw from your interview answers to ensure that you agree with my interpretation, and to ensure that the information you provided cannot be used by others to identify you. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:

You may ask any questions you have now. Or if you have questions later, you may contact the researcher via phone XXX or email (XXX). If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 001-612-312-1210. Walden University's approval number for this study is 04-10-15-0326416 and it expires on **April 9, 2016**.

Please print or save this consent form for your records.

Statement of Consent:

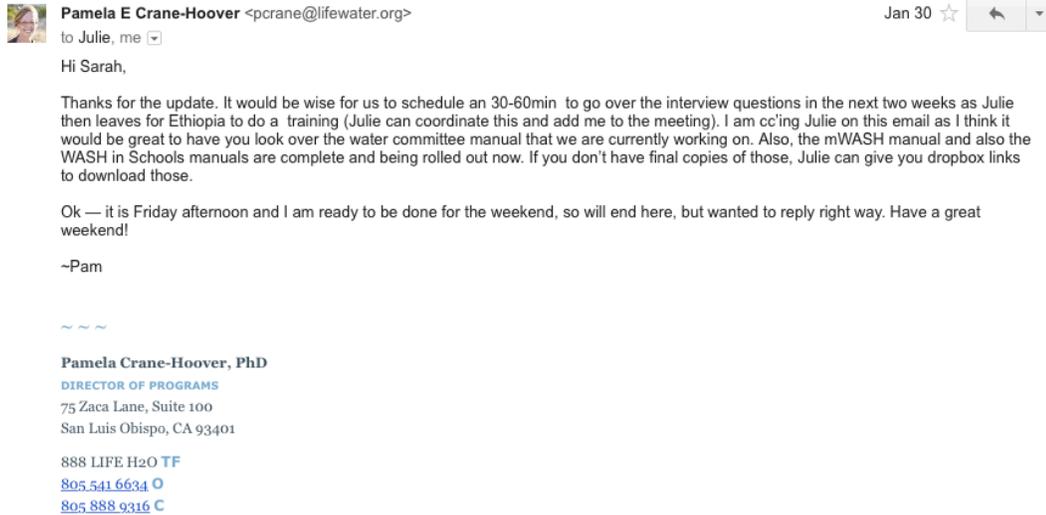
I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By replying to this email with the words, "I consent," I understand that I am agreeing to the terms described above.

Printed Name of Participant

Date of consent

Appendix C: Expert Panel

This email, from the Director of Programs at Lifewater International, shows her and Julie Smith's agreement to be on my expert panel. These are the two staff members I did use for the panel to calibrate my interview questions before conducting data collection.



This second email is a more formal agreement from Pamela Crane, specifically showing her agreement to be on the expert panel.

