2018

The Impact of Parental Education Level, Wealth Status, and Location on Female Genital Mutilation Prevalence in Northwestern Liberia

Sando Adetunji
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral dissertation by

Sando Adetunji

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. Chinaro Kennedy, Committee Chairperson, Public Health Faculty
Dr. Adebowale Awosika-Olumo, Committee Member, Public Health Faculty
Dr. James Rohrer, University Reviewer, Public Health Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University

2018

Abstract

The Impact of Parental Education Level, Wealth Status, and Location on Female Genital Mutilation Prevalence in Northwestern Liberia

by

Sando G. Adetunji

MSW, Howard University, 2000

BSW, University of Maryland Baltimore County, 1998

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

February 2018

Abstract

Female genital mutilation has been a public health issue in many countries. As a result, researchers across the globe have conducted numerous studies showing that the practice is very harmful toward women's health and safety. Unfortunately, in the northwestern region of Liberia, there have been no recent empirical studies conducted regarding the danger of female genital mutilation on women's reproductive health and safety. The socio-ecological model can guide this study which outlines how environmental variables can impact the experiences of FGM. In this study, a quantitative approach was used to explore whether there were environmental factors such as parental educational attainment, parental wealth (socioeconomic), and location that affect the prevalence of female genital mutilation among girls and women in the northwestern region of Liberia. Secondary data from the 2013 Liberia Demographic Health Survey was used to analyze the multiple determinants that influenced parents and families to join the Sande Bush Society which facilitated female genital mutilation practices in the northwestern region of Liberia. The methods of analysis included chi-square for association and multiple logistic regression. The findings showed that parental wealth and parental education predicted whether females were initiated into the Sande Bush Society, resulting in female genital mutilation practices. There were no significant differences in whether parental region (suburban or rural) predicts the likelihood of initiation into the Sande Bush Society. This study provides additional information to stakeholders, policy makers, and social advocacy groups for developing and implementing laws relevant to female genital mutilation.

The Impact of Parental Education Level, Wealth Status, and Location on Female Genital Mutilation Prevalence in Northwestern Liberia

by

Sando G. Adetunji

MSW, Howard University, 2000

BSW, University of Maryland Baltimore County, 1998

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

February 2018

Dedication

I dedicate this dissertation to all the women, especially in Liberia, who continue to struggle with FGM health issues. This dissertation is also dedicated to my awesome husband, Emmanuel Adetunji, and my beautiful daughters, Temitope Adetunji, Adetinuke Adetunji-Chmieliauskas, my new son-in-law, Mr. Augustina Chmieliauskas, Tahnee Morris, and my two beautiful granddaughters, Brooklyn and Caprice Davis whose encouragement, patience, and support was helpful to me through this process. My youngest daughter, Temitope Adetunji was most supportive in staying up with me during the late hours of the night while studying.

Acknowledgments

First and foremost, I want to give thanks to my Almighty and Lord, who reduced the stress in my life and the burdens of this world that made me feel weak and powerless. I thank God for the empowerment that he bestowed upon me, giving me the strength and clarity to foster change in the world. I would like to acknowledge the chair of my committee, Dr. Chinaro Kennedy, my committee member, Dr. Adebowale Awosika-Olumo, and my URR, Dr. James Rohrer, for their guidance through the dissertation process for this study. Special acknowledgement goes to Dr. Kennedy, whose kind words and encouragement kept me on track and to defend my work: "Just Chill." Special thanks to the Program Director, Dr. Nancy Rea, the IRB Committee, and all my professors at Walden University.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Female genital mutilation (FGM) has been referred to procedures that alter female genitalia, involving the partial or total removal of the outer layer of female genitalia or injury to the female organs for no medical purpose (World Health Organization [WHO], 2012). The origin of FGM was unclear, though it has been documented in Egypt as early as 250 B.C. where it was used to preserve a woman's virginity (Kiragu, 1995). It was an integral part of many African traditions and cultures (Gibbs, 1965). In countries where the prevalence of FGM was high, it was considered an essential part of raising a girl and preparing her for womanhood and marriage (United Nations International Children's Emergency Fund [UNICEF], 2013). FGM was practiced primarily in African, Asian, and South American countries; however, it was also performed in Europe, Australia, Canada, and the United States among immigrants from practicing countries (Dorkenoo, 1992; Hosken, 1978; Toubia, 1993).

FGM was a tradition that marks the transition of a young girl from childhood to womanhood and motherhood. Previous research by the WHO (2010) estimated that 100–140 million babies, girls, and women have experienced FGM worldwide. The WHO (2010) also estimated that 3 million girls have been at risk of FGM every year. FGM had no health benefits, and instead poses risks in all aspects of life, including health and education (Okeke, Anyaehie, & Ezenyeaku, 2012). However, many women living in rural areas who were unaware of the risks and health consequences of FGM continued to defend the practice. Survivors did not return to the excisor for follow-up checks on their well-being after experiencing FGM.

Currently, there was little information on women's understanding of the long-term complications of FGM, particularly of women living in rural areas who spoke multiple dialects. More specifically, there was a lack of knowledge about the effects of FGM on women's reproductive health in the northwestern region of Liberia, where the prevalence of FGM was high (28 Too Many, 2014). Here, a child living with her mother and grandmother in a strong patriarchal community that had a firmly held traditional belief system with no access to school or health centers was likely to experience FGM. FGM also acted as a precursor to early or child marriage, which was a violation of human rights and considered a situation of slavery (Turner, 2016). In most rural areas of Liberia, families depended on substantial bride prices to ensure family honor and to initiate the female (Shell-Duncan et al., 2000). Additionally, procedures were often performed by family members or another woman known to the child from the community, which raised the question as to why women continued to practice FGM against other women when it has had such significant health risks (28 Too Many, 2014).

In Liberia, regions with fewer public schools for children aged between 2 and 5 have had high FGM prevalence rates. Most children have started school at age 7 or 10 depending on where the child lived. Since the cutting age of a Liberian girl was 7–12, this meant that the child will return home at the age of 14 to begin first grade (28 Too Many, 2014). Girls and women in countries with lower levels of education were significantly more likely to continue experiencing FGM, such as in Kenya, where an estimated 38% of women and girls had no education (UNICEF, 2013).

Around the world, female literacy and education levels tended to correlate strongly with human development (Kay, 2012). However, economic inequalities and social deprivation in early childhood were strongly linked to poverty and the female child facing social disadvantages in adulthood (Adebowale, 2000). Studies have shown that when there was investment in early childhood education, there was a higher rate of economic return for the individual, community, and the country overall (Boakye-Boaten, 2010). Adebowale (2000) contended that governments must make low-income households a priority to reduce poverty, educate citizens about the importance of eradicating FGM, and make education accessible in rural areas to reduce other forms of violence against children.

The Liberia Demographic and Health Survey (LDHS; 2007) showed that for both sexes, there was a significant gap between urban and rural levels of literacy, with people in urban areas having far higher literacy rates. Among the regions in Liberia, Monrovia has had the highest proportion of women and men who were literate, while people living in the northwestern region have had the lowest literacy levels (LDHS, 2007). For example, 68% of the population in Bong County over the age of 6 has never been to school, 66% in Grand Bassa, and 48% in Grand Cape Mount, which were in the northwestern region of Liberia (LDHS, 2013). The lowest proportion of the population who have never attended school was in Montserrado County in the south-central region, with only 30% of the population having never been to school.

In Liberia, a sub-Saharan African country, FGM was referred to as the Sande Bush Society (SBS) and was well recognized in many rural areas as a necessary tradition

(28 Too Many, 2014). In this study, I explored the impact of parental education, parental wealth, and location on the likelihood that a child would be subjected to FGM in northwestern Liberia.

Background

In this study, I explored the relationship between individuals' demographic characteristics and their likelihood of experiencing FGM in northwestern Liberia. The northwestern region of Liberia has been home to four ethnic groups that has practiced FGM. The Liberian Civil War that lasted from 1989 to 2003 led to a significant drop in the practice due to population displacement (FrontPageAfrica & Monrovia, 2016). The end of the Civil War resulted in a large proportion of the population congregating in urban areas, though the impact of such population shifts on FGM practice was not known. Support from international organizations, religious leaders, politicians, civil society, and the medical community was needed to combat FGM through community intervention, research, and changes in public policy (WHO, 1997). Indeed, international organizations such as the WHO were making a difference in the effort to eradicate FGM (Abiodun, Oyejola, & Job, 2011). For example, in 2007, the WHO developed an accelerated program with the United Nations Fund for Population Activities and UNICEF to reduce FGM in 17 African countries, including Liberia (WHO, 2011). In 2008, nine United Nations partners signed a statement declaring that more support and advocacy was needed worldwide to eradicate FGM. The United States has also used foreign policy to influence the reduction of FGM. For example, Shell-Duncan and Hernlund (2000)

reported that former Secretary of State Hillary Clinton has spoken out against FGM on several occasions while visiting Africa.

The LDHS (2013) reported a 58% prevalence rate of FGM in Liberia. It was difficult to get information from survivors due to secrecy and the challenge of getting to rural areas to collect data (LDHS, 2007). In Liberia, FGM was practiced by a group known as the SBS, an all-female group among the ethnic groups that have practiced FGM. FGM survivors were stated to have an obligation to report on women who divulged information about the practice, and exchanging information about FGM or the SBS can be dangerous and even deadly (Kay, 2012). The SBS prohibited the discussion of the initiation rites with girls or women who have not been cut. One Liberian journalist, Azango, who wrote about the SBS was threatened by traditionalists who said they would initiate the journalist and her 9-year-old daughter if she spoke out about FGM practices (Kay, 2012).

When the first female president of Liberia, Ellen Sirleaf-Johnson, took office in 2005 (FrontPageAfrica & Monrovia, 2016), the international community and Liberians expected that she would fight to protect women and children's rights in Liberia (Liberian Observer, 2016). FrontPageAfrica & Monrovia (2016) reported that the expectation faded when the president failed to ban FGM in her second year of presidency. However, the president recently made a commitment at a global meeting on gender equality and women's empowerment to pass legislation banning FGM before she left office in 2017. Due to pressure from international communities and anti-FGM campaigns, a domestic

violence bill (DVB) was approved by the president in September 2015 and placed in front of Liberia lawmakers for enactment in 2016.

The Liberian Observer (2016) noted the bill was meant to support women's economic participation, free education, right to accessible healthcare, participation in decision-making in private and public life, and protection from violence. However, Grace Uwizeye and Florence Machio, two journalists from Kenya, critiqued the bill as being unclear on FGM and lacking mechanisms to prosecute offenders (Liberian Observer, 2016). The DVB was enacted in 2016, however the section of the bill addressing FGM was removed because of protest from SBS members, who argued that FGM was part of their culture. President Sirleaf-Johnson's promises to protect children and women in Liberia from harmful acts such as FGM did not come to fruition under the DVB.

The WHO (2012) reported the SBS included 58% of Liberian women, and it was known that FGM was compulsory for girls' initiation into the secret society. However, despite the high prevalence rate of FGM, information on maternal and child health where FGM was performed was limited, particularly in remote areas including the northwestern region of Liberia. Women who lived in rural areas with limited health facilities and unskilled midwives were constantly at risk of infection and difficult pregnancies leading to death (Liberia Observer, 2016). There was no accurate data on maternal or infant mortality rates during childbirth in rural areas of Liberia in relation to FGM, and there have been no studies about how many girls have died as a result of FGM initiations (28 Too Many, 2014).

Overall, education has been critical because it played a significant role in shaping children's lives and societal views on FGM and gender norms. Women was less equipped than men to take advantage of higher income opportunities in Liberia because of their high illiteracy rates (28 Too Many, 2014). Even though researchers often cited education as key to eradicating FGM, there were educated women who worked within the Liberian government who have considered FGM as an acceptable tradition (Liberia Observer, 2016).

Types or Forms of FGM

FGM has no health benefits and is harmful to girls and women physically, mentally, and in terms of their overall health. The WHO (2010) classified FGM into four types based on the type and severity of the cut, as specified below:

- Type I: Excision of the prepuce with or without excision of part, or all, of the clitoris.
- Type II: Excision of the clitoris with partial or total excision of part or all the labia minora.
- Type III: Excision of part or all the external genitalia and stitching/narrowing of the vaginal opening (infibulations).
- Type IV: Unclassified. All other harmful procedures to the female genitalia for non-medical purposes, for example pricking, piercing, incising, scraping, and cauterization (WHO, 2010).

The WHO (2013b) reported that genital tissue cutting for Types III and IV were more detrimental to girls and women than types I and II. There were limited studies on

Type IV FGM, but it appeared to be less associated with harm or risk than Types I, II, and III, which were infibulation (WHO, 2011). Health consequences related to FGM also included relational problems such as limited arousal, low sexual libido, and painful intercourse (Alsibiani & Rouzi, 2008).

The Procedures

There have been debates about the term FGM, as some individuals believed "mutilation" was not accurate; parents have given consent for the procedure to be performed (WHO, 2010). A traditional female leader in the community performed the procedure and was overseen by a head woman (Nour, 2008). FGM was often performed by an excisor without any medical training, without anesthesia, and with reused or unsterilized tools (Abdulcadira, Margairazb, Boulvaina, & Iriona, 2011). In rural areas in Liberia, girls were blindfolded and then taken away from homes or schools to where the procedure was administered at an undisclosed location, one at a time, until all girls have been initiated (WHO, UNICEF, UNFPA, 1997). After the initiation, each girl's legs were bound together to stop heavy bleeding while the wound heals with the aid of herbs (WHO, UNICEF, UNFPA, 1997).

Reasons Behind Female Genital Mutilation

UNICEF (2016) studied the prevalence of FGM worldwide and found varied reasons for the practice. Surveys estimated 90% of FGM cases were Type I (mainly clitoridectomy) and Type II (excision), while 10% (over 8 million women) experienced Type III, a very severe type (infibulation) practiced in the northeastern region of Africa

(i.e., Djibouti, Eritrea, Ethiopia, Somalia, and Sudan; UNICEF, 2013). The LDHS (2007) estimated a prevalence rate of FGM of 52.8% in Liberia.

According to Berggren et al. (2006), FGM was performed to reduce a girl's sexual desires to preserve her virginity for her husband. However, Khaja (2004) also cited religion as the main reason why FGM was performed in practicing countries, including Liberia. Another study reported that the practice was seen as honoring the Muslim faith and a girl who was uncut considered a bad Muslim (Allag, Abbound, Mansour, Zanardi, & Quereux, 2001). Another reason for FGM was to ensure the hygiene of the genitals; without this procedure, the female genitalia was considered harmful to the male penis (Norman, Hemmings, Hussein, & Otoo-Oyortey, 2009), and if FGM was not performed, practitioners believe it can cause a bad odor. In Liberia, FGM was mainly practiced to secure income (28 Too Many, 2014).

In many communities where FGM was practiced, it was viewed as a cultural norm essential in raising a girl. In Kenya, for example, females who experienced FGM were considered unclean and not suitable for marriage (Dugger, 1996). In many ethnic groups, families faced considerable pressure to conform to the tradition of FGM (WHO, 2008). A girl's virginity was essential for a family to request a high bride price (WHO, 2013b). In most rural areas, the family depended on a substantial bride price to achieve family honor (Shell-Duncan et. al 2000). If the female child was cut and a virgin, it signified that the female child came from a good home and her family name is honored.

In Somalia, families also saw infibulation (FGM) and early marriage as a means of ensuring that a child remained pure and worthy of a high bride price (Warsame, 1989).

Non-FGM girls were constantly teased and bullied about being unclean, told that no man will marry them and that they were not fit to participate in community events. Somali mothers constantly checked their daughters to ensure that the girls were still stitched and closed (Barnes & Boddy, 1994; Dugger, 1996; Warsame, 1989). Another Sudanese study showed girls may be bullied or teased in relation to FGM, led them to desire to conform to the practice to avoid ostracism by peers. The UNFPA noted that FGM practices were viewed as requirements for social acceptance, family honor, income, and marriageability (WHO, 1979).

According to the LDHS (2007), there were multiple reasons why FGM was performed on girls aged 5–15 years old in Liberia. The SBS generated income from FGM initiation; parents pay a fee before FGM was performed and another fee when the girl completed the process, which can take 1 to 5 years depending on the ethnic group (28 Too Many, 2014; LDHS, 2007). The fees to initiate a child were higher in rural areas where FGM was considered necessary to preserve cultural traditions; it was a prerequisite for marriage, connoted acceptable sexual behavior, and generated income. Although most parents lived below the poverty level, they saved money to pay for their children's FGM initiations. The regions in Liberia with the highest SBS membership were in the northcentral and northwestern regions. Membership was very low among women in the southeastern regions. The WHO (2010, 2013a) reported several reasons for FGM, including cultural and social acceptance, the prevention of promiscuity, remaining faithful to the husband once married, and increasing the husband's sexual pleasure. In Somalia, for example, prospective husbands have had the right to inspect the brides'

bodies prior to marriage to determine whether they were still virgins (Toubia, 1993). These were the three main factors that played a key role in the continuation of FGM in practicing countries among multiple ethnic groups: social norms, cultural traditions, and religion (Almroth, Elmusharaf, Hadi, Obeid, & Al, 2001; Jones, Ehiri, & Anyawu, 2004; Keita & Blankhart, 2001; WHO, 2008).

Complications

The health complications associated with FGM varied. One study showed that women who underwent FGM had a higher rate of bacterial vaginosis and incidences of the herpes simplex virus (Morison et al., 2001). Further health complications associated with FGM include hemorrhaging, septicemia, tetanus, urogenital complications, chronic pain, infection, keloid formation, primary infertility, birth complications, urinary tract infection, danger to an unborn or newborn child, and psychological consequences (Almroth et al., 2005; Alsibiani & Rouzi, 2008; Behrendt & Moritz, 2005). No data was available concerning how many girls have had died from FGM while in the SBS.

Several researchers have reported adverse physical health complications from FGM that can lead to death ("Secret Societies," 2014). In terms of acute complications associated with FGM, the most common included severe pain, shock, genital tissue swelling, and bleeding. Other common complications of FGM included infection such as tetanus and septicemia; shock; severe pain causing urine retention and mechanical obstruction of the urine due to the procedure; urethral, vaginal, perineal, or rectal damage; and incontinence, both urinary and fecal (El-Shawarby & Rymer, 2008).

Long-Term Health Complications

The long-term health complications include difficulties with menstruation, low sexual arousal, infected epidermal inclusion cysts, abscess formation, chronic pelvic infections, keloid formation, and an increased risk of obstetric complications (Behrendt & Moritz, 2005; Dirie & Lindmark, 1992; Nour, 2004; Pereira & Guilfoil, 2012). A recent research study conducted in Sudan have showed a significant association between cervical cancer and FGM (Ibrahim, Rasch, Pukkala, & Aro, 2011). Further studies conducted in Sierra Leone showed that girls under the age of 10 who had undergone FGM suffered from ongoing fever (Bjälkander et al., 2012).

Problem Statement

The WHO (2013b) noted that FGM was more prevalent in African countries than in developing countries, and researchers have estimated more than 140 million girls and women have been subjected to some form of FGM each year. FGM is performed in the absence of any perceived medical necessity, subjecting girls and women to health risks and life-threatening consequences (WHO, 2008). It could also be argued that girls (under 18) cannot possibly give informed consent for FGM initiation.

There was an abundance of research in the field of public health on early marriages, FGM, and high infant and maternal mortality rates in sub-Saharan African countries (Amusan & Asekun-Olarinmoye, 2007; Cappa, Moneti, Wardlaw, & Bissell, 2013; Sipsma et al., 2012; WHO, 2014), and it was within this literature that this study has been situated. Girls' health and education issues have received considerable attention in recent years, with studies completed on the rates of school completion for girls

(Ayodo, Simatwa, & Juma, 2012; Tamire & Molla, 2013), the impact of early marriage and pregnancy (Olukoju, 2006), and high maternal mortality rates (WHO, 2011). However, to date, there has been limited research on whether parental education, wealth, and geographic location have an impact on the prevalence of FGM in northwestern Liberia. Such information could influence policymakers to make FGM practices illegal in Liberia by developing legislation to prohibit the practice. Additionally, other social factors—such as cultural traditions and beliefs that may influence whether a young girl was subject to FGM—have not been well researched in Liberia.

The WHO (2014a) reported that when poor and uneducated parents lacked the necessary health information needed to provide optimum care for their children, the risk of participation in FGM will increase. Several studies (Davis-Kean, 2005; UNESCO, 2014; UNICEF, 2013; WHO, 2013b) have shown that babies born to mothers with no education who have experienced FGM were twice as likely to die before their first birthday compared with babies born to mothers who have some education. Whether parental education, wealth, and location can influence if a young girl was subjected to FGM practice has not been well researched in the northwestern region of Liberia. In this study, I examined the impacts of these three factors in relation to the process (FGM) of girls becoming members of the SBS in northwestern Liberia. Social and economic variables, including parental educational level and wealth, were factors associated with FGM in many sub-Saharan countries (UNICEF, 2013).

Purpose of the Study

In this study, I examined the links between FGM and parental education, wealth, and location. In addition, the study was designed to determine whether lack of education, low income, and location perpetuate women's initiation into SBS in areas that have no access to education, health facilities, or employment. This knowledge may help community leaders and members improve the quality of health and to decrease the practice of FGM. I aimed to contribute answers to questions regarding whether more educational programs would benefit certain populations, which specific populations they would benefit the most, and where resources would be most efficiently used.

Nature of the Study

I used a quantitative approach in this study. With this research design and method, I used numerical data to explore the factors affecting the prevalence of FGM in the northwestern region of Liberia. The sample used in this study was collected from the LDHS (2013), which included men, women, and children (aged 15–49) from 9,239 households in Liberia. I analyzed quantitative survey data using descriptive statistics, correlations, logistic regression, and chi square. The Social Ecological Model (McLeroy, Bibeau, Steckler, & Glanz, 1988) provided the framework to explain the presence of levels of influence, and how these levels were interactive and reinforcing when implemented. Detailed explanations of the target population, sampling procedures, and sample size were provided in this study under the methodology section.

Research Questions and Hypotheses

These research questions were at the foundation of this study:

RQ1: Is there an association between parental education level and the prevalence of FGM among girls in Liberia?

$H_0$1: There is no association between parental education level and the prevalence of FGM among girls in Liberia.

H_a1: There is an association between parental education level and the prevalence of FGM among girls in Liberia.

RQ2: Is there an association between parental economic status and the prevalence of FGM among girls in Liberia?

$H_0$2: There is no association between parental economic status and the prevalence of FGM among girls in Liberia.

H_a2: There is an association between parental economic status and the prevalence of FGM among girls in Liberia.

RQ3: Is there a relationship between parental location and FGM prevalence among girls in Liberia?

$H_0$3: There is no relationship between parental location and FGM prevalence among girls in Liberia.

H_a3: There is a relationship between parental location and FGM prevalence among girls in Liberia.

Theoretical Framework

This study was based on the social ecological model (SEM), which recognized the intertwined relationship between individuals and their environment. The SEM developed out of the work of several prominent researchers including (a) Urie Bronfenbrenner's (1979) ecological systems theory, which focused on the relationship between the individual and the environment; (b) Kenneth McLeroy's ecological model of health behaviors (McLeroy, Bibeau, Steckler, & Glanz, 1988), which classified different levels of influence on health behavior; and (c) Daniel Stokols's social ecological model of health promotion (1992, 1996), which identified the core assumptions that underpin the SEM. The work of these and other researchers have been used, modified, and evolved into what researchers have referred to as the SEM.

This framework viewed interpersonal violence as the outcome of multiple factors at the four levels of (a) the individual; (b) the relationship; (c) the community; and (d) the society. The SEM emphasized the linkages and relationships among several factors affecting health (McLeroy et al., 1988). The approach was based on the premise that social traditions, rules, norms, and culturally-shared beliefs have influenced individuals' behaviors within a group.

The model was considered effective for understanding the multifaceted and interactive effects of factors that shaped a person's behavior. I used SEM concepts to explore the impact of parental education, wealth, and location factors on the prevalence of FGM among women in northwestern region of Liberia. I developed the research questions to explore whether parental level of education, wealth status, and location have

had an impact on the rates of FGM in the northwestern region of Liberia. Stokols (1992, 1996) noted that the social, physical, and cultural aspects of the environment have had an ongoing effect on individual's health. Stokols further stressed that the environment consists of multiple layers, such as neighborhoods and institutions, which were embedded in larger social and economic structures.

Figure 1. The social ecological model. Source: Adapted from the CDC, The Social Ecological Model: A Framework for Prevention. Retrieved from http://www.cdc.gov /violence prevention/overview/social-ecologicalmodel.html

Definition of Terms

Economic status: Independent ordinal variable in the study which measured the following levels: poorest, poorer, middle, richer, and richest (LDHS, 2013).

Educational level (EL): Independent ordinal variable in the study which measured the following levels: no education, primary education, high school and higher education (LDHS, 2013).

Enumerated areas (EA): Areas used for census data collection. The EA in this study consisted of the geographic area surveyed in 2008 during the Liberia Population and Housing Census (LPHC; 2008): 15 counties stratified into 30 sampling strata including 15 rural and 15 urban strata ("LDHS," 2013).

Mutilation: To inflict serious damage on any part of the body or body altering (UNICEF, 2013).

Sande Bush Society (SBS): An all-female social group primarily responsible for the preparation of girls for adulthood and marriage (McClusky, 2002). The SBS exists in several ethnic or tribal groups including the Vai, Gola, Mano, Bassa, Kissi, and Kpelle people from Liberia. The Vai, Gola, Gbarpolu, and Mano ethnic groups are representative of northwestern Liberia.

Assumptions and Limitations

In this study, I used regional secondary data collected by the LDHS (2013). I made the following assumptions in this study:

1. The dataset used was not originally collected for this study. I considered missing data occurrences, which were common in secondary data. Misclassification or error was another issue in the data entry that may have occurred, and the instrument used to collect data was imperfect, with participants failing to complete the questionnaires (Howell, 2007). I used a special technique to handle any issues associated with missing data. Since
2. The technique and procedure I used to manipulate the dataset was appropriate to address the issue of missing data, any incomplete data, and data splitting in a way that

did not compromise the validity of the dataset. Since missing data was common in studies involving secondary data, and misclassification was also possible with imperfect collection instrument, I assumed that the special technique that I used was appropriate.

3. The population of girls and mothers aged 19–49 living in northwestern Liberia, West Africa was representative.

Scope, Limitations, and Delimitations

I conducted this research to explore the link between parental education, wealth, location, and the likelihood of FGM. The study was limited to the northwestern region of Liberia. A limitation was the use of secondary data with potentially missing or incomplete datasets because the data was not collected for this study. The study did not extend to other regions of Liberia. Additionally, FGM was only performed on girls and women; as a result, the data includes only women aged 15–49. The distribution of the practice may be explained in terms of either the impact of independent variables such as the level of wealth, location, and lack of education, or the dependent variable, FGM.

Significance of the Study

This study bridges the gaps in the literature and contributes to social change. There is an abundance of studies on factors that perpetuate FGM in high prevalence countries such as Sierra Leone, Guinea, and Liberia (WHO, 2013b). For women who have experienced FGM, the health consequences, including mental distress and sexual dysfunction, are significant. Liberia experienced 14 years of war (UNICEF, 2011; WHO, 2009), which made it difficult for researchers to collect data. Little or no research has

been conducted to address factors linking women's health issues to FGM in the northwestern region of Liberia. This study adds to the body of knowledge by exploring whether parental education level, wealth status, and location can predict whether a female child is subject to FGM.

Contribution to Social Change

According to the German Society for International Collaboration (Deutsche Gesellschaft fur International Zusammenarbeit, 2011b), 58% of women in Liberia have participated in FGM; in the northwestern region of Liberia, 72% of women have participated in the practice. Liberia was among the few African countries that has not been enacted a policy to eradicate FGM; instead, the government has restricted when FGM practices can occur (e.g., only during school closures), though some ethnic groups such as the Loma tribe has practiced FGM throughout the year (28 Too Many, 2014). In this study, I aimed to understand possible predictors of FGM in the northwestern region of Liberia. Hopefully, my findings will influence policymakers and empower women in the northwestern region. This information may be used to develop strategies to alleviate the financial burdens of women struggling to take care of their children due to financial or medical issues. Social change will be actualized when the information can be used to develop health awareness programs about the health consequences of FGM for women in high-prevalence regions in Liberia.

Summary

FGM practiced by the SBS in Liberia poses a great public health challenge for women (WHO, 2014). Women lack access to education, sanitation, and health facilities in rural areas (World Bank, 2015). Education can play a key role in rural areas to discourage FGM practices. In this chapter, I discussed my intent in the study along with operational definitions, the theoretical approach, the scope and delimitations, assumptions, and the significance of the study. In Chapter 2, I reviewed the literature in relation to the topic as well as the theoretical foundation that I used in this research. Specifically, I discussed what is already known about FGM and the impact it has had on women's reproductive health in Liberia.

Chapter 2: Literature Review

Introduction

FGM was one of the most significant public health problems in contemporary Africa (Toubia, 1993). FGM disproportionally affects girls in sub-Saharan Africa (WHO, 2015). Previous studies by the (WHO, 2013a) have shown that in other parts of Africa, there was not nearly the prevalence of FGM as that in sub-Saharan Africa. Various researchers have studied FGM in relation to culture, religion, and income; however, few have examined parental education, wealth, and location in relation to the practice of FGM in Liberia.

Liberia has had a 58% prevalence rate of FGM nationally (WHO, 2010). In Liberia, FGM was usually performed on girls between the ages of 7 and 12 years, though some researchers have recently noted its practice on women of all ages (Deutsche Gesellschaft für Internationale Zusammenarbeit, 2011c). Despite decades of attempts to eradicate genital cutting, FGM remained a source of income for the members of the SBS. According to the WHO (2010), studies based on data from six African countries showed that the cost associated with various medical complications for girls and women due to FGM places a financial burden on the overall health system. In this chapter, I discussed factors such as parental education, wealth, and location, and how they may be linked to the perpetuation of FGM. I also discussed the epidemiology of FGM and its health consequences, as well as the SEM and how researchers explained individuals' interaction with multiple factors.

Literature Search Strategy

To locate the literature, I searched various databases through the Walden University Library including PubMed, Medline, Google Scholar, and a general search engine. My search focused on peer-reviewed articles published within the last 5 years (2011–2016). I also searched in databases of international organizations. The search phrases included *female genital mutilation, SBS in Liberia, FGM and education,* and *FGM strategy to eradicate*. I found few studies on whether education, high income, and location had an impact on the prevalence of FGM in Liberia. Therefore, in this literature review, I discussed studies conducted in other sub-Saharan African countries that shared cultures, traditions, and FGM rituals with Liberia such as Sierra Leone, Côte d'Ivoire, and Guinea.

Geography and Climate of Liberia

Liberia has been a small country with a physical size comparable to the state of Wyoming in the United States. Liberia is situated on the west coast of Africa, south of the Sahara Desert. It is bordered by Sierra Leone on the northwest, Guinea to the north, and Côte d'Ivoire to the east. The Atlantic Ocean lies to the south (World Bank, 2015). The land mass of Liberia is 43,000 square miles, and the country lies at latitudes of 4° 20' to 8° 30' North and longitudes of 7° 18' to 11° 30' West (World Bank, 2015). Liberia consists of 15 counties (LDHS, 2013). The country has two main seasons of the year: dry and rainy. The rainy season typically runs from May to October. It features heavy rainfall and high humidity levels of between 90% and 100% (LDHS, 2013). The dry season generally lasts from November to April, with milder temperatures ranging

from 90°F to 102°F (“LDHS,” 2013). The climate in Liberia is well-suited as breeding grounds for mosquitoes; consequently, malaria is endemic in the country (Govoetchan et al., 2014). The climate can also increase risk for infections, especially if a child is subjected to surgical procedures without proper tools such as sterilized blades (28 Too Many, 2014).

Liberia has a population of 3.7 million, with an average life expectancy at birth of 59 years (Center for Disease Control and Prevention, 2013). Liberia has been multicultural country; several ethnic groups live in the country with various religious practices, all with different cultural beliefs and traditions. Liberia is one of the poorest and least-developed countries in the world, and it is at the bottom of the Sub-Saharan African Countries Index (WHO, 2013b). According to the Poverty Reduction Strategy (2007), nearly 64% of Liberians lived below the global poverty level, and 48% lived in extreme poverty, especially women and girls. However, poverty and the underdevelopment of the country and its people were not the only barriers limiting human resources in the country. There were challenges that have had emerged since the Civil War ended in 2005, dividing the country by ethnicity, religion, and location (Utah, 2008). Liberia is made up of 16 different religious groups including Christianity, Islam, and various indigenous belief systems. In the recent Liberia Institute of Statistics and Geo-Information Services (LISGIS, 2013) health survey, Liberia was divided into urban and rural regions, and data was collected by region. In Liberia, FGM was estimated at 58% for girls and women aged 15–49 (LDHS, 2013). The LDHS (2013) noted the

percentage of women aged 20–24 who experienced FGM had declined, from 59% in 2007 to 39% in 2013.

The Epidemiology of Female Genital Mutilation

FGM involved the removal of part or all a female's genitalia for non-medical reasons (WHO, 1995). While the origins of FGM has not been known, Oloyinka (1997) argued that FGM was first practiced to control women's sexual behavior. Another reason for FGM was the belief that it will increase the pleasure of the woman's husband and contribute to the woman's social acceptance (WHO, 2010). The health consequences of FGM depended on the type of the procedure performed (WHO, 2013). Consequences included infection, chronic pain, infertility, epidermoid cysts, and complications with childbirth (WHO, 2013). Other consequences can include fatal bleeding, acute urinary infection, septicemia, tetanus, and the transmission of HIV from improper sterilization or reuse of instruments (Abdulcadira et al., 2011; Berg, Rigmor, & Denisona, 2012).

Given the sensitive nature of FGM and the lack of reliable data, the number of women who died during childbirth each year because of this harmful practice was not known (WHO, 2010). However, in countries such as Sudan with a high-prevalence of FGM where health infrastructure was non-existent in rural areas, it is estimated that 75% of women who have experienced FGM will have complicated childbirths (Women's Policy Inc., 1996). Because of the practice, many girls married younger and did not complete school (Women's Policy Inc., 1996). In Liberia, FGM procedures were performed in the forest where there were no medical facilities available to handle any emergencies that might have arisen. Even in urban areas, medical facilities were limited

and often did not function effectively, increasing the likelihood of a patient's death from complications during the procedure (Koso-Thomas, 2009).

In Liberia, Types I and II of FGM were common. There were numerous reasons why the practice is endemic in the country. FGM is tied to religion in rural areas and rooted in gender inequality. Across the country, FGM was also linked to marriage status, income, community, politics, and issues around control over women's bodies and sexuality (WHO, 2008, 2013b). The SBS was highly supported by both men and women in Liberia, including government officials, and was considered in some ethnic groups as part of raising a well-respected child (WHO, 2013b). The SBS a tight-knit, member-only society headed by older Zoe women in the community; those who opt not to become members of the society were often ostracized and barred from participating in community decision-making.

Interventions to reduce FGM have been in place since the 1960s (WHO, 1965). Despite multiple international efforts to eradicate FGM, there is a lack of reliable data concerning its prevalence rate in relation to children's ages, though studies have showed low school enrollment for girls compared to boys. There was little data available to for developing strategic education programs and income opportunities, and for make learning more accessible to the most disadvantaged groups in the rural areas of Liberia.

The Sande Bush Society in Liberia

The SBS was a female initiation society well known in Liberia as associated with FGM. The SBS was responsible for preparing girls from multiple ethnic groups for adulthood and marriage through FGM (Phillips, 1978). The SBS has been in place since

the 19th century and was tied to male-dominant institutions in West African culture (McClusky, 2002). It fought to preserve century-old traditions and art forms (McClusky, 2002). The members of the SBS emphasized the secrecy of its rituals and the initiation of its members. The SBS has been an organization made up entirely of women who have gone through FGM.

While the SBS was publicly known for its traditional dance performances, its more secretive rituals, such as FGM, was dangerous for the women and girls of Liberia (McClusky, 2002). While women appeared to lead these practices, men played important political roles in encouraging women to continue FGM to be respected in the community. The SBS operated alongside the Poro society, an all-male society that discussed important political, economic, and legislative issues (Bledsoe, 1984). The elders from both societies were greatly respected by the communities they represent. The SBS believed that all members should adhere to a cultural code of conduct, and non-members were also expected to follow the code if they lived in an area where SBS operated.

Initiations can occur in remote, secluded areas over a period of years depending on the ethnic group (McClusky, 2002). Once a child was initiated, she was taught to cook, fish, sing, and work in groups, and was educated about practical life skills including how to negotiate with her husband and prepare for motherhood (McClusky, 2002). Most girls were married immediately after completion of the initiation period, as SBS training prepared girls for their new roles as wives and mothers. Sande Bush women have defended this practice as a tool to teach girls how women negotiate their relationships with men, which decisions of their husbands to question, what constituted

beauty and appropriate mannerisms, and how to handle disappointment and good fortune (Bledsoe, 1984). The SBS affected all major indigenous ethnic groups in Liberia. The prevalence rate of girls initiated into the SBS (i.e., those experiencing FGM) was unclear. However, the LDHS (2013) found 60% of children who should be in school were not in attendance. Initiation duration varied among ethnic groups. Depending on how deeply rooted the family was within the culture, a female can be kept for 2 to 6 years without any schooling (28 Too Many, 2014). Girls cannot attend school because they were separated from others who are not members of the SBS.

Figure 2. Sande masquerade dancers after initiation. Reprinted. Image available in the public domain. (Phillips, 1978, p. 266).

Economic Status of Parents

Parental income (i.e., economic status) was measured in the LDHS (2007) as an index of wealth. I used parental income as an independent variable in this study to explore the relationship between poverty and the practice of FGM. The literature has shown that poverty increased a child's risk of not attending primary school and becoming an SBS member in Liberia (28 Too Many, 2014). In Liberia, 83% of the population lived on $1.25 U.S. dollars a day, which was at the global poverty line of $1.25 day

(Purchasing Power Parity, 2014). Furthermore, the United Nations Development Program (UNDP) in 2013, ranked Liberia 175 out of 187 countries on the Human Development Index (UNDP, 2014; WHO, 2014a). The high prevalence of FGM was linked to children who lived in poor regions with no education. The physical demands of walking 2 to 3 hours to primary school in rural areas posed barriers for the parents and made it unsafe for the child.

The women overseeing SBS were considered powerful in the society, but the ones who were forced to join were only considered part of the SBS membership and were not necessarily powerful. Most of the women who oversee SBS were uneducated, unemployed, and reside in rural areas of Liberia where cultural traditions were obligatory for all in the community (28 Too Many, 2014). Women depended on their husbands to provide for them, but most men were unemployed or have no stable means of income. The SBS excisors (not the SBS members) did generate some income, but not economic stability. Parents made decisions about the husband their child will marry and whether he was from a good family. When the family arranged for the daughter to marry, the parents were guaranteed steady income and other options that benefit the family (Elmusharaf, 2013; Moges, 2009).

The husband was responsible for all immediate family members' needs. Most families lived together including the grandmother, great-grandmother, aunts, uncles, nephews, nieces, and friends of the family. No studies have examined whether FGM was driven by economic motives in Liberia. While performing the procedure did not generate a lucrative income, it provided enough to sustain the family of the woman who performs

it through the FGM season. The SBS excisor was paid by the girl's guardian before the initiation and after the process. For some ethnic groups, FGM was also a prerequisite for women to have the right to inherit property (UNFPA, 2008).

Parental Education Level

In urban regions in Liberia, the literacy rate for adult men was 55% and 41% for women; illiteracy in rural settings was 97% for both genders ("LDHS," 2007). Illiteracy was linked to other forms of social injustice such as domestic violence and unequal political and employment opportunities (Nussbaum, 2005). UNESCO (2014) reported that 38% of African adults (153 million) were illiterate, two-thirds of whom were women. UNESCO (2014) also emphasized that more than half of parents were not able to help their children with homework or school assignments due to illiteracy. Most women who lived in rural areas of Liberia did not have access to schooling for their daughters (Deutsche Gesellschaft für Internationale Zusammenarbeit, 2011a). Education can be costly, incurring fees for registration, uniforms, books, and transportation. Many families in rural areas cannot afford the costs associated with education. Parents with more education were less likely to perform FGM on their daughters (UNICEF, 2001). According to Bonessio (as cited in Hassanin & Shaaban, 2013, p. 275), females' education level was the single most important factor in changing women's attitudes toward FGM. The study also found that parents whose educational status was below high-school level were three times more likely to experience FGM and initiated their daughters as well (Tamine & Molla, 2013).

Living in a high-prevalence FGM location, and especially in a rural area, have increased the likelihood of FGM. A study conducted in Burkina Faso found a significant association between place of residence and FGM (Karmaker, Ngianga-Bakwin, Chung, & Clarke, 2011). In Liberia, SBS membership was highest in the northwestern (72%) and south-central (73%) regions (28 Too Many, 2014).

Location: Urban/Rural

Much of the research on FGM indicated that the practice was more likely to be carried out in remote villages than in urban settings (Secret societies, 2014). There were more opportunities for a woman living in urban settings to encounter girls who were not circumcised and who did not experience the stigmatization they would in rural settings. In rural areas, uncircumcised girls were ridiculed, ostracized, and not allowed to participate in community affairs.

A major ethnic group migration occurred after the Civil War ended in 2003 (28 Too Many, 2014), displacing the 16 ethnic groups of Liberia from various villages. The SBS women moved to regions where the practice was strongly upheld by the ethnic groups that practice FGM. Those living in urban areas, where women work and were more educated, were less likely to undergo the rite (28 Too Many, 2014). Thus, geographical location was an important factor that affected whether a young girl will be initiated into SBS. Parents who lived in rural areas were subject to greater social pressure than those in urban areas to uphold the cultural traditions of FGM (28 Too Many, 2014). Individuals who lived in urban areas have access to health information on radio and television, and individuals living in rural areas did not have access to media

communication. Place of residence can be a contributing factor that has had an association with FGM depending on ethnic composition (UNICEF, 2013).

Environmental Factors

Abayomi (2007) stated that the belief persisted in Africa that the place of a woman was in the home. Sons were sent to school while daughters were forced to remain at home to help their mothers with household chores. Therefore, the culture or traditions within the child's community became a significant factor affecting her educational opportunities. Social groups were also important, and having friends who were members of SBS and accept FGM as a cultural norm can teach children that FGM was appropriate or even desirable. Children were the product of their environment, and they were influenced by the activities and ideas of the adults with whom they spent time. These ideas and cultural concepts, such as early marriage being acceptable, can be internalized by children (Vygotsky, 1962). Vygotsky also emphasized that children's thought processes and reasoning were supported through tools such as language, signs, and symbols. The SBS was known as an aspirational symbol for girls and women who wanted to move up the ladder of the political system (28 Too Many, 2014).

Family Structure

The Liberian household was composed of both immediate and extended family. The number of family members living in a typical household varied depending on a family's income. Families living in rural areas tended to have a different family household composition with an average of four to five children per family along with extended family members living together (Ballah, 2016). It was also common for men to

take on more than one wife in the rural areas depending on the tribe of the families or religion. In rural areas, it was also common for women to marry at an early age such as 14 or 15, but it has been illegal in urban areas to marry a girl before the age of 18 (Ballah, 2016).

Most family members' roles in Liberia were tied to traditions. Men have the role in the family to provide financial support and maintain primary authority over the household. Women were expected to handle all childcare and household duties. The female child was expected to assist with farming, household chores, and help to take care of their siblings as well. In rural areas, boys were expected to attend schools, where the female child was expected to get married at an early age to assist the family with income from the dowries given to the girl's family. It was common for most women to work outside of the home in urban settings.

Religion

Religion has been strongly associated with FGM, especially Islam (Gruenbaum, 2005). Many scholars argued that FGM predates Christianity and Islam (Ahmadi, 2013), although it has been reported that FGM is practiced most commonly in Muslim communities. However, Ballah (2016) disagreed with this assertion in his study involving a section of Liberia, arguing that religion was not the reason FGM was practiced in Liberia, as there were no requirements for FGM found in either the Bible or the Koran. Ballah also emphasized that FGM was practiced by several ethnic groups in Liberia and further stressed that not all Islamic groups practiced FGM. Some of the groups mentioned in the study were traditionalist, animist in sub-Saharan African countries, Muslims, and

Christians (Elmusharaf, 2013; WHO, 2011). The religious composition of Liberia as reported by (UNICEF, 2013) was 40% Christians, 40% Animist, and 20% Muslim. This was contested by Muslim leaders in Liberia who claimed that the Muslim population was 50% and not 20%. Regardless of this discrepancy, it can be difficult to establish a link between this data and FGM specifically, as there was limited existing information on the impact of religion on the prevalence of FGM in the northwestern region of Liberia.

Furthermore, the Office on Women's Health (2012) noted there were no existing studies that can link a specific religion to FGM. The northwestern region of Liberia included the Vai tribes from Grand Cape Mount County, the Gola tribes from Bomi, and the Kpelle tribes from Gpapolou. These three tribes covered one of the five regions in Liberia. They were well-known tribes that were entrenched in SBS, but the type or form of FGM and the duration of the initiations were different between these three ethnic groups (28 Too Many, 2014; Secret societies, 2014).

Age

UNICEF (2013) described the age at the time of FGM initiation across practicing countries such as Chad, Egypt, Somalia, and Kenya. The report stated that the age at which girls were initiated varies among ethnic groups, but that it was common for girls to be initiated before their fifth birthday. In Liberia, the ages of the girls who joined the SBS ranged from 7–12 years old (28 Too Many, 2014).

FGM in Liberia was strongly upheld in some areas as part of raising a female child, or as a rite of passage into womanhood. There was no data for the age at which FGM was performed given either in the 2007 or the 2013 LDHS. UNICEF (2013) stated

that most girls were taken to the SBS between 7–12. One prominent example from recent years was the case of Ruth Perry, whose daughter was kidnapped and initiated. When she complained about the abduction, she was also forcefully initiated by SBS women (Liberia Observer, 2016).

This data implied there was no specific age for FGM in Liberia, and girls between 15 and 20 years old were also at risk of being initiated. The LDHS (2007) reported the prevalence rate of FGM: 85.4% of women were members of the SBS. The LDHS (2013) survey showed a decline to 72% in the prevalence rate. The decline was assumed to be due to the migration of SBS women to urban communities.

Tribe

Liberia has 16 tribes; 13 of them were known to practice FGM. The SBS was based mainly in rural areas among various tribes, and when individuals migrated to the city, they normally settled among tribes that practiced FGM in a diverse population. Some children may not be initiated due to parents' multi-tribal status or intermarriage, where the father was not from a tribe that practices FGM (UNFPA, 2016). The two types or forms of FGM practiced in Liberia were Type I (excision) and Type II (clitoridectomy). Type I was practiced by the Bassa, Kpelle, Gola, Mano, Gio, Vai, Dei, Mende, and Krahn tribes. Type II was practiced by the Lorma, Kissi, Belle, and Gbandi tribes (Secret societies, 2014). The population in the northwestern region consisted of three counties: Bomi, Grand Cape Mount County, and Gbarpolu. All three counties have had strong ties to the SBS. The Gola people lived in Bomi, which was very close to Grand Cape Mount County. The Vai tribe was well known for practicing FGM in Grand

Cape Mount County, though there were other tribes such as the Mende who also have had strong ties to SBS.

Culture

Culture was defined as the shared characteristics and values of a society ("Liberia – History and Culture," n.d.). There were two different class systems. People who lived in rural areas tended to be from lower socioeconomic backgrounds, and their cultures were different to those from urban settings. Americo-Liberians were slaves in America who were freed and sent back to Liberia. The freed Americo-Liberian slaves and the diverse tribal ethnicities made the country very rich in culture ("Liberia – History and Culture," n.d.). Most Americo-Liberian slaves listened to haunting slave music and songs of the American South, while the indigenous musical traditions of the region were illustrated with ritualistic events such as masquerade dances and harvest season celebrations. These were valued heritage traditions for various ethnic groups in Liberia.

Farage et al. (2015) described how culture dictates FGM practice, as when parents and children were accepted in communities only if they were members of the SBS. Flomo (2014) also noted that Liberia's patriarchal culture was exacerbated by old traditions handed down through generations, making it difficult to end FGM. Countries such as Sierra Leone carried out similar traditional practices and used culture as the justification for performing FGM on young girls. In Gambia, religion was used as the justification for FGM (Ahmadu, 2000). Another aspect of Liberian culture that may have influenced the practice of FGM was the practice of polygamous relationships that was common in rural communities. There were no laws prohibiting marrying more than one

woman in Liberia, especially in rural areas where they were more likely to follow traditional laws than government laws (Liberia Observer, 2016).

Operationalization of the Theoretical Framework

In this study, I used the Social Ecology Model (Bronfenbrenner, 1979) to emphasize the importance of social and physical environments. The Center for Disease Control and Prevention (CDC) further exemplified the use of the SEM to understand how violence affected the individual within their communities. I used the SEM as a prevention framework and to explore risk factors from all levels of the SEM that influence on FGM rates in areas where prevalence was high. The SEM addressed the complexities and interdependences between socioeconomic, cultural, political, environmental, organizational, psychological, and biological determinants of behavior (Stokols, 1996). The model has had its origins in the fields of psychology and human development in the mid-20th century, when researchers began to understand how health is affected by behavior (Dahlberg & Krug, 2002). McLeroy et al. (1988) developed five classifications of the levels of influence within an individual's community. This model was expanded by scholars in public health fields like health promotion, health psychology, epidemiology, and maternal and child health (Institute of Medicine, 2003; Stokols, 1996).

The Institute of Medicine (2003) defined the ecological model as a model of health that explained the linkages and relationships among multiple factors affecting health. The SEM was important in health promotion which can help to evaluate and analyze data. These results can be used as tools to enact change (McLeroy et al., 1988). Many studies have proposed explanations of why FGM was performed globally, but not

the factors that influenced individuals' behavior at multiple levels in some countries of Africa. Social ecology explains human behavior and how it affected varies level of influence in the environment.

McLeroy et al. (1988) outlined an ecological model that included five factors that affect health. The first level of the SEM was the policy/enabling environment, which included policies regarding the allocation of resources for maternal, newborn, and child health and access to healthcare services, and restrictive policies or lack of policies. The second level of SEM was organizational and social institutions, which provided social identities and role definitions such as a partner, friends, and family. The third level was the community, which included rules, policies, and formal and informal structures. The fourth level of the SEM was the interpersonal level, which provided social identity and role definition such as being a partner or friend, with established norms and values, standards, and social networks. Finally, the fifth level was the individual level, which consisted of the characteristics that influenced behavior such as knowledge, attitudes, skills, and beliefs (McLeroy et al., 1988; Stokols, 1996). This model was previously used in an alcohol prevention study among athletes on a college campus (Hansen, 1997; Perkins & Berkowit, 1986). The authors noted that in promoting health interventions, it was necessary to employ comprehensive approaches to develop strategies for health promotion programs (Hansen, 1997). In this study, the theoretical model was used to explain the factors influencing FGM in the northwestern region of Liberia. The research questions focused on explaining the linkages between multilevel factors.

Policy/Enabling Environment

The policy/enabling environment level included regulations pertaining to the environment. For example, in an obesity study, factors included regulations pertaining to school food programs and chemicals in foods (Frieden, 2010). In this study, this level was used to engage lawmakers to develop programs tailored to women's health awareness. This level was only effective if the message was clear in addressing the issue with law makers. Advocacy messages should impact the community and motivate individuals to participate in decision making.

Organizational and Social Institution

The organization and social level was a continuous process that encouraged and motivated other partners in private, local, and national sectors to achieve an objective. The model helped community leaders to ensure an environment that benefited individuals. Some partners may include government policymakers, community leaders, and religious leaders. This level also moved freely between the community level and individual level to create an environment for change.

Community Level

The community level was the context in which social relationships occurred in schools, neighborhoods, churches, and workplaces influence individuals (Gregson, 2001). This community level influenced individuals' activities within their communities (Fielding et al., 2010). The importance of all levels was that the individuals moved freely between levels and the factors were interrelated with the individual and the community. The factors at the community level that may have influenced FGM affected the

neighborhood (rural, some urban setting, no access to schools, and health facilities). Individual interactions with families, peer interactions, and economic needs and socioeconomic status were also factors that affected FGM (McLerory et al, 1988). Shefner-Rogers (2013) noted social mobilization dealt with the collaboration at multiple levels, from the individuals to community to policy between levels. The individual within the community was the catalyst for change. For example, a mother may talk to another mother about how many infants in the community have had severe coughs and how many have died because of pneumonia (the mother may or may not know it as pneumonia), or a mother may talk to and ask questions of others in her inner circle about a problem, which could prompt someone to identify a skilled person such as community health worker to address the problem (Frieden, 2010). The level was used in this study to foster the sharing of information about the health consequences of FGM.

Interpersonal

The interpersonal level included influences such as cultural factors and traditions at the family level that were reinforced at the societal level, affecting other factors that were interrelated with the individual and the community (McLeroy et al., 1988). In the SEM, the interpersonal level referred to the social influences from friends and family, and norms within social networks (McLeroy et al., 1988). For example, interpersonal relationships have had major influences on health behaviors including consulting a healthcare provider and seeking cancer screenings (Ashida, Wilkinson, & Koehly, 2010; Kinney, Bloor, Martin, & Sandler, 2005; Pasick et al., 2009). This level referred to the influence of family members, spouses or partners, and peers. Access to social support

networks versus social isolation, community norms, cultural background, and socioeconomic status of the community are also elements of this level. Relating this model to this study, an individual could be pressured to continue the practice of FGM from parents, older siblings, and the community as well.

Individual Level

The individual level included factors that increased or decreased an individual's health when using the SEM model. Since individuals existed in all the levels of the social ecological system, changing behavior and creating new social norms will require a supportive environment that was conducive for the individual to facilitate change (Shefner-Rogers, 2013). Attitudes and beliefs were the typical variables measured for the intrapersonal level of influence. Knowledge about the issue may be an important intrapersonal influence on behavior. For example, in a vaccine study, perceived membership in a priority group for vaccination could impact uptake more than actual membership in a priority group (Brewer & Hallman, 2006).

In this study, the factors that could exist on the individual level affect the perpetuation of FGM were: level of education, employment, socioeconomic status, knowledge, attitudes, beliefs, perceived barriers, and motivation. All levels of the SEM have impacted the behavior of the individual (Stokols, 1996). The SEM represented this concept as a series of overlapping circles, with each circle representing a different layer or component of the model. This model focused on the individual level and aimed to change an individual's knowledge, attitudes, behavior and skills, which included education and mentoring programs. The first individual level included the characteristics

that influence behavior such as knowledge, attitudes, skills, and beliefs; the second level was the interpersonal process, which included social identity, role definition such partner, friends, and family; the third level was organizational, which consisted of policies and rules; and the fourth level was the community level which consisted of already established norms and values, standards and social networks (McLeroy et al., 1988; Stokols, 1996).

While using the SEM approach, Vlahov, Coady, Ompad, and Galea (2007) suggested that interventions aimed at multiple levels were especially important when targeting hard-to-reach populations including minorities. There were studies that have confirmed the effectiveness of the SEM model in affecting a community. Coady et al. (2008) stated that education materials such as posters and flyers were helpful in the interpersonal level to create dialogue between community members during the community meetings to target minorities in rural areas. Another study was conducted in Guinea by USAID on how decisions were made about FGM among urban Guineans and individuals living in rural areas (Shefner-Rogers, 2013). The study findings revealed individuals from rural areas who lived in ethnically homogeneous neighborhoods turned to members of their rural home community for important decisions and had lower media exposure than urban dwellers (Mackie, 2013). Individuals with high incomes who lived in ethnically diverse neighborhoods turned to friends, coworkers, media figures, and religious groups for their information (UNICEF/UCSD, 2012). These outcomes suggested avenues for designing programs to change social norms around FGM.

Summary and Conclusion

In this chapter, I reviewed the literature on the consequences of FGM practices, which continued to be highly prevalent in sub-Saharan African countries despite contemporary assessments, research, and interventions by the WHO and other international organizations. In the literature reviewed, there were limited studies on factors that perpetuate FGM, and there remained a lack of knowledge about whether parental education, wealth, and location were linked to FGM in the northwestern region in Liberia. The literature confirmed that cultural traditions, religious practices, and family structure can perpetuate the continuation of FGM, but there were limited sources about how the above factors relate to the northwestern region of Liberia; this therefore constituted a gap in the literature.

The SEM was used to address this research gap through a five-dimensional approach of the multilayered factors. The SEM was focused on the relationships and interactions between levels of influence, such as individual, interpersonal, intrapersonal, community, and policy/enabling level factors (Center for Disease Control and Prevention, 2010). In addition, the SEM was used in this study to describe how an individual can move freely between multiple levels of influences in the environment. The Social Ecological Model in this study was used to shift the focus from individual behavior to multiple levels of influence to better understand the factors that impact health outcomes. For this study, I examined whether parental education, wealth, and location were influences that may correlate with problems of reproductive system of a woman. In

Chapter 3, I will provide a comprehensive description of the study design and the methods that will be used in the study.

Chapter 3: Research Method

Introduction

The purpose of this quantitative study was to explore whether parental education level, socioeconomic status (wealth quantile), and the location of the parents have correlated with FGM in the northwestern region of Liberia. In this chapter, I will discuss the research design and rationale of the study. This included the design choice and the variables studied. The chapter includes a discussion of the methodology, target population, secondary data collection procedure, recruitment and sampling strategy, and the data collection instruments associated with the secondary survey. In this chapter, I also will address the threats to validity and how they were mitigated. Chapter 3 concludes with a description of the ethical concerns in this study.

Research Design and Rationale

I conducted a cross-sectional quantitative research study using secondary data from the (LDHS, 2013). A cross-sectional design was appropriate for this study because I examined the independent relationships of parental education, wealth, and location as they related to FGM in the northwestern region of Liberia. Smith, Borowski, and Liu (2011) reported that the use of a cross-sectional design saved time and was less expensive when there are data already available. Cross-sectional designs were popular in health science studies measuring the incidence of a disease and the effects of public health strategies (Research Design Service – South West, 2012). I did not consider using an experimental design for this study because it was not necessary to alter the variables or manipulate the study environment to influence the outcome (see Creswell, 2012).

Additionally, experimental designs assisted in identifying cause-and-effect relationships. I did not seek to establish cause-and-effect relationships among current variables, but rather sought to provide in-depth descriptions and determine relationships among the study variables. The Walden institutional review board number is 09-05-17-0462587.

Research Questions and Hypotheses

This study was guided by the following research questions:

RQ1: Is there an association between parental education level and the prevalence of FGM among girls in Liberia?

$H_0$1: There is no association between parental education level and the prevalence of FGM among girls in Liberia.

H_a1: There is an association between parental education level and the prevalence of FGM among girls in Liberia.

RQ2: Is there an association between parental economic status and the prevalence of FGM among girls in Liberia?

$H_0$2: There is no association between parental economic status and the prevalence of FGM among girls in Liberia.

H_a2: There is an association between parental economic status and the prevalence of FGM among girls in Liberia.

RQ3: Is there a relationship between parental location (rural or urban setting) and FGM prevalence among girls in Liberia?

$H_0$3: There is no relationship between parental location (rural or urban setting) and FGM prevalence among girls.

H_a3: There is a relationship between parental location (rural or urban setting) and FGM prevalence among girls in Liberia.

Variables

Membership in the SBS was the dependent variable in the study. The independent variables were parental education level, economic status, and location (rural or urban). In this study, I focused on the northwestern region of Liberia. Other variables that I used for descriptive statistics included the age of the child and the religious affiliation of the parents. Measurement scales used in this study were nominal (categorical or dichotomous), ordinal, ratio, and continuous (Laerd, 2013). The variable measured by a nominal scale was region, the variable that defined parental education level was ordinal, and the variable that defined age was measured on a continuous scale. Table 1 listed the study variables and their measurement scales.

Table 1

Relevant Variables Analyzed in This Study

Variable label	Variable name	Level of measurement
AGE	Age of household	Nominal
RELIGION	Parental religion	Nominal
PARENTAL_KNOW	Parental education level	Ordinal
REGION	Region of the country	Nominal
LOCATION	Type of place of residence (rural/urban)	Nominal
WEALTH_INDEX	Economic status	Ordinal
FGM	Members of Sande Society	Dichotomous

Methodology

Population

The target population of this study was women between the ages of 15 and 49 years living in the northwestern region of Liberia where FGM practice was common. In the most recent national census, the population of the northwestern region of Liberia who were females and members of the SBS was estimated at 72% (141,744; LDHS, 2007).

Sample and Sampling Procedures

This study used secondary data from the 2013 LDHS survey conducted by the LISGIS from March 10 to July 19, 2013. The Ministry of Health and Social Welfare authorized the survey, with funding provided by the U.S. Agency for International Development, the Global Fund, UNICEF, the UNFPA, and the government of Liberia. The sampling frame was based on the National Population and Housing Census conducted in 2008 (NPHC, 2008). In the 2008 census process, 7,021 EAs were developed to ensure that the entire country was covered. The classification of localities as urban or rural was modified in the updated census. In the 2008 census allocation, Liberia was divided into 15 counties; each county was subdivided into many districts, and districts were further divided into clans or townships. Liberia is composed of 138 districts and 854 clans. In the 2008 NPHC, each clan group was subdivided into smaller EAs, which included approximately 100 households. A proportional allocation was not applied because of the great disparity among the county sizes. Among the 322 cluster areas selected for the NPHC (2008) census, 119 clusters were in urban areas and 203 clusters

were in rural areas. Because many of the counties are rural and have small populations, rural areas were oversampled relative to urban areas.

Power analysis provided a method to determine the sample size I needed to detect the desired effect. Sample size calculation in this study was determined by three factors: effect size, statistical power, and .05 alpha level (see Cohen, 1988). The effect size measured the numerical strength of the associations between the independent and the dependent variables, while the G*Power or 1-beta (1-β) measured the chance of rejection of the null hypothesis (see McDonald, 2014). The alpha value is effective in measuring the significance level of a statistical test in a study. I used a medium effect size of 0.3 to identify the desired effect without difficulty. I also used a 95% confidence interval and a default alpha value of .05. Further, I used a statistical power tool called G*Power 3.1.7 to estimate the size of the sample required to detect an effect in this study. Using a two-tailed alpha with the statistical technique of G*Power, sample size was calculated to have a minimum effect between both independent and dependent variables at 176. Using *female* and *the northwestern region in Liberia* as selection criteria, a total sample size (n = 230) was used in this study. This sample size exceeded the minimum sample of 176 required to address my research question. Environmental factors, culture, tribe, family structure, and membership in SBS were variables I explained in the literature review as control variables that were not captured in LDHS (2013) demographic survey. The available dataset contained a population size of 568 for the northwestern region of Liberia. The northwestern region of Liberia was used as inclusion criteria to filter the dataset with the outcome of a sample size of 230 to use in this study. Parental education,

wealth and location were used to filter the dataset, resulting in a proposed sample size of all women of the northwestern region (n = 230) out of the 568 sample. There were 4,006 variables, but only seven were appropriate for this study.

Procedure for Archival Data

The LDHS (2013) was the fourth demographic and health survey conducted in Liberia since 1986. The first survey was conducted in 2007, the second in 2009, and the third in 2013 (LISGIS, 2013). The data for 2013 was stratified by region, where household clusters were constructed based on the region. A total of 9,239 households in Liberia were included in the survey with only females between the ages of 15 and 49 responding. The LDHS (2013) dataset and other previous surveys were publicly available on the Demographics and Health Survey website.

Instrumentation and Operationalization of Constructs

Data source. I drew data from the 2013 LDHS Demographics and Heath Survey Program database. The survey was conducted between March 10 to July 2013.

Sample size. The original dataset included 9,239 samples of females between the ages of 15 and 49 years. The population sample survey included 568 women from the northwestern region in Liberia (LDHS, 2013). The sample size used in this study after statistical calculation was 230.

Variables. There were 4,006 variables in the dataset. However, only seven variables were relevant to this study. Table 2 showed the variable names, labels, measurement scale, value, and value definition.

Table 2

Variable Definition and Measurement Scale

Variable label	Variable name	Measurement scale	Value	Definition
AGE	Parental ages	Ratio/continuous	15–49	Years
RELIGION	Parent religion		1	Muslims
			2	Christians
PARENTAL_KNOW	Parental education level	Ordinal	0	No education
			1	Primary school
			2	High school & above
REGION	Region of the country	Nominal	1	Monrovia
			2	Northwestern
			3	South Central
			4	South Eastern A
			5	South Eastern B
			6	North Central
PLACE	Type of place of residence (rural/urban)	Nominal	1	Rural
			2	Urban
WEALTH_INDEX	Economic status/Wealth classification of parents	Ordinal	1	Poorest
			2	Poorer
			3	Middle
			4	Richer
			5	Richest
SANDE BUSH SOCIETY	Members of Sande Society	Nominal/ dichotomous	0	No
			1	Yes

Data Analysis

I used the Statistical Program for the Social Sciences (SPSS) Version 21, a popular statistical application developed by IBM, to analyze the data. This software was appropriate for conducting descriptive and inferential statistical analyses and addressing the research questions in this study (see Creswell, 2015). Because the data for the study was gathered for a different purpose, it required data cleaning, which included identifying appropriate coding or variables, measuring scales, and mitigating other data issues such as missing data with special techniques (see Mikut & Reischl, 2011).

The original data file had the following characteristics: (a) data file: LBIR6AFL.SAV; (b) number of records: 9,239; and (c) number of variables: 4,006. After filtering samples using an independent variable test, I generated and renamed a new data file. While there were 4,006 variables in the LDHS dataset, I used only seven variables to address the research questions. Table 3 below listed the seven variables as represented in the original dataset.

Table 3

Relevant Variables From the DHS/Database

Variable label	Variable name
V152	Age of household
HV024	Religion of participant
V149	Education level
V101	Region of the country
V102	Type of place of residence (rural/urban)
V190	Wealth classification of parents
S952	Membership of Sande Society

Variable Recoding

I renamed the original dataset into different variables with new names that were easy to discern their meanings and values. Table 4 illustrated the new recoded names of the variables, labels, and statistical analysis that were conducted.

Table 4

Recoded Variables From the DHS/MIS Database

Original name	Recoded name	Variable label	Analysis
V152	AGE_PARENTAL	Age of household	Frequencies
HV021	RELIGION	Type of religion	Frequencies

V149	PARENTAL_KNOW	Educational attainment	Chi-square, logistic regression
V101	REGION	Region of the country	N/A
V102	LOCATION	Type of place of residence (Rural/urban)	Frequencies
V190	WEALTH_INDEX	Wealth classification of parents	Chi-square, logistic regression
S952	FGM	Members of Sande Society	Chi-square, logistic regression

Handling of Missing Values

As previously noted, I did not collect the original data for this study; therefore, data required cleaning and attention to missing data (see Cheng & Phillips, 2014). I used list-wise deletion to handle this issue in instances where less than 10% of the data were missing. However, when more than 10% were missing, I used another technique of multiple imputation to handle missing data (see Langkamp, Lehman, & Lemeshow, 2010).

Statistical Tests for the Study Outcome

The study explored relationships between variables to refute or validate the study hypotheses. I used two statistical methods to analyze the data. First, to address RQ1, a chi-square with cross-tabulation was used to analyze relationships between the independent variable (parental education) and the dependent variable, members of the SBS. In RQ2, a chi-square with cross-tabulation was used to test the relationship between the independent variable (parental wealth) and the dependent variable, members of the SBS. In RQ3, a chi-square with cross-tabulation was used to test the relationship between the independent variable (parental location) and the dependent variable, the members of SBS (FGM). Phi (φ) and Cramer's V were used to measure the strength of the association

between the independent variables and the dependent variable. Secondly, I used logistic regression to test any predictors which influenced the independent variables, which predicted the dependent variable, and members of the SBS. I conducted at a 5% significance level and the effect was measured at 95% confidence interval (CI) with a p-value of .05. Summary statistics including frequencies and measures of central tendency for the variables being analyzed were also calculated.

Threats to Validity

Natarajan, Li, and Koronios (2010) reported that internal and external validity were key concepts in research for establishing a causal relationship between independent and the dependent variables. External validity was focused on generalization of the findings of a study to a larger population group. The study did not seek to make causal inferences, which limited threats to internal validity. Any threats to validity in this study were associated with the limitations of what was to be expected in the use of secondary data. The factors recognized were limited as follows: (a) the purpose and how the data was collected could influence this study resulting in data incompleteness, and (b) the format was different from the original format, which may not be suitable for this study analysis.

Ethical Considerations

Ethical considerations were standards and norms for conducting research that distinguished between right and wrong (Dich, McKee, & Porter, 2013). This study used a quantitative design utilizing secondary data from the 2013 LDHS. The population study were women who have given consent and were interviewed (LDHS, 2013). The dataset

was de-identified and contained privacy protection of confidentiality for all the participants in the study (LDHS, 2013). It was also important to further protect the participants by storing the datasets in an electronic format. The data management was ongoing to protect the dataset before and after the dissertation was complete.

The dataset was publicly available, and registration was needed to access the data, which was a requirement of the Demographic Health and Survey website. The website requested personal information about the investigators or researchers that needed to access the dataset. When my proposal was approved through Walden University Institutional Review Board (IRB), I requested the dataset.

Summary

In Chapter 3, I discussed the research design and rationale of the study methodology, including the target population, study respondents, sampling procedure, data collection and analysis procedures, and ethical considerations. A total of 9,239 female households between the ages of 15–49 years comprised the sample in all regions of Liberia. External validity (generalizability) was supported since the internal validity was not assessed because the study did not seek cause-and-effect outcomes, but rather to explore associations or relationships among the variables. In Chapter 4, I will present the statistical results of the study including the descriptive statistics, probability values, and confidence intervals (CI).

Chapter 4: Results

Introduction

The purpose of this quantitative study was to explore the effect of parental education level, parental socioeconomic status, and household location (region) on the prevalence of FGM in the northwestern region of Liberia. The study had a cross-sectional design that included secondary data from the 2013 LDHS, conducted jointly by the Ministry of Health and Social Welfare of Liberia, LISGIS, and ICF International. The sponsor of the 2013 LDHS survey was the U.S. Agency for International Development as part of the Demography Health Survey Program. The original data set contained 9,239 samples. For this study, the data set included only women in the northwestern region of Liberia between the ages of 15 and 49 years old. The total sample size examined for this study was $n = 230$. This sample size exceeded the minimum sample of 176 required to address the research questions.

In this study, I addressed the three research questions and hypothesis, using chi square for association and logistic regression through SPSS Version 23.

RQ1: Is there an association between parental education level and the prevalence of FGM among girls in Liberia?

$H_0$1: There is no association between parental education level and the prevalence of FGM among girls in Liberia.

H_a1: There is an association between parental education level and the prevalence of FGM among girls in Liberia.

RQ2: Is there an association between parental economic status and the prevalence of FGM among girls in Liberia?

$H_0$2: There is no association between parental economic status and the prevalence of FGM among girls in Liberia.

H_a2: There is an association between parental economic status and the prevalence of FGM among girls in Liberia.

RQ3: Is there a relationship between parental location (rural or urban setting) and FGM prevalence among girls in Liberia?

$H_0$3: There is no relationship between parental location (rural or urban setting) and FGM prevalence among girls in Liberia.

H_a3: There is a relationship between parental location (rural or urban setting) and FGM prevalence among girls in Liberia.

This chapter includes a discussion of the data collection process and data processing. I will also report descriptive demographic characteristics and explain the representativeness of the sample. Other topics discussed include the analytical test used and the results.

Data Collection

There were no discrepancies in data collection from the plan presented in Chapter 3. Data collection involved using data from the 2013 LDHS data set, which was publicly available on the LDHS website. Requesting access to the data set was an online process that required providing personal information including name, address, phone contact, e-mail address, and institution. Additional information provided included the title of the

study, purpose, and description of the study. The online submission of the application to the LDHS website took place on August 2, 2017. The approval from the LDHS to use the data arrived on August 3, 2017. The approval letter to use the data set is in Appendix A. The equally apportioned samples included 26 clusters for each of Liberia's five regions (LISGIS, 2013). The total number of clusters used was 322; 119 clusters were urban, and 203 clusters were rural (LDHS, 2013). The data set included 30 households selected from each cluster in each of the five regions and included only women in the northwestern region in Liberia. In total, 9,239 female households aged 15–49 years old were available among the five regions in Liberia (LISGIS, 2013). The house-to-house fieldwork took place from March 10 to July 10, 2013, by the Ministry of Health and Social Welfare of Liberia, LISGIS, and ICF International (LISGIS, 2013).

I filtered the original data set of 9,239 female households aged 15–49 years old obtained from the Ministry of Health and Social Welfare of Liberia, LISGIS, and ICF International to include only females in the northwestern region of Liberia who were between 15 and 49 years old. The inclusion filter yielded 568 samples. The final sample size was n=230. FGM was a predictor variable measured on a categorical scale (1 = *no,* 2 = *yes*). The sample size was suitable to address the research questions and was larger than the minimum sample size of n = 176.

Data Exclusion

The two main exclusion indicators used to filter the original data set were males and four regions. Other exclusions in this study included individuals younger than 15

years old and older than 49 years old. The exclusion criteria yielded 568 samples. The sample size in this study was *n*=230, which was larger than the minimum required sample size of *n*=176

Data Inclusion

The study only included data from females in the northwestern region of Liberia who were between 15 and 49 years old. All females in the northwestern region of Liberia who participated in the LDHS were included in this study.

Sample Representation of Population

The National Population and Housing Census conducted in 2008 yielded census data that covered the entire country. The data included 7,021 EAs and 15 counties. Each county included smaller regions and was either rural or urban. An EA in the census referred to a cluster that contained 30 households. Samples had 25 clusters in each region. Liberia had a population of 3.4 million as reported in the 2008 national census (LISGIS, 2009). Of that number, 72% of females between the ages of 15 and 49 (*n* = 141,744) had experienced FGM (LDHS, 2007). According to the Ministry of Health and Social Welfare (2012), the prevalence rate of FGM was three times higher in rural areas compared to that of urban areas. The composition of the study sample was 62% rural and 38% urban.

Fidelity of Statistical Test and Categorization of Variables

I used chi-square and logistic regression tests to analyze the samples and address the three research questions. Chi-square for association served as the primary statistical test to assess whether an association existed between the variables in each of the three

research questions. Given that the key variables analyzed were qualitative (nominal), the challenges encountered while applying chi-square of association and logistic regression in SPSS were negligible. The independent variables were parental education, parental wealth, and location. The dependent variable was female membership or participation in the SBS. For parental education, the variables were ordinal: 0 represented no education, 1 represented the completion of primary school, and 2 represented high school education and above. For parental wealth, the variables were also ordinal: 1 represented poorest, 2 represented poorer, 3 represented middle, 4 represented richer, and 5 represented richest. For region, the variables were nominal: 1 represented North Central, 2 represented Northwestern, 3 represented South Central, 4 represented South Eastern A, and 5 represented South Central B. The information relating to the categorization of variables appeared in Table 2.

Descriptive Statistics

The size of the sample analyzed in this study was n=230. One hundred females responded no, which indicated they were not in the SBS. One hundred thirty females responded yes, which indicated they were in the SBS. As illustrated in the data, there were more females in the SBS than females who were not in the SBS (see Table 5 and Figure 3). As illustrated in Table 6 and Figure 3, the total sample was 230 females. The size of the sample was smaller than the population sample size, but the sample size was larger than the minimum sample size of 176 I noted in Chapter 3.

Table 5

Frequency of Members of Sande Society

Response	*N*
No (0)	100
Yes (1)	130
Total	230

Note. N= 230

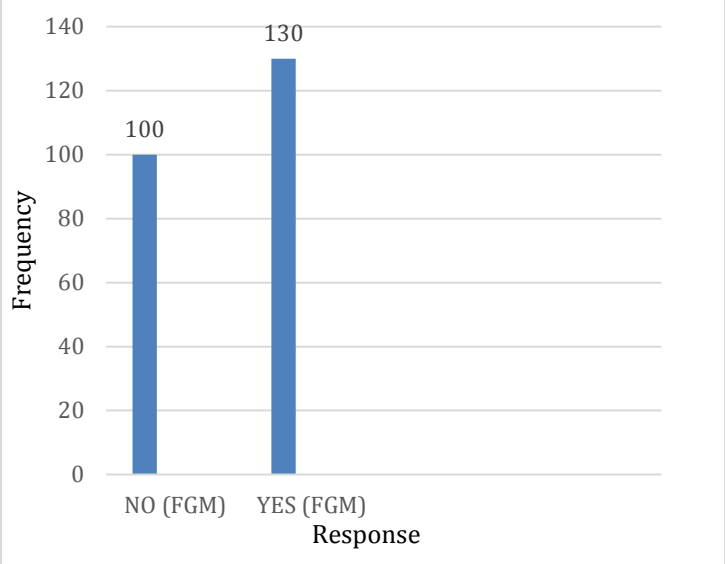

Figure 3. Frequency of female genital mutilation *(n*= 230).

Ages ranged from 17 to 49 years old (see Tables 6 and 7 and Figure 4). Most of the females in the sample (*n* = 127) were between 39 and 49 years old. Fifty-three females were between the ages of 17 and 27 years old. Fifty females were between the ages of 28 and 38. There were 127 females between 39-49 years old**.** Figure 4 showed that there were proportionally more females between 39 and 49 years old than in other age ranges (17–27 and 28–38 years old). Table 7 showed that the mean age was 39 years old and the median age was 38 years old. The standard deviation was 13.2, the range was 32, the minimum was 17, and the maximum was 49.

Table 6

Frequency of Age

Age range	Frequency
17-27	53
28-38	50
39-49	127

Note. n = 230.

Table 7

Statistics of Study Participants' Age

Label	Frequency
Mean	39.0
Median	38.0
Std. deviation	13.2
Range	32.0
Minimum	17.0
Maximum	49.0

Note. n = 230.

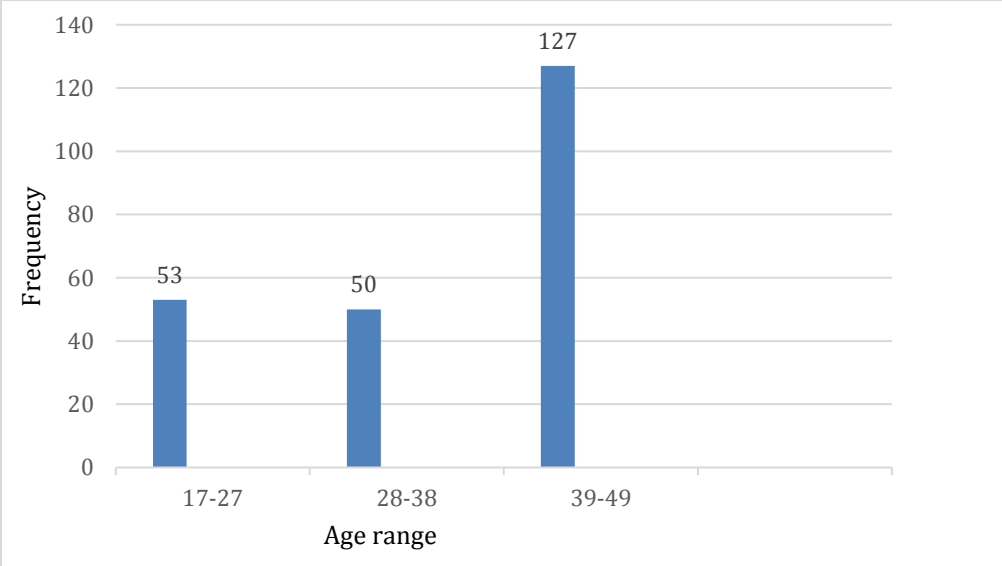

Figure 4. Frequency of age (n = 230).

The educational attainment of the parents of females in this study appeared in Table 8 and Figure 5. Most of the parents (n = 123) reported that they received no

education. Only a few parents (n = 4) reported that they received higher education. Figure 5 showed that there were proportionally more parents who received no education, compared to other groups, such as incomplete primary, complete primary, incomplete secondary, and higher. The sample included 123 parents with no education, 40 parents with incomplete primary, 12 parents with complete primary, 21 parents with incomplete secondary, 30 parents with complete secondary, and 4 parents with higher education. Forty-six parents received education out of 230 participants.

Table 8

Frequency of Educational Attainment of Parents

Label	Frequency
No education	123
Incomplete primary	40
Complete primary	12
Incomplete secondary	21
Complete secondary	30
Higher	4
Total	230

Note. n = 230.

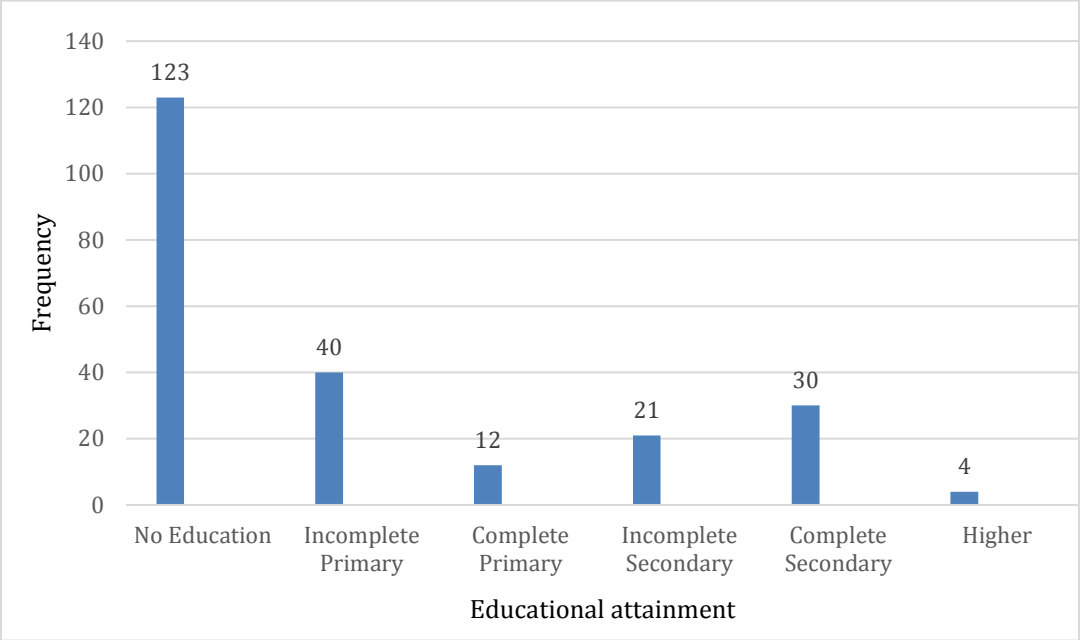

Figure 5. Frequency of parental educational attainment (*n* = 230).

The wealth classifications of the parents of females in this study appeared in Table 9 and Figure 6. Most of the parents of females in this study were poor. One hundred fifty-one parents were in the poorest class. Nine parents were in the richest class. Compared to the other groups, the poorest group had the most parents. There were 40 poorer parents, 20 middle-class parents, and 10 richer parents. Based on the demographic information, a middle-class population was lacking in the study.

Table 9

Frequency of Wealth Classifications of Parents

Label	Frequency
Poorest	151
Poorer	40
Middle	20
Richer	10
Richest	9
Total	230

Note. *n* = 230.

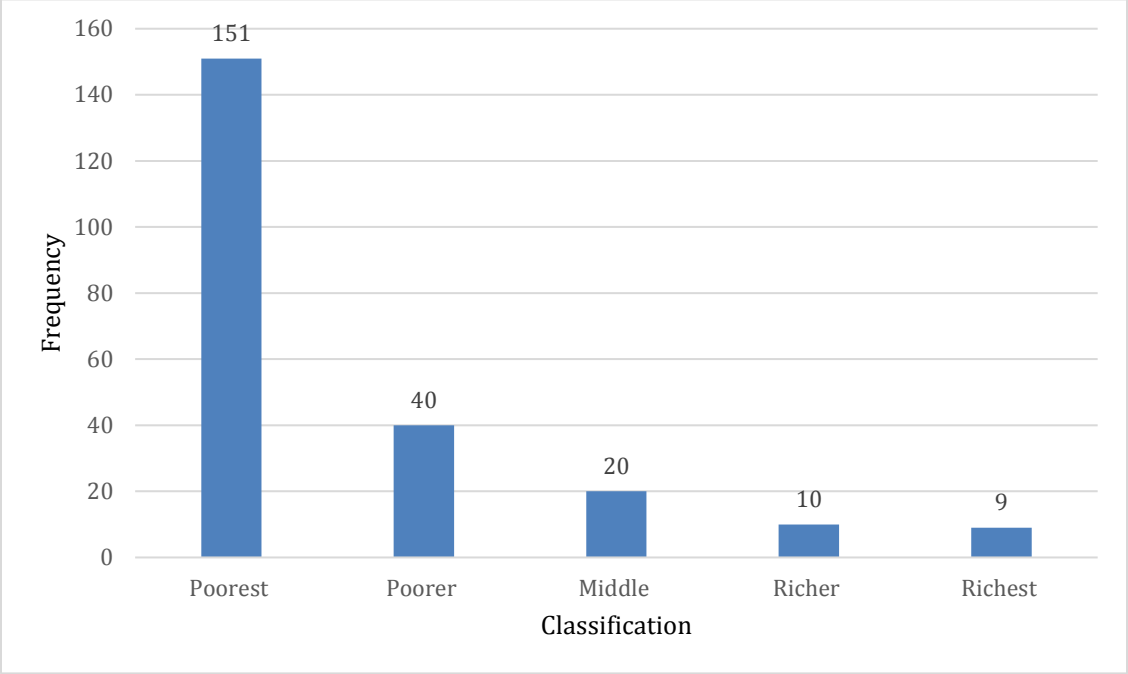

Figure 6. Frequency of wealth classifications of parents (*n*= 230).

Most females in this study resided in the Northwestern (*n* = 80), South Central (*n* = 70), and Southeastern A (*n* = 50) regions (see Table 10, Figure 7, and Figure 8). Few individuals in this study resided in Southeastern B (*n* = 20) and North Central (*n* = 10) regions. One hundred eighty individuals lived in rural areas (see Figure 8), and 50 individuals lived in urban areas.

Table 10

Frequency of Region

Label	Frequency
Northwestern	80
South Central	70
Southeastern A	50
Southeastern B	20
North Central	10
Rural	180
Urban	50

Note. *n* = 230.

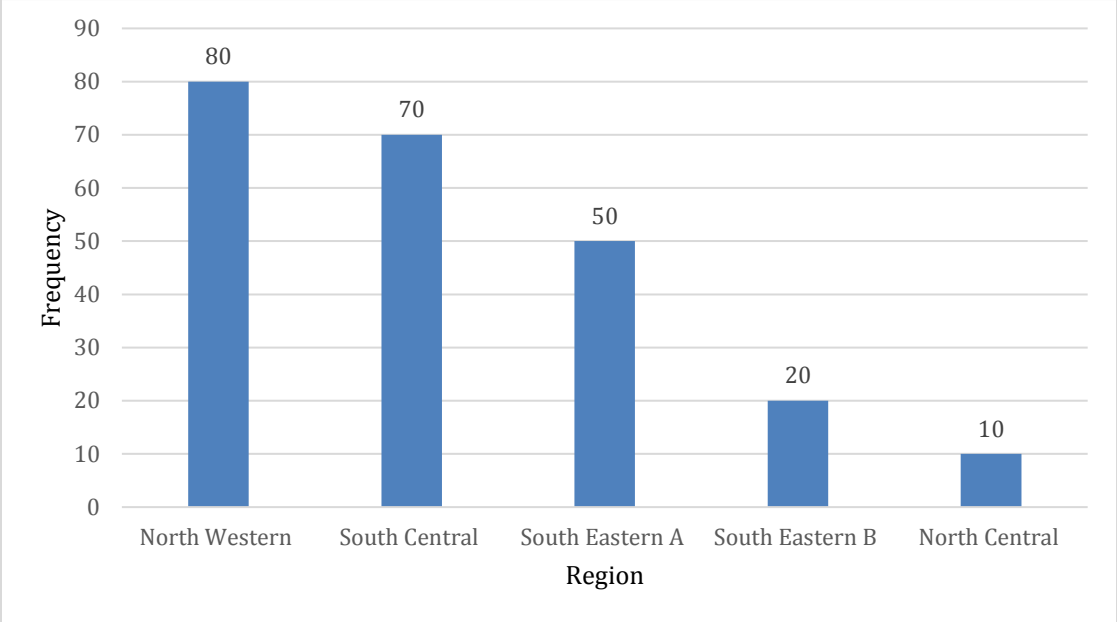

Figure 7. Frequency of regions (*n*= 230).

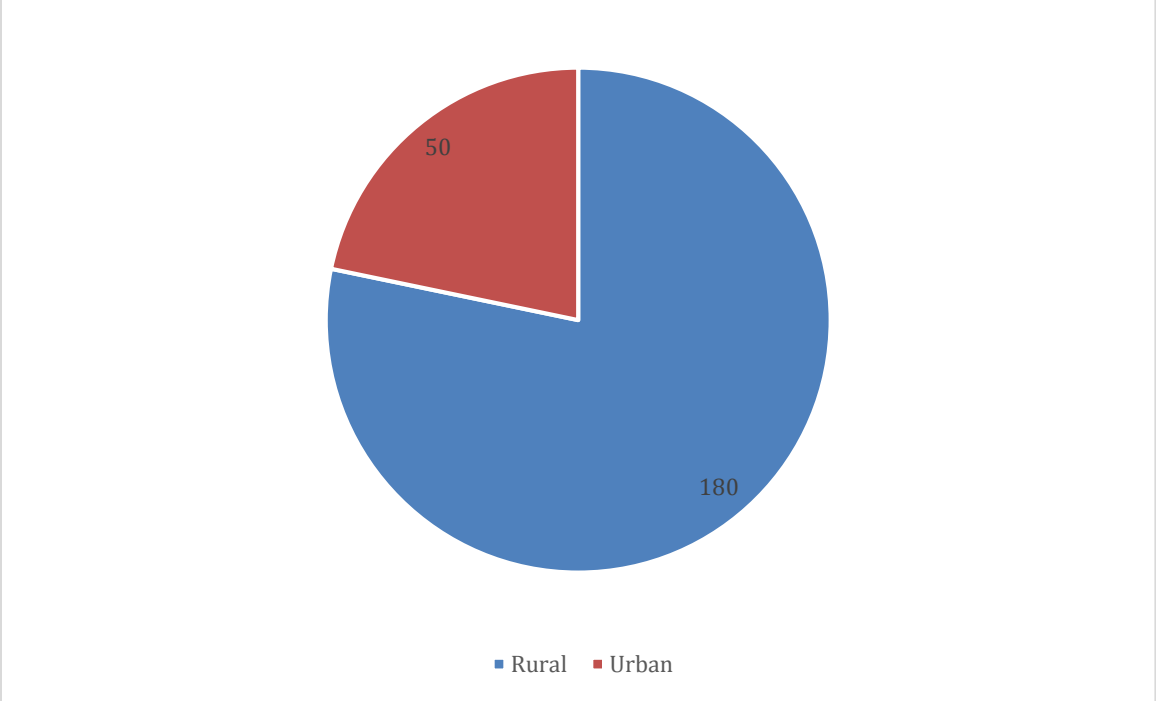

Figure 8. Geographic location of study participants.

As illustrated in Table 10, Figure 7, and Figure 8, most females in this study resided in Northwestern, South Central, and Southeastern A regions. The numbers are *n* = 80, *n* = 70, and *n* = 50, respectively. Few individuals in this study resided in Southeastern B (*n* = 20) and North Central region (*n*=10). As illustrated in Figure 8, 180 individuals were living in rural areas. Fifty individuals were living in urban areas. Large numbers of participants resided in the Northwestern region. Significantly, there were more individuals in the rural areas than in the urban areas.

Data Analysis Results

I used two statistical tests to address the three research questions. The chi-square test for association served as the primary statistical test to assess any association between variables, and logistic regression was suitable for examining whether the independent variables (parental education, parental wealth, and parent location) had any predictive influences on the dependent variable (FGM prevalence). There was no need to test the relationship between FGM and members of the SBS using statistical analysis, as all females in the SBS experience FGM as a part of their initiation.

RQ1: Is there an association between parental education level and the prevalence of FGM among girls in Liberia?

$H_0$1: There is no association between parental education level and the prevalence of FGM among girls in Liberia.

H_a1: There is an association between parental education level and the prevalence of FGM among girls in Liberia.

Using a sample size of $n = 230$, a chi-square test for association was performed between parental education level and members of SBS for prevalence among females in the northwestern region of Liberia, as shown in Table 11. Pearson's chi-square showed the value of 16.317 and $p < .006$, which was statistically significant. There was a significant relationship between parent educational attainment and membership of Sande Bush Society.

Table 11

Chi-Square Results of Parental Educational Attainment and Membership in the Sande Bush Society

	Value	*p*
Pearson chi-square	16.317	.006
df	2.000	
Cramer's V	0.120	

As the predictor independent variable (parental education) contained more than two categories and the relationship between the predictor variable and the response variable (membership in the SBS) was statistically significant in the chi-square analysis, a close examination of the data took place using odds ratios. The categories of the predictor variable were as follows: 0 = *no education*, 1 = *primary education*, and 2 = *high school and above*. Analysis included a conventional technique of considering odds ratios relative to a fixed baseline category. In the 2 × 3 contingency table shown in Table 12, the category 0 = *no education* served as a baseline against which I considered odds ratios of the other categories. "Yes" membership in SBS yielded more participants in the no-education category ($n = 105$) compared to the primary education category ($n = 12$) and the high-school-and-above category ($n = 13$). "No" membership in SBS yielded more

participants in the high school and above higher education category (n = 42) compared to the no-education (n = 18) and primary education (n = 40) categories. One hundred thirty participants were in the SBS, and 100 participants were not in the SBS.

Table 12

Parental Education Level and Membership in Sande Bush Society Prevalence

Membership in Sande Bush Society	No education (0)	Primary education (1)	High school and higher (2)	Total
Yes				
Observed	105	12	13	130
Expected	100	20	10	130
No				
Observed	18	40	42	100
Expected	40	50	10	100
Total				
Observed	123	52	55	230
Expected	140	70	20	230

Figure 9 showed the relationship between parent educational level and membership in the SBS. More parents with no education had daughters enrolled as members of the SBS. Moreover, more parents with a high school education and higher did not have daughters enrolled as members of the SBS. Prevalence showed 105 parents in the no-education category enrolled in the SBS compared to 18 parents in the no-education category not enrolled in the SBS. Twelve parents in the primary-education category were in the SBS compared to 40 parents in the primary-education category. Thirteen parents in the high-school-and-higher category were in the SBS, compared to 42 parents not enrolled in the SBS.

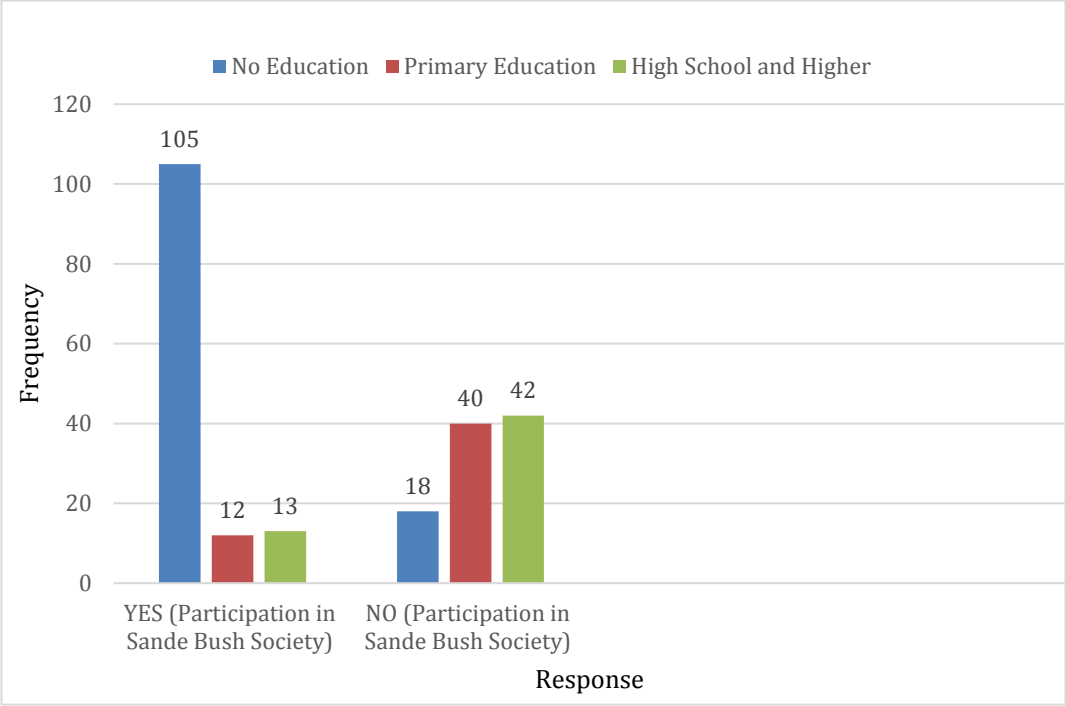

Figure 9. Parental education level and membership in Sande Bush Society prevalence.

The odds ratio computations in Table 13 showed the effect of parental educational attainment and membership in the SBS through two effects: *completed primary education* and *high school and higher*. Parents who completed primary education had 20% greater odds of reduced SBS membership prevalence among their children than did parents who did not complete primary education. These odds were statistically significant, as indicated by a confidence interval that was less than 1, $CI_{0.95}$ = [.420, .972]. Parents who attained a primary-school education had 20% lower odds of membership in the SBS. Parents who attained a high school degree or higher had 28% greater odds of reduced SBS membership prevalence among their children than did parents who did not complete high school. These odds were also statistically significant,

as indicated by the confidence interval in Table 13, $CI_{0.95}$ = [.260, .750]. The results showed that the reduced odds ratio increased for the high-school-and-higher category**.**

RQ2: Is there an association between parental wealth and the prevalence of FGM among girls in Liberia?

H_01: There is no association between parental wealth and the prevalence of FGM among girls in Liberia.

H_a1: There is an association between parental wealth and the prevalence of FGM among girls in Liberia.

Table 13

Odds Ratios Against Baseline Category (0 = No Education)

	Odds ratio	95% CI lower	95% CI upper
Completed primary school (1) vs. no education (0)	.80	.420	.972
High school and higher (2) vs. no education	.72	.260	.750

Note. CI = confidence level.

Table 13.1

Odds Ratio (Parent Education)

Source	Odds ratio	95% CI for odds ratio
(0) No education	0.800	(0.420, 0.972)
(1) Primary	0.720	(0.260, 0.750)
(2) High school and higher	0.600	(0.320, 0.860)

Using a sample size of n = 230, a chi-square test for association took place between parental wealth and FGM (membership in the SBS) prevalence among females in the northwestern region of Liberia. The results illustrated a significant effect of parental wealth on the rates of membership in the SBS, $\chi^2(4) = 20.12$, $p < .001$. This was

further shown by the measure of effect between parental socioeconomic status and the prevalence of membership in the SBS among children, $\varphi = 0.30$, $p < .001$ (see Table 14). Therefore, a significant relationship existed between parents' socioeconomic status and membership in the SBS. The next tables showed the categories of predictor variables, which were 1 = *poorest*, 2 = *poorer*, 3 = *middle*, 4 = *richer*, and 5 = *richest*. As illustrated from Table 13.1, the no education category presented a 0.80 odds ratio, the primary education category presented a 0.72 odds ratio, and the high school and higher education category presented a 0.60 odds ratio. In relation to odds ratio against baseline category, the results from Table 13.1 confirmed the findings for results from Table 13. The no education category's odds ratio yielded more possibility for the experience of FGM than other educational categories. The trend was the higher the education, the lower the incident of FGM. The next step was to conduct a multiple logistic regression analysis in predicting the influence of education on FGM.

Table 14

Chi-Square Results of Parental Socioeconomic Status and Membership in the Sande Bush Society

	Value	*P*
Pearson chi-square	20.12	<.001
df	4.00	
Cramer's V	0.30	

This analysis involved examining the data closely using odds ratios, as the predictor variable (parental wealth) contained five categories and the relationship between the predictor variable and the response variable (SBS prevalence) was statistically significant in the chi-square analysis. The categories of the predictor variable

were as follows: 1 = *poorest*, 2 = *poorer*, 3 = *middle*, 4 = *richer* and 5 = *richest*. The conventional technique applied involved considering odds ratios relative to a fixed baseline category. In the 2 × 5 contingency table shown in Table 15, the category 1 = *poorest* served as a baseline to consider odds ratios of the other categories against. The odds ratios computations in Table 15 showed the effect of capturing parental socioeconomic status on membership in the SBS through four categories: *poorer*, *middle*, *richer,* and *richest*. Membership in SBS illustrated more participants (n = 90) in the poorest category than in other categories (poorer, middle, richer, richest). The no-membership in SBS category contained only 12 participants in the middle-class category; only 10 participants were in the richer category, and nine participants were in the richest category. As illustrated from Table 16.1, the results of the levels of the socioeconomic status confirmed the findings from Table 16. The odds ratio for poorest class was 0. 923, the odds ratio for poorer class was 0.722, the odds ratio for middle class was 0.428, the odds ratio for richer class was 0.112, and the odds ratio for richest class was 0.002. Therefore, the highest incident of experience for FGM resulted in the poorest class (odds ratio: 0.923). The lowest incident of experience for FGM resulted in the richest class (odds ratio: 0.002). The trend is the rates of FGM decreased as there was increases for socioeconomic class. The next step was to conduct a multiple logistic regression of predicting socioeconomic level on FGM.

Table 15

Contingency Table of Parental Socioeconomic Status and Membership in Sande Bush Society Prevalence

Membership in the SBS	Poorest (1)	Poorer (2)	Middle (3)	Richer (4)	Richest (5)	Total
Yes						
Observed	90	32	8	0	0	130
Expected	94	28	8	0	0	130
No						
Observed	61	8	12	10	9	100
Expected	61	9	11	11	8	100
Total						
Observed	151	40	20	10	9	230
Expected	155	37	19	11	8	230

Figure 10 illustrated the relationship between parent economic status and membership in the SBS. As seen in the figure, parent wealth affected membership in the SBS. Parents who came from the poorest households had the highest percentage of participation in the SBS. None of the parents from the richer and richest categories participated in the SBS. The percentage of parents in the sample who came from the poorest families, whether there were females in the SBS, was large.

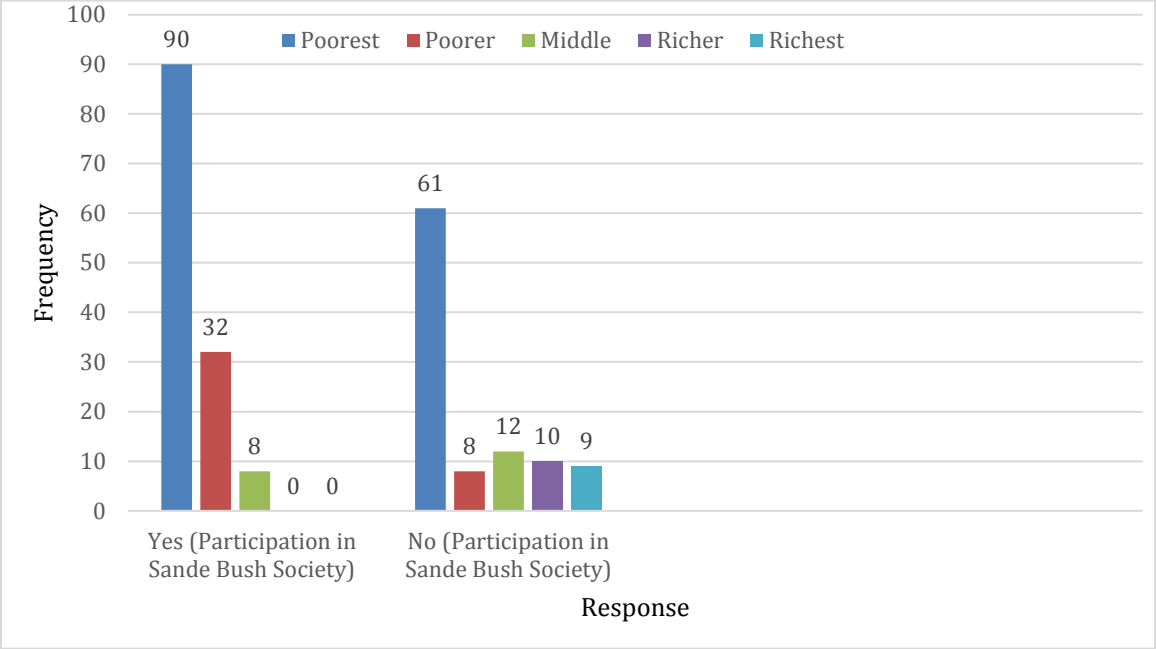

Figure 10. Parental socioeconomic status and membership prevalence in the Sande Bush Society.

As shown in Table 16, parents in the wealth index category of *poorer* had 7.7 % odds of reducing membership in the SBS among their children than parents who in the wealth index category of *poorest*. These odds were not statistically significant, as indicated by a confidence interval higher than 1, $CI_{0.95}$ = [.348, 1.341]. Parents in the wealth index category of *middle* had 27.8% greater odds of reducing SBS membership prevalence among their children than did parents in the poorest wealth index category. These odds were also not statistically significant, as indicated by a confidence interval in Table 15, $CI_{0.95}$ = [.343, 3.330]. Parents in the wealth index category of *richer* had 57.2% greater odds of reducing SBS membership prevalence among their children than did parents in the wealth index category of *poorest*. Similarly, parents in the wealth index category of *richest* had 88.8% greater odds of reducing SBS membership prevalence

among their children than did parents in the wealth index category of *poorest*. The odds ratios in both the *richer* and the *richest* wealth index categories were statistically significant ($CI_{0.95}$ = [.234, .834], [.034, 0.302]). Thus, only the richer and richest wealth index categories had a significant effect for reducing membership in the SBS. The index category of poorer and middle wealth index had no significant effect for reducing membership in the SBS.

Table 16

Odds Ratios Against Baseline Category (1 = Poorest)

	Odds ratios	95% CI lower	95% CI upper
Poorer (2) vs. poorest (1)	.923	.348	1.341
Middle (3) vs. poorest (1)	.722	.343	3.330
Richer (4) vs. poorest (1)	.428	.234	0.834
Richest (5) vs. poorest (1)	.112	.034	0.302

Note. CI = confidence interval.

Table 16. 1

Odds Ratio (Parent Wealth)

Source	Odds ratio	95% CI forodds ratio (lower, upper)
(1) Poorest	0.923	(0.348.1.341)
(2) Poorer	0.722	(0.348, 3.330)
(3) Middle	0.428	(0.234,0.834)
(4) Richer	0.112	(0.034, 0.302)
(5) Richest	0.002	(0.024, 0.240)

RQ3: Is there a relationship between parental location (rural or urban setting) and FGM prevalence among girls in Liberia?

$H_0$3: There is no relationship between parental location (rural or urban setting) and FGM prevalence among girls in Liberia.

H_a3: There is a relationship between parental location (rural or urban setting) and FGM prevalence among girls in Liberia.

With a sample size of $n = 230$, the study used a chi-square test for association between parental location (rural or urban) and SBS membership prevalence among girls in Liberia. There was no statistically significant association between region and SBS membership prevalence, $\chi^2(1) = 0.403$, $p = .502$, odds = .92, $CI_{0.95}$= [.353, 1.345]. The measure of the effect between region and SBS membership prevalence showed this further for $\varphi = -0.34$, $p = .502$ (see Table 17). Table 17 supported the null hypothesis that no association existed between region (rural and urban) and SBS membership prevalence. The study failed to reject the null hypothesis for the association between region and SBS membership prevalence. Table 17.1 presented the levels for region in terms of the odds ratio. There was no pattern of the odds ratios for the region. However, the region's odds ratio was comparably high as the odds ratio for northwestern region is 0.920. The odds ratio for South Central region was 0.890. The odds ratio for South Eastern A region was 0.820. The odds ratio for South Eastern B's region was 0.850. The odds ratio for North Central region was 0.840. Out of all the odds ratio, northwestern region had the highest odds ratio which is 0.920, which meant that this region had the highest incident of FGM. The next step was to conduct a multiple logistic regression of predicting parental location on the experience of FGM.

Table 17

Chi Square Results of Region (Rural and Suburban) and Membership in the Sande Bush Society

	Value	*p*	95% CI (lower, upper)
Pearson chi-square	0.403	.502	
df	1		
Phi	-0.34		
Odds ratio	.92		(.353, 1.345)

Note. CI = confidence interval.

Table 17.1

Odds Ratio (Parent Region)

Source	Odds ratio	95% CI for odds ratio (lower, upper)
(1) Northwestern	0.920	(0.352, 1.345)
(2) South Central	0.890	(0.352. 1.345)
(3) South Eastern A	0.820	(0.352, 1.345)
(4) South Eastern B	0.850	(0.352, 1.345)
(5) North Central	0.840	(0.352, 1.345)

The first model (see Table 18) included the first predictor: parental education. The first logistic regression model is statistically significant for parental educational level, $\chi^2(1) = 17.45$, $p < .001$. Therefore, the relationship between parental education and FGM was statistically significant. The odds ratio for the relationship was 0.80; there was strong relationship of education predicting FGM.

Table 18

Logistic Regression Predicting Likelihood of Female Genital Mutilation Based on Parent Educational Level

	B	*S.E.*	Wald	*p*	Odds ratio	95% CI for odds ratio (lower, upper)
FGM_PARENTALEDU	1.470	0.180	8.55	.001	0.80	(0.420, 0.972)
Constant	0.134	0.113	13.50	.003	0.93	

Note. CI = confidence interval.

The reason for using logistic regression was to determine the significance level for the odds ratio tested against constant. The first model illustrated the first predictor. The level used was parent wealth. The odds ratio, which was 0.80 and $p < .001$, showed that it was statistically significant.

The second model (see Table 19) included the second predictor: parent socioeconomic level. The second logistic regression model was statistically significant for parent socioeconomic level, $\chi^2(1) = 14.55$, $p < .001$. The second predictor compared the first predictor, as well as its constant. The odds ratio for the second predictor (0.923, $p < .001$) revealed that it was statistically significant.

Table 19

Logistic Regression predicting likelihood of Female Genital Mutilation based on Parent Socioeconomic Level

	B	*S.E.*	Wald	*p*	Odds ratio	95% CI for odds ratio (lower, upper)
FGM_PARENTSES	-1.520	0.120	8.34	0.001	0.923	(0.348, 1.341)
FGM_PARENTALEDU	1.470	0.180	8.55	0.001	0.800	(0.420, 0.972)
Constant	0.223	0.344	14.50	0.000	0.890	

Note. CI = confidence interval.

The third model (see Table 20) includes all predictors. The model was not statistically significant, $\chi^2(4) = 0.85$, $p = .45$. The third predictor, parental location, underwent a comparison to the constant, parent socioeconomic status, and parental education was not significant. The odds ratio for parent location was 0.92, $p < .702$.

Table 20

Logistic Regression Predicting Likelihood of Female Genital Mutilation Based on Parental Regions, Parental Socioeconomic Status, and Parental Education Level

	B	*S.E.*	Wald	*p*	Odds ratio	95% CI for odds ratio (lower, upper)
FGM_PARENTLOC	-1.840	0.150	9.32	0.702	0.920	(0.352, 1.345)
FGM_PARENTSES	-1.520	0.120	8.34	0.001	0.923	(0.348, 1.341)
FGM_PARENTALEDU	1.470	0.180	8.55	0.001	0.800	(0.420, 0.972)
Constant	0.223	0.344	14.50	0.000	0.890	

Note. CI = confidence interval.

Table 21 showed the multiple logistic regression analysis for parent education, wealth, and location. As the three independent variables (parent socioeconomic status, parental educational level, and parental region) were categorical, they were dummy coded. As illustrated Table 21, *B* represented the unstandardized regression weight, which gave information about the coefficient for the constant (also called intercept) in the null model. The standard error measured the variances around the coefficient for the constant, which demonstrated how much the unstandardized regression weight can vary. A summary of all the predictor variables appeared in Table 21. Important information included the unstandardized regression, standard deviation, statistical significance, odds ratio, and confidence interval.

Table 21

Multiple Logistic Regression Summary Table

Source	*B*	*S.E. B*	Wald χ^2	*p*	Odds ratio	95% CI forodds ratio (lower, upper)
(3) No education	1.47	0.18	8.55	.001	0.800	(0.420, 0.972)
(4) Primary	-1.28	0.12	0.12	.002	0.720	(0.260, 0.750)
(5) High school and higher	-1.29	0.08	8.21	.005	0.600	(0.320, 0.860)
(5) Poorest	-1.52	0.12	8.34	.001	0.923	(0.348.1.341)
(6) Poorer	1.62	0.10	7.32	.001	0.722	(0.348, 3.330)
(7) Middle	1.78	0.08	6.12	.002	0.428	(0.234,0.834)
(8) Richer	1.93	0.12	5.02	.050	0.112	(0.034, 0.302)
(5) Richest	1.82	0.07	4.32	.040	0.002	(0.024, 0.240)
(6) Northwestern	-1.89	0.13	9.32	.502	0.920	(0.352, 1.345)
(7) South Central	-1.92	0.19	7.50	.502	0.890	(0.352. 1.345)
(8) South Eastern A	-1.89	0.23	6.82	.502	0.820	(0.352, 1.345)
(9) South Eastern B	-1.72	0.50	5.83	.502	0.850	(0.352, 1.345)
(10) North Central	-1.62	0.72	4.23	.502	0.840	(0.352, 1.345)

Note. CI = confidence interval.

The important statistical variables in Table 18 were Wald χ^2 and p. Wald χ^2 tested the null hypothesis that the constant equaled 0. Parent education and parent wealth were significant . Hence, the hypothesis was rejected because the *p* value was smaller than the critical *p* value of .05 (.01). As parent education and wealth were significant, the results indicated that the constant was not 0. However, the independent variable of parental region was not significant because the *p* value was greater than the critical *p* value of .05 (.01). Therefore, the results indicated that the constant of parental region was not 0.

Odds ratio, as explained before, served to predict the likelihood of each variable predicting the experience of FGM. The results showed that the difference between parents who have had no education (odds ratio = 0.80) and parents who have had high school education above (odds ratio = 0.60) were big. Parents who received a primary education or a high school or above education had a lower likelihood of admitting their

daughters to the SBS. The difference between parents who were from the poorest socioeconomic level and parents who were from the richest socioeconomic level was also big. Parents who were from the poorest socioeconomic level had a 0.923 odds ratio of allowing their daughters to participate in an FGM ritual, compared to parents who were from the richest socioeconomic level, who had a 0.002 odds ratio of allowing their daughters to participate in an FGM ritual. As parents' socioeconomic level increased, the odds ratio decreased. Therefore, the results indicated that parental socioeconomic status predicted how parents made decisions in allowing their daughters to participate in FGM rituals.

Data Summary

This chapter included the results from the analysis of secondary data taken from the 2013 LDHS survey conducted by the LISGIS from March 10 to July 10, 2013. Chi-square for association and logistic regression were the two statistical tests used to derive the following results: (a) in RQ1, results were statistically significant regarding the relationship between parent educational attainment and membership in the SBS, (b) in RQ2, results were statistically significant regarding the relationship between parental socioeconomic status and membership in the SBS, and (c) in RQ3, no statistically significant association existed between region and membership in the SBS. Finally, logical regression took place to determine the likelihood of variance for each association to occur. Out of the three research questions, there was a strong association between membership in the SBS socioeconomic status and parental educational attainment.

The next chapter includes a discussion on the interpretation of the results from the analysis conducted in this chapter related to the research questions. Other topics discussed include the limitations of this study, recommendations for future study, interpretation of findings, implications in terms of positive social change, and the conclusion.

Chapter 5: Discussions, Conclusions, and Recommendations

Introduction

The purpose is to examine the relationship between independent variables of parent education, wealth, and location and the dependent variable of SBS membership. The study showed that environmental influences in a family can impact whether females are initiated into the SBS. The key finding confirmed that there was association of three variables (parent education, wealth, and location) on the prevalence of FGM. However, there were significant effects of only two variables (parental education and wealth) on the prevalence of SBS membership.

Interpretation of Findings

The hypothesis of environmental variables affecting FGM was supported by the review of the literature. According to Bronfenbrenner's ecological theory (1979) and Kenneth McLeroy's ecological model of health promotion (1992, 1996), there were components that influenced an individual's decision-making process. The components were intertwined in the relationship between individuals and their environments. Both models explained the strong relationship between environmental influences and health factors. These approaches explained social behaviors, norms, cultures, and traditions that are applicable in community groups (Bronfenbrenner, 1979; McLeroy, 1992). When using the SEM in this research, I found that enrollment in SBS has been influenced by external as well as environmental factors. In this research, families who were highly educated and from high socioeconomic backgrounds were less likely to be part of the SBS. As a result, regions with higher socioeconomic family status and high parent

educational attainment had lower levels of FGM. Moreover, regions with more families from low socioeconomic backgrounds and low parental educational attainment levels had higher rates of FGM prevalence. This research aimed to extend the discipline of advocating that families' factors in the northwestern region of Liberia are important during the decision-making process for initiation into the Sande Bush Society. I found that families who were educated, knowledgeable, and wealthy were less likely to allow FGM in their families.

I used a sample of 230 to test for significance, having adjusted the sample size using a test for statistical power. The sample size was also derived from the confidence interval and confidence level. In this study, the higher the confidence interval, the smaller the required sample size. G*power was conducted using SPSS to compute effect sizes. Power analysis determined the sample size required to detect an effect of a given size with a given degree of confidence. I conducted power analysis to determine the minimum sample size required to reasonably detect a given effect on size. In this case, a sample of 230 was desired to achieve the desired effect size. The reason I used a sample size of 230 (instead of population size of 568) was because I aimed to reduce the probability of a Type II error (concluding that there was no effect, when in fact there was effect).

RQ1: Is there an association between parental education level and the prevalence of FGM among girls in Liberia?

$H_0$1: There is no association between parental education level and the prevalence of FGM among girls in Liberia.

H_a1: There is an association between parental education level and the prevalence of FGM among girls in Liberia.

RQ2: Is there an association between parental economic status and the prevalence of FGM among girls in Liberia?

$H_0 2$: There is no association between parental economic status and the prevalence of FGM among girls in Liberia.

$H_a 2$: There is an association between parental economic status and the prevalence of FGM among girls in Liberia.

RQ3: Is there a relationship between parental location (rural or urban setting) and FGM prevalence among girls in Liberia?

$H_0 3$: There is no relationship between parental location (rural or urban setting) and FGM prevalence among girls.

$H_a 3$: There is a relationship between parental location (rural or urban setting) and FGM prevalence among girls in Liberia.

Findings in Relation to the Social Ecology Model

I used Bronfenbrenner's (1979) SEM to evaluate the impact of parental education, wealth, and location on the prevalence of FGM in the northwestern region of Liberia. The SEM was based on Bronfenbrenner's (1977) theory of the ecology of human development, which held that individuals have developed through multiple levels that consisted of different ranges from the most proximal to the most distal. The SEM explained the interactions of various factors at multiple ecological levels that significantly affected people's behaviors. The four components of the SEM were used to

examine the relationships between the person's perceptions, attitudes, environment, and behavior (Ettner & Grzywacz, 2001). The SEM helped to assessed the contributions of each ecological levels as they impact parental education level, socioeconomic status, and parental location on the prevalence of a parents subjecting a child to FGM (Harris, 2010; Sallis, Owen, & Fisher, 2008). My goal in this research was to prevent violence before it occurs. The CDC used the four-level SEM to better understand violence and the effect it has had on prevention strategies (Harris, 2010). Researchers used this model to understand the complexities and interdependent relationships among the individual, relational, community, and societal factors.

My findings supported Bronfenbrenner's (1979) theory that there were family educational factors that can influence individuals' decision-making processes. I found that there was a significant effect of parental educational attainment on membership prevalence in the SBS. The *p* value was 0.006, which was statistically significant (Table 10). Compared to parental wealth, education, and location, wealth and education had the greatest effect on membership prevalence in the SBS.

Limitations of the Study

There were several limitations in this study. Because the data came from secondary statistics on the prevalence of FGM in northwestern region of Liberia, the results may not be generalizable to other countries. Moreover, there was a lack of information available about the initial collection process for this data I used.

I used secondary data to analyze the association between the independent and dependent variables. As such, the limitations associated with using secondary data were

present in this study. The purpose and collection method of the original data were not influenced by the current research topic; as a result, some data were incomplete or missing. Further, the format of the dataset (scale of measurement and label categories) differed from the format suitable for this study. Additional data manipulation was required that could have led to errors and jeopardized the validity of the study results. To mitigate this threat, I took extra care by using a scientifically-proven method.

This analysis was conducted using survey data collected in 2013. The current circumstances regarding the prevalence of SBS membership may have changed since the survey was conducted. As a result, the findings in this study may be slightly different from the current prevalence of SBS membership in Liberia.

In this analysis, I did not seek a cause and effect outcome, but rather an association between variables. Therefore, internal validity and its threats were not examined. However, I analyzed 230 samples, a sample size that was large enough to mitigate threats to external validity.

Validity of the Study

The study was valid and reliable because the data came from reputable organizations (Ministry of Health and Social Welfare of Liberia and United States Agency for International Development). Because I used secondary data obtained from LDHS, the dataset did not specifically indicate the validity and reliability of data. The information from reports obtained from the LDHS did show that there was training provided to the field staff (65 women and 31 men). Each of the 16 field teams consisted of a team supervisor, one field editor, three female interviewers, one male interviewer,

and one driver. All questionnaires were returned to the central office in Monrovia for data processing.

Recommendations

In this study, I used a cross-sectional quantitative methodology to examine the association between parental education level, socioeconomic status, and location on the prevalence of FGM in the northwestern region of Liberia. The results showed that the associations were statistically significant. Further research is needed to explore those other factors in the context of the results of this study. Given my findings, I recommend that the government focus on literacy training to build up the population's economic capacity. As this study's results showed, parental education, economic status, and location are associated with the prevalence of FGM in Liberia.

There have been several countries (such as Kenya, Egypt, Ghana, and Nigeria) that have enacted laws against the practice of FGM, classifying it as a public health concern. Eliminating FGM and the SBS would require significant education and awareness, and economic capacity building should be part of a comprehensive strategy used to eliminate FGM in countries like Guinea, Sierra Leone and Mali (WHO, 2012). Thus, an integrated approach with a comprehensive strategy to address the FGM situation in Liberia is recommended.

Implications for Social Change

I used a quantitative methodology to examine the association between parental education level, parental socioeconomic status, and parental location on the prevalence of FGM in the northwestern region of Liberia. The results revealed that the association was

statistically significant for parental socioeconomic status and parental educational level only, but not for parental location (urban vs. rural locations). Further research is needed to explore those other factors in the context of the results of this study. The other factors could include women's health information, availability of free educational classes, access to higher education, and much more. An additional recommendation is for the government to focus on literacy training that will build the economic capacity of the population. As this study results revealed, parental education level was associated with FGM prevalence in Liberia.

Conclusion

The SBS is a cultural practice in Liberia that many people honor and believe in. People in Liberia follow this practice because of their social, cultural, and ethnic beliefs in the nature and their ways of life. Over time, this practice poses a public health concern that endangers many women and girls living in Liberia. Many people outside of the country have heard stories about the Sande Bush Society practices and have done research in this field. Researchers and policy makers have advocated for the banning of this practice due to medical risks. However, the citizens of Liberia have resisted outsiders' approach to ban and continue to practice this ritual to the present day (28 Too Many, 2014).

Currently, research has reported that Sande Bush Society is performed in villages, especially in rural areas. However, recent reports have found that more of this ritual (FGM) has been exposed in urban communities in Liberia. There are statistics that there are more incidences than in the 1970s (28 Too Many, 2014). The Sande Bush Society is

very common in thirteen ethnic groups in Liberia. Children in Liberia are not advised to go outside when there are drums playing. Throughout history, the Sande Bush Society has been known for attracting little children by playing the drums. Forty years later, children in most Liberian communities are being initiated into the Sande Bush Society in Liberia (FrontPage Africa & Monrovia, 2016). The World Health Organization (2013) and several other organizations have attempted multiple approaches to eliminating FGM in the Sub-Saharan Africa but have fallen short because of cultural and ethnic misunderstandings. Furthermore, there are issues of distrust and antagonism toward outsiders. As a result, few improvements are being made in Liberia.

Female genital mutilation remains alarmingly high in remote areas in Liberia, resulting in high illiteracy rates among young teens (28 Too Many, 2014). The findings of this study revealed that parental education attainment and parental socioeconomic status can influence whether a female girl is initiated into the Sande Bush Society (SBS). Previous research indicates that parents with no education, low socioeconomic status, and living in remote villages, without the access to schools or health facilities, are more likely to subject their female child to FGM (FrontPage Africa & Monrovia, 2016). From the findings of this research, the results illustrate that parental educational level and parental socioeconomic status had a significant effect on membership prevalence of Sande Bush Society. However, there was no significant effect of parental region on the membership prevalence of Sande Bush Society.

Female genital mutilation is declining in some sub-Saharan African countries but the countries with higher prevalence rates are yet to enforce any laws against FGM

practice. Because of a lack of knowledge, family members unknowingly allow this practice to continue. Greater public awareness is needed to inform the community about the harmfulness of this practice (28 Too Many, 2014). The purpose of this study was to examine the impact of parental education level, socioeconomic status, and location on the prevalence of FGM in north western region in Liberia. Furthermore, the study aimed to understand the environmental influences at the ecological level that contribute to the continuation of female initiation into the Sande Bush Society (FGM).

The results revealed significant social, community, and individual attitudes that affected FGM prevalence. These included environmental factors, influence of community leaders, and a patriarchal setting. The study findings revealed that parental education levels and parental socioeconomic status were associated with FGM prevalence in the northwestern region of Liberia.

The study serves to add to the body of literature presented in the first two chapters. The information from this research could contribute to the statistics that environmental factors impact the parent's decisions to enroll females in societies such as the Sande Bush Society. The academic discourse research in Liberia should note individual decisions, as well as familial decisions, are essential in choosing to enroll daughters in these societies. However, parental wealth and parental educational attainment are strong predictors of decisions to enroll a girl child in the Sande Bush Society (FGM). The results support that it is not true that merely living in certain locations can cause mothers to initiate their female children to Sande Bush Society. It is interesting that region is not significant in this research. The research disagrees with

Mackie (2013)'s study suggesting that individuals from rural areas who lived in ethnically homogenous neighborhoods turned to members of their rural areas who lived in ethnically homogeneous community. Regions do not have any impact on the decision-making process, according to the results of this study.

This study can help public health professionals develop appropriate approaches to eliminate FGM that are culturally specific for those ethnic groups, such as awareness program on the effects of FGM. The awareness-raising activities should not invoke conflict among the members but instead inform them about healthy practices. The healthy practice knowledge can assist in the future planning of society as well as improve the wellbeing of citizens.

References

28 Too Many. (2014). Country profile: FGM in Liberia. Retrieved from http://www.28toomany.org/countries/liberia/

Abayomi, J. (2007). Culture and girl-child education in the blue-print on women education in Nigeria. *International Journal of Education Learning and Development, 1*(1), 71–74. Retrieved from https://www.ajol.info/index.php/sophia/article/view/38755

Abdulcadira, J., Margairazb, C., Boulvaina, M., & Iriona, O. (2011). Care of women with female genital mutilation/cutting. *European Journal of Medical Science, 6*(14), 3–8. doi:10.4414/smw.2011.13137

Abiodun, A. A., Oyejola, B. A., & Job, O. (2011). Female circumcision in Nigeria: Prevalence and attitudes. *Centrepoint Journal, 17*(2), 89–98. Retrieved from https://www.researchgate.net/profile/Alfred_Abiodun/publication/267367536_Female_Circumcision_in_Nigeria_Prevalence_and_Attitudes/links/59ad2744aca272f8a1612bc1/Female-Circumcision-in-Nigeria-Prevalence-and-Attitudes.pdf

Adebowale, A (2000). Effects of exposure to violence and poverty on young children: The southern African context. *Early Child Development and Care 163*(1), Retrieved from https://www.researchgate.net/profile/Adebowale_Akande2/publication/283665866_EXPOSURE_TO_VIOLENCE/links/5642fe8108aec448fa62c019.pdf

Adegoke P. (2005, November). *Female genital mutilation: An African humanist view. Ibadan University Humanist Society* (Presentation).

Africa: Lost in transition – No change for women's rights in Liberia. (n.d). Retrieved from https://issafrica.org/iss-today/lost-in-transition-no-change-for-womens-rights-in-liberia

Ahmadi, A. B. A. (2013). An analytical approach to female genital mutilation in West Africa. *International Journal of Women's Research, 3*(1), 37–56. Retrieved from https://journals.ut.ac.ir/article_30589_92ccff08cb10acd5cec215096c3b672f.pdf

Ahmadu, F. (2001). Rights and wrongs: An insider/outsider reflects on power and excision. In B. Shell-Duncan & Y. Hernlund (Eds.), *Female "circumcision" in Africa: Culture, controversy and change* (pp. 283–312). Boulder, CO: Lynne Rienner.

Allag F., Abboud P., Mansour G., Zanardi M., Quéreux C. (2001). Female genital mutilation. Women's point of view. *Gynecology Obstetric Fertility*; *29*, 824–828.

Almroth, L., Elmusharaf, S., Hadi, N. E., Obeid, A., & Al, E. (2005). Primary infertility after genital mutilation in girlhood in Sudan: A case-control study. *The Lancet, 366*(9483), 385–391. Retrieved from http://www.sciencedirect.com/science/article/pii/S0140673605670237

Alsibiani, S. A., & Rouzi, A. (2008). Sexual function in women with female genital mutilation. *Fertility & Sterility, 93*(3), 722–724. Google Scholar Medline Retrieved from http://www.sciencedirect.com/science/article/pii/S0015028208042696

Amusan, O. A., & Asekun-Olarinmoye, E. (2007). Knowledge, beliefs, and attitudes to female genital mutilation (FGM) in Shao community of Kwara state, Nigeria.

International Quarterly of Community Health Education, 27(4), 337–349. Retrieved from http://journals.sagepub.com/doi/abs/10.2190/IQ.27.4.e

Ashida S, Wilkinson A.V, & Koehly LM (2010). Motivation for health screening: evaluation of social influence among Mexican-American adults. Am J Prev Med., *38*(4), 396–402. Retrieved from http://www.sciencedirect.com/science/article/pii/S0749379710000085

Ayodo, T. M. O., Simatwa, E. M. W., & Juma, L. S. A. (2012). Impact of family socio-economic status on girl-child academic achievement in secondary schools in Kenya: A case study of Kisumu East District. *International Research Journals: Educational Research, 3*(3), 297–310.

Ballah, A., K (2016). The practice of female genital mutilation in the Paynesville Community, Liberia. *Science Journal of Medicine and Clinical Trials.*

Barnes, V. L., & Boddy, J. A. (1994). *The story of a Somali girl.* New York, NY: Vintage Books.

Baseline survey on female genital mutilation practices in Koibatek District, Rift Valley Province. (2001). Retrieved from https://www.giz.de/expertise/downloads /giz2011-en-fgm-bildung.pdf

Behrendt, A., & Moritz, S. (2005). Posttraumatic stress disorder and memory problems after female genital mutilation. *American Journal of Psychiatry, 162*(5), 1000–1002. Retrieved from https://ajp.psychiatryonline.org/doi/full/10.1176/appi.ajp.162.5.1000

Berg, R. C., & Denison, E. (2012). Interventions to reduce the prevalence of female genital mutilation/cutting in African countries. *Campbell Systematic Reviews, 8,* 4–156. Retrieved from http://accaf.uonbi.ac.ke/sites/default/files/chs/accaf/Berg_Effectiveness%20of%20interventions%20against%20FGM_2012.pdf

Berg, R. C., Denison E., & Fretheim, A. (2010). *Factors promoting and hindering the practice of female genital mutilation/cutting* (Report No. 23). Oslo, Norway: Kunnskapssenteret (Norwegian Knowledge Centre for the Health Services).

Berggren V, Yagoub AE, Satti AM, Khalifa MA, Aziz FA, Bergstrom S (2006). Being different and vulnerable: experiences of immigrant African women who have been circumcised and sought maternity care in Sweden. Journal of Transcultural Nursing. 2006;*17*(1):50–57. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.867.9023&rep=rep1&type=pdf

Bjälkander, O., Bangura, L., Leigh, B., Berggren, V., Bergström, S., & Almroth, L. (2012a). Health complications of female genital mutilation in Sierra Leone. *International Journal of Women's Health, 4,* 321–331. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3410700/

Bjälkander, O., Grant, D. S., Berggren, V., Bathija, H., & Almoth, L. (2012b). Female genital mutilation in Sierra Leone: Forms, reliability of reported status, and accuracy of related demographic and health survey questions. *Obstetrics &*

Gynecology International, 4, 321–331. Retrieved from https://www.hindawi.com/journals/ogi/2013/680926/abs/

Breslow, L. (1996). Social ecological strategies for promoting healthy lifestyles. *American Journal of Health Promotion, 10*, 253–257. Retrieved from http://journals.sagepub.com/doi/abs/10.4278/0890-1171-10.4.253?journalCode=ahpa

Bledsoe, C (1984). The Political Use of Sande Ideology and Symbolism. American Ethnologist *11* (3):455-472. Retrieved from http://onlinelibrary.wiley.com/doi/10.1525/ae.1984.11.3.02a00030/full

Boakye-Boaten, A (2010). Changes in the concept of childhood: Implications on children in Ghana. *Journal of International Social Research* 3.10: 104–115. Retrieved from https://s3.amazonaws.com/academia.edu.documents/43231629/Changes_in_the_coincept_of_childhood.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1515122247&Signature=VlQCNRN4L%2BT70j9N3zbS5NcEkOg%3D&response-content-disposition=inline%3B%20filename%3DChanges_in_the_concept_of_Childhood_Impl.pdf

Brewer N. T., & Hallman W. K. (2006). Subjective and objective risk as predictors of influenza vaccination during the vaccine shortage of 2004-2005. Clinical Infectious Diseases, 43, 1379-1386. Retrieved https://academic.oup.com/cid/article/43/11/1379/449308

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist, 32*(7), 513-531. doi:10.1037/0003-066X.32.7.513

Bronfenbrenner, U. (1979). *The Ecology of Human Development: Experiments by Nature*

Cappa, C., Moneti, F., Wardlaw, T., & Bissell, S. (2013). Elimination of female genital mutilation/cutting. *Lancet, 382*, 1080–1081. http://dx.doi.org/10.1016/S0140-6736(13)61532-9.

Centers for Disease Control and prevention (2010), The Social Ecological Model: A framework for Prevention. Retrieved from http://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html.

Centers for Disease Control and Prevention (2013). Retrieved https://www.cdc.gov/nchs/data/databriefs/db168.htm.

Cheng, H. G., & Phillips, M. R. (2014). Secondary analysis of existing data: Opportunities and implementation. *Shanghai Archives of Psychiatry, 26*(6), 371–375.doi: 10.11919/j.issn.1002-0829.214171 Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4311114/

Coady, M. H., Galea, S., Blaney, S., Ompad, D. C., Sisco, S., & Vlahov, D. (2008). Project VIVA: A multilevel community-based intervention to increase influenza vaccination rates among hard-to-reach populations in New York City. *American Journal of Public Health, 98*(7), 1314–1321.

Coady MH, Galea S, Blaney S, Ompad DC, Sisco S, & Vlahov D (2008). Project VIVA: use of posters in a multilevel community-based intervention to increase influenza

vaccination rates among hard-to-reach populations in New York City. Am J Public Health. 2008;98(7):1314–1321.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Creswell, J. W. (2015). *Research design: Qualitative, quantitative, and mixed method approaches* (2nd ed.).

Dahlberg, L. L., & Krug, E. G. (2002). Violence – A global public health problem. In E. Krug, L. L. Dahlberg, J. A. Mercy, A. B. Zwi, & R. Lozano (Eds.), *World report on violence and health* (pp. 1–56). Geneva, Switzerland: World Health Organization.

Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: the indirect role of parental expectations and the home environment. *Journal of family psychology*, *19*(2), 294. Retrieved from https://s3.amazonaws.com/academia.edu.documents/31193294/ParentEducationIncome.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1515121835&Signature=aFsswDI5zvg%2BBpJD73%2FVwYZ13NE%3D&response-content-disposition=inline%3B%20filename%3DThe_influence_of_parent_education_and_fa.pdf

Deutsche Gesellschaft für Internationale Zusammenarbeit. (2011a). *Female genital mutilation and behaviour change.* Retrieved from https://www.giz.de/expertise/downloads/giz2011-en-fgm-verhaltensaenderung.pdf.

Deutsche Gesellschaft für Internationale Zusammenarbeit. (2011b). *Female genital mutilation and education*. Retrieved from https://www.giz.de/fachexpertise /downloads/giz2011-en-fgm-bildung.pdf

Deutsche Gesellschaft für Internationale Zusammenarbeit. (2011c). *Intergenerational dialogue: A big step towards ending female genital mutilation (FGM)*. Retrieved from https://www.giz.de/expertise/downloads/Fachexpertise/giz2011-en-fgm

Dich, L., McKee, H. A., & Porter, J. E. (2013). Ethical Issues in Online Course Design: Negotiating Identity, Privacy, and Ownership. *Selected Papers of Internet Research, 3*. Retrieved from https://spir.aoir.org/index.php/spir/article/view/866

Dirie, M. A., & Lindmark, G. (1992). The risk of medical complications after female circumcision. *East African Medical Journal, 69*(9), 479–482. Retrieved from http://www.cirp.org/pages/female/dirie1/

Dorkenoo, E. (1992). *Cutting the rose.* Ann Arbor, MI: Minority Rights Group, University of Michigan.

Dugger, C. W. (1996, October 5). African ritual pain: Genital cutting. *New York Times*, A1, A6. Elmusharaf, S. (2013). Female genital mutilation: Determinants and consequences among girls and women in Sudan. Retrieved from http://publications.ki.se/xmlui /handle/10616/41807.

El-Shawarby, S. A., & Rymer, J. (2008). Female genital cutting. *Obstetrics, Gynecology, & Reproductive Medicine, 18*, 253–255. doi: 10.1016/j.ogrm.2008.07.005

Equalitynow.org. (n.d.). Retrieved from http://www.equalitynow.org/what

Ettner, S. L., & Grzywacz, J. G. (2001). Workers' perceptions of how jobs affect health: A social, ecological perspective. *Journal of Occupational Health Psychology, 6*, 101–113. http://dx.doi.org/10.1037/1076-8998.6.2.101

Farage, M. S., Miller, K., Tzeghai, G. E., Azuka, C. E., Sobel, J. D., & Ledger, W. J. (2015). Female genital cutting: Confronting cultural challenges and health complications across the across the lifespan. *Women's Health, 11*(1), 79–94. http://doi.org/10.2217/whe.14.63

Fielding, J. E., Teutsch, S., & Breslow, L. (2010). A framework for public health in the United States. *Public Health Reviews, 32,* 174–189. Retrieved from https://publichealthreviews.biomedcentral.com/track/pdf/10.1007/BF03391597?site=publichealthreviews.biomedcentral.com

Flomo, E. (2014). *Publisher crusades against female genital mutilation in Africa.* Lanham: Federal Information & News Dispatch.

Frankfort-Nachmias, C., & Nachmias, D. (2008). *Research methods in the social sciences* (7th ed.). New York, NY: Worth.

Frieden, T.R. (2010). A framework for public health action: health impact pyramid. Am J Public Health. Forth coming on population health. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/20194973.

FrontPageAfrica & Monrovia, M. A. (2016, October 4). FGM in, affirmative action out – Where does Liberia stand on women's rights? *AllAfrica.com*. Retrieved from http://search.proquest.com.ezp.waldenulibary.org/docview/1825613952?accounted=14872.-gen.pdf.

Gibbs, J. L. (1965). *Peoples of Africa*. New York, NY: Holt, Rinehart, & Winston.

Govoetchan, R., Gnanguenon, V., Ogouwalé, E., Oké-Agbo, F., Azondékon, R., Sovi, A., … Akogbéto, M. (2014). Dry season refugia for anopheline larvae and mapping of the seasonal distribution in mosquito larval habitats in Kandi, northeastern Benin. *Parasites & Vectors*, 7, 137. Doi :10.1186/1756-3305-7-137

Green, L. W., Richard, L., & Potvin, L. (1996). Ecological foundations of health promotion. *American Journal of Health Promotion, 10*, 270–281. Retrieved from https://www.researchgate.net/profile/Lawrence_Green/publication/13137818_Ecological_Foundations_of_Health_Promotion/links/5617071f08ae1a8880035c0b.pd

Gregson, J. (2001). System, environmental, and policy changes: Using the social-ecological model as a framework for evaluating nutrition education and social marketing programs with low-income audiences. Journal of Nutrition Education, *33*(1), 4-15. Retrieved from http://www.sciencedirect.com/science/article/pii/S1499404606600651

Gruenbaum E. Socio-cultural dynamics of female genital cutting: research findings, gaps, and directions. *Cult Health Sex* 2005; 7: 429-41 doi: 10.1080/13691050500262953 PMID: 16864214.

Hansen, W. (1997). A social ecology theory of alcohol and drug use prevention among college and university students. In Designing alcohol and other Drug Prevention Programs in Higher Education: Bringing Theory into Practice. Newton, MA: Higher Education Center for Alcohol and Other Drug Prevention.

Hassanin, I. M. A., & Shaaban, O. M. (2013). Impact of the complete ban on female genital cutting on the attitude of educated women from upper Egypt toward the practice. *International Journal of Gynecology & Obstetrics, 120*(3), 275–278. Retrieved from http://www.sciencedirect.com/science/article/pii/S0020729212005838

Hosken, F. P. (1978). The epidemiology of female genital mutilations. *Tropical Doctor, 8*, 150–156. Retrieved from http://journals.sagepub.com/doi/abs/10.1177/004947557800800326?journalCode=tdoa

Howell, D. C. (2007). The analysis of missing data. In W. Outhwaite & S. Turner (Eds.), *Handbook of social science methodology*. London: Sage.

Ibrahim, A., Rasch, V., Pukkala, E., & Aro, A. R. (2011). Cervical cancer risk factors and feasibility of visual inspection with acetic acid screening in Sudan. *International Journal of Women's Health, 3*, 117–122. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3089429/

Institute of Medicine. (2003). Who will keep the public health? Educating public health professionals for the 21st century. Washington, DC: The National Academies Press. Retrieved from http://courses.washington.edu/nutr531/who_healthy_summary.pdfhttp://courses.washington.edu/nutr531/who_healthy_summary.pdf

Jones, SD, Ehiri, J., & Anyanwu, E (2004). Female genital mutilation in developing countries: an agenda for public health response. Eur J Obstet Gynecol Reprod

Biol. 2004 Oct 15;116(2):144-51. Review. PMID:15358454. Retrieved from http://www.sciencedirect.com/science/article/pii/S0301211504003501

Karmaker, B., Ngianga-Bakwin, K., Chung, D., & Clarke, A. (2011). Factors associated with female genital mutilation in Burkina Faso and its policy implications. *International Journal for Equity in Health, 10*(20). doi:10.1186/1475-9276-10-20

Kay, J. (2012, December 4). A courageous struggle against a barbaric practice; Liberian journalist Mae Azango has risked her life to expose the hideous dangers of female genital mutilation. *National Post.* Retrieved from http://search.proquest.com.ezp.waldenulibrary.org/docview/1223549271?accountid=14872

Keita, D., & Blankhart, D (2001) Community-based survey on female genital excision in Faranah District, Guinea, Reproductive Health Matters, 9:18, 135-142, DOI: 10.1016/S0968-8080(01)90100-4.

Kempf, W. F., & Hilke, R. (2012). *The measurement of social norms in mathematical models for social psychology*. Bern, Germany: Huber.

Khaja, K (2004). Female circumcision: Life histories of Somali women. Salt Lake City, Utah, USA: University of Utah; 2004. (Ph.D. dissertation.).

Kinney AY, Bloor, LE, Martin C, & Sandler RS (2005). Social ties and colorectal cancer screening among Blacks and Whites in North Carolina. Cancer Epidemiol Biomarkers Prev. 2005;14(1):182–189. Retrieved from https://pdfs.semanticscholar.org/4fb6/7438e2a001578cbfb509356e63beba90fec6.pdf

Kiragu, K. (1995). *Female genital mutilation: A reproductive health concern*. Baltimore, MD: John Hopkins Population Information Program.

Koso-Thomas, O. (2009). *The circumcision of women: A strategy for eradication.* London, United Kingdom: Zed Press.

Laerd Statistics. (2013). One-way MANOVA. Retrieved from https://statistics.laerd.com /spss-tutorials/one-way-manova-using-spss-statistics.php

Langkamp, D. L., Lehman, A., & Lemeshow, S. (2010). Techniques for handling missing data in secondary analyses of large surveys. *Academic Pediatrics, 10*(3), 205–210.

Liberia – History and Culture. (n.d). Retrieved from http://www.iexplore.com/articles /travel-guides/Africa/Liberia/history-and-culture.

Liberia demographic and health survey. (2007). Monrovia, Liberia: Liberia Institute of Statistics and Geo-Information Services. Retrieved from http://www.emansion.gov.lr/doc/Population_by_County.pdf

Liberia Institute of Statistics and Geo-Information Services, Ministry of Health and Social Welfare, National AIDS Control Program, & ICF International. *Liberia demographic and health survey 2013.* Monrovia, Liberia: Authors.

Liberia Population Housing Census. (2008). *2008 population and housing census final results*. Retrieved from http://www.emansion.gov.lr/doc/Population_by_County .pdf.

Liberian Observer. (2016, October 26). FGM damage girls' health. Retrieved from http://search.proquest.com.ezp.waldenulibrary.org/docview/1832300985? accounted=14872Mackie, G. (2013, January). *General considerations in*

measuring social norms. Paper presented at the STRIVE Meeting, C4D Section, Programmed Division, UNICEF, New York, NY. Retrieved from http://strive.lshtm.ac.uk/resources/social-norms

McClusky, P. (2002). *Art from Africa: Long Steps Never Broke a Back*. Seattle Art Museum.

McKee, H. A., & Porter, J. E. (2013). Ethical issues in online course design: Negotiating identity, privacy, and ownership. *Selected Papers of Internet Research, 3*.

McLeroy, K., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly, 15*, 351–377.

Merriam-Webster (n.d). Merriam-Webster Dictionary Timeline: Merriam-Webster Milestones, retrieved https://www.merriam-webster.com/dictionary/dictionary.

Mikut, R., & Reischl, W. M. (2011). Interdisciplinary reviews: Data mining and knowledge discovery. *1*(5), 431–443.

Moges, A. (2009). *What is behind the tradition of FGM?* Retrieved from http://www.african-women.org/documents/behind-FGM-tradition.pdf

Morison, L., Scherf, C., Ekpo, G., Paine, K., West, B., Coleman, R., & Walraven, G. (2001). The long-term reproductive health consequences of female genital cutting in rural Gambia: A community-based survey. *Tropical Medicine & International Health, 6*, 643–653.

Natarajan, K., Li, J., & Koronios, A. (2010). Data mining techniques for data cleaning. In D. Kiritsis, C. Emmanouilidis, A. Koronios, & J. Mathew (Eds.), *Engineering asset lifecycle management.* London: Springer.

Norman K., Hemmings J., Hussein E., Otoo-Oyortey, N (2009). FGM is always with us. Experiences, perceptions and beliefs of women affected by female genital mutilation in London. Results from a PEER study. London, England.

Nour, N. M. (2004). Female genital cutting: Clinical and cultural guidelines. *Obstetrical & Gynecological Survey, 59*(4), 272–279.

Nussbaum, M.C. (2005). "Women's Bodies: Violence, Security, Capabilities." Journal of Human Development 6(2): 167−83. Retrieved from https://www.amherst.edu/system/ files/media/1556/Pica-%2520nussbaum-women%2527s %2520bodies.pdf. Accessed 28 March 2014.

Obermeyer, C. (2003). The health consequences of female circumcision: Science, advocacy, and standards of evidence. *Medical Anthropology Quarterly, 17*(3), 394–412. Retrieved from https://www.researchgate.net/profile/Carla_Obermeyer/publication/10567902_The_Health_Consequences_of_Female_Circumcision_Science_Advocacy_and_Standards_of_Evidence/links/54197ed80cf203f155adf54d.pdf

Office on Women's Health (2012). In the Office of the Assistant Secretary for Health at the U.S. Department of Health and Human Services. Retrieved from https://www.nasmhpd.org/sites/default/files/FedPartnersOWH.pdf.

Okeke, T. C., Anyaehie, U. S. B., & Ezenyeaku, C. C. K. (2012). An overview of female genital mutilation in Nigeria. *Annals of Medical & Health Sciences Research, 2*(1), 70–73. Retrieved from http://www.ajol.info/index.php/amhsr/article/view/87793

Oloyinka, K. S. (1997). *The circumcision of women: A strategy for eradication.* London: Zed Books.Olukoju, A. (2006). *Culture and customs of Liberia*. Westport, CT: Greenwood Press.

Pashaei, T., Rahimi, A., Ardalan, A., Felah, A., & Majlessi, F. (2012). Related factors of female genital mutilation (FGM) in Ravansar (Iran). *Journal of Women's Health Care, 1*, 108. doi:10.4172/2167-0420.1000108.

Pasick, R.J., Barker, J.C., Otero-Sabogal, R., Burke, N.J., Joseph, G., & Guerra, C. (2009). Intention, subjective norms, and cancer screening in the context of relational culture. Health Education & Behavior, *36*(Suppl. 1), 91S-110S. Google Scholar Medline. Retrieved from http://journals.sagepub.com/doi/abs/10.1177/1090198109338919

Pereira, N., & Guilfoil, D. S. (2012). Excision of an enlarging vaginal epidermal inclusion cyst during pregnancy: A case report. *Journal of Lower Genital Tract Disease, 16*(3), 322–324. Retrieved from http://journals.lww.com/jlgtd/Abstract/2012/07000/Excision_of_an_Enlarging_Vaginal_Epidermal.20.aspx

Perkins, H. W, & Berkowitz, A. D. (1986). Perceiving the community norms of alcohol use among students: Some research implications for campus alcohol education programming. International Journal of the Addictions, 21, 961-976. Retrieved from https://www.researchgate.net/profile/Alan_Berkowitz2/publication/19369252_Perceiving_the_Community_Norms_of_Alcohol_Use_Among_Students_Some_Rese

arch_Implications_for_Campus_Alcohol_Education_Programming/links/56907bae08aecd716aedfe7e.pdf

Poverty Reduction Strategy (2007). Monrovia: Republic of Liberia. Available From: http://siteresources.worldbank.org/INTPRS1/Resources/Liberia-PRSP(Jul2008).pdf

Purchasing power Parities (2014). OECD Purchasing power parities (PPP) (Indicator). Doi:10.1787/1290ee5a-en (Accessed on April 2014).

Research Design Service – South West. (2012). Glossary. Retrieved from http://www.rdssw.nihr.ac.uk/glossary.html

Richard, L., Potvin, L., Kishchuk, N., Prlic, H., & Green, L. W. (1996). Assessment of the integration of the ecological approach in health promotion programs. *American Journal of Health Promotion, 10*, 318–328. Retrieved from http://journals.sagepub.com/doi/abs/10.4278/0890-1171-10.4.318

Rights commission criticizes low prosecution of rape cases. (2015, October 16). *AllAfrica.com.* Retrieved from http://search.proquest.com.ezp.waldenulibrary.org/doc view/1722473543? accounted=14872

Sallis, J. F., Owen, N., Fisher, E. B. (2008). Ecological models of health behavior. In K. Glanz, B. K. Rimer, K. Viswanath (Eds.). *Health behavior and health education: Theory, research, and practice* (4th ed., pp. 465–482). San Francisco, CA: Jossey-Bass.

Secret societies make Liberia one of the hardest places to end FGM. (2014, February 5). *AllAfrica.com.* Retrieved from http://search.proquest.com.ezp.waldenulibrary.org /doc view/1495333893? accounted=14872.

Shefner-Rogers, C. (2013). *Regional communication strategy development guide for newborn care and the prevention and control of childhood pneumonia and diarrhea in East Asia and the Pacific region*. New York, NY: United Nations International Children's Emergency Fund.

Shell-Duncan, B., & Yvla Hernlund (2000). Female "Circumcision" in Africa. Bouldar, CO. Lynne Rienner Publishers, Inc.

Sipsma, H. L., Chen, P. G., Ofori-Atta, A., Ilozumba, U. O., Karfo, K., & Bradley, E. H. (2012). Female genital cutting: Current practices and beliefs in western Africa. *Bulletin of the World Health Organization, 90*(2), 120–127F. doi:10.2471/BLT.11 .090886

Smith, A. W., Borowski, L. A., & Liu, B. (2011). U.S. primary care physicians' diet, physical activity, and weight-related care of adult patients. *American Journal of Preventive Medicine, 41*, 33–42. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3142674/

Stokols, D. (1992). Establishing and maintaining healthy environments: Toward a social ecology of health promotion. *American Psychologist, 47*, 6–22. Retrieved from https://www.researchgate.net/profile/Daniel_Stokols/publication/21615651_Estab lishing_and_Maintaining_Healthy_Environments_Toward_A_Social_Ecology_of _Health_Promotion/links/0deec51648b8bb0531000000.pdf

Stokols, D. (1996). Translating social ecological theory into guidelines for community health promotion. *American Journal of Health Promotion, 10*, 282–298. Retrieved from https://www.researchgate.net/profile/Daniel_Stokols/publication/13137819_Translating_Social_Ecological_Theory_Into_Guidelines_for_Community_Health_Promotion/links/0deec51648b8c5f7d3000000.pdf

Stokols, D., Allen, J., & Bellingham, R. L. (1996). The social ecology of health promotion: Implications for research and practice. *American Journal of Health Promotion, 10*, 247–251. Retrieved from 13137814_The_Social_Ecology_of_Health_Promotion_Implications_for_Research_and_Practice

Stokols, D., Pelletier, K. R., & Fielding, J. E. (1996). The ecology of work and health: Research and policy directions for the promotion of employee health. *Health Education Quarterly, 23*, 137–158. Retrieved from https://cloudfront.escholarship.org/dist/prd/content/qt56f5k1c6/qt56f5k1c6.pdf

Tamire, M., & Molla, M. (2013). Prevalence and belief in the continuation of female genital cutting among high school girls: A cross-sectional study in Hadiya zone, southern Ethiopia. *BMC Public Health, 13*, 1120. Retrieved from https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-13-1120

Tostan. (2014). Areas of impact: Cross-cutting issues. *Female Genital Cutting – Tostan – Dignity for All.* Retrieved from http://tostan.org/female-genital-cutting

Toubia, N. (1993). *Female genital mutilation: A call for global action*. New York, NY: Women Ink.

Turner, C. (2016). When does child marriage become slavery? Retrieved from http://www.girlsnotbrides.org/when-does-child-marriage-become-slavery/.

United Nations Development Programmed (2014). World Bank, and EC (European Commission). 2014. "Roma Data." www.eurasia.undp.org/content/rbec/en/home/our work/poverty reduction/Roma-in-central-and -southeast-Europe/Africa/Roma-data/. Accessed 28 March 2014.

United Nations Educational, Scientific, and Cultural Organization (2014). *Education for all global monitoring report 2014: Teaching and learning – Achieving quality for all.* Paris, France: Author.

United Nations International Children's Emergency Fund. (2013). *Female genital mutilation/cutting: A statistical overview and exploration of the dynamics of change.* Retrieved from http://data.unicef.org/corecode/uploads/document6 /uploaded pdfs/core code/FGMC_Lo_res_Final_26. pdf U.S. Department of Health and Human Services, Health Resources and Services Administration. (2013). *Women's health USA 2012*. Rockville, MD: Author.

United Nations Population Fund (2008). "Linking Population, Poverty and Development. Migration: A World on the Move." www.unfpa.org/pds/migration.html. Accessed 30 March 2014,

Vlahov, D., Coady, M. H., Ompad, D. C., & Galea, S. (2007). Strategies for improving influenza immunization rates among hard-to-reach populations. *Journal of Urban*

Health, 84(4), 615–631. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2219560/

Wakabi, W. (2007). Africa battles to make female genital mutilation history. *The Lancet, 369*, 1069–1070. Retrieved from http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(07)60508-X/fulltext

Warsame, M. (1989). Medical and social aspects of female circumcision in Somalia. Retrieved from https://www.ncbi.nlm.nih.gov.

WHO, UNICEF, UNFPA (1997). Female genital mutilation. A Joint WHO/UNICEF/UNFPA Statement. Geneva, World Health Organization.

Women's Policy, Inc (1996). Female Genital Mutilation. Women's Health Equity: Act of 1996: Legislative Summary and Overview. Women's Policy, Inc.

World Bank. (2015). *Liberia dashboard*. Retrieved from http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&C

World Health Organization (2011). *Female Genital Mutilation*. Fact sheet N°241. Available from: http://www.who.int/mediacentre/factsheets/fs241/en. Accessed December 3, 2014.

World Health Organization. (1997). *Female genital mutilation: A joint WHO/UNICEF/UNFPA statement.* Geneva, Switzerland: Author.

World Health Organization. (2008). Eliminating female genital mutilation: An interagency statement. Geneva, Switzerland: Author.

World Health Organization. (2010). *Female genital mutilation: A joint WHO/UNICEF/UNFPA statement.* Geneva, Switzerland: Author.

World Health Organization. (2012). *Eliminating female genital mutilation: An interagency statement*. Geneva, Switzerland: Author.

World Health Organization. (2013a). Female genital mutilation. Retrieved from http://www.who.int/mediacentre/factsheets/fs241/en/

World Health Organization. (2013b). *Female genital mutilation report of a WHO technical working group*. Geneva, Switzerland: Author.

World Health Organization. (2014a). *Country cooperation strategy at a glance*. Retrieved from http://www.who.int/countryfocus/cooperation_strategy/ccsbrief _lbr_en.pdf.

World Health Organization. (2014b). *Female genital mutilation and other harmful practices: Prevalence of FGM.* Geneva, Switzerland: Author. Retrieved from http://www.who.int/reproductivehealth/topics/fgm/prevalence/en

World Health Organization. (2016). Female genital mutilation: Fact sheet, February 2016. Retrieved from http://www.who.int/mediacentre/factsheets/fs241/en/

Yirga, W. S., Kassa, N. A., Gebremichael, M. W., & Aro, A. R. (2012). Female genital mutilation: Prevalence, perceptions and effect on women's health in Kersa district of Ethiopia. *International Journal of Women's Health, 4*, 45–54. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3282605/

Appendix A: Approval Letter to Use Liberia DHS Datasets

August 3, 2017

Sando Adetunji
Institution: Walden University
Phone: 240-777-3229
EMail: sando.adetunji@waldenu.edu

Dear Sando Adetunji.

This is to confirm that on August 2 2017, you were approved to use the Liberia Demographic and Health Survey (DHS) datasets, for your registered research titled: **"The Impact of educational level, wealth status, and location".**

To access the datasets, please login at: http://www.dhsprogram.com/data/dataset_admin/login_main.cfm The user name is your registered email address, and the password is the one selected during registration.

The IRB-approved procedures for DHS public-use datasets do not in any way allow respondents, households, or sample communities to be identified. There are no names of individuals or household addresses in the data files. The geographic identifiers only go down to the regional level (where regions are typically very large geographical areas encompassing several states/provinces). Each enumeration area (Primary Sampling Unit) has a PSU number in the data file, but the PSU numbers do not have any labels to indicate their names or locations. In surveys that collect GIS coordinates in the field, the coordinates are only for the enumeration area (EA) as a whole, and not for individual households, and the measured coordinates are randomly displaced within a large geographic area so that specific enumeration areas cannot be identified.

The DHS Data may be used only for the purpose of statistical reporting and analysis, and only for your registered research. To use the data for another purpose, a new research project must be registered.

All DHS data should be treated as confidential, and no effort should be made to identify any household or individual respondent interviewed in the survey.

The data must not be passed on to other researchers without the written consent of DHS. Users are required to submit an electronic copy (pdf) of any reports/publications resulting from using the DHS data files to: archive@dhsprogram.com.

Sincerely,

Bridgette Wellington

Data Archivist
The Demographic and Health Surveys (DHS) Program

530 Gaither Road, Suite 500, Rockville, MD 20850 USA +1.301.407.6500 +1.301.407.6501 fax icf.com

Appendix B: NIH Certificate

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **sando adetunji** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 08/02/2017.

Certification Number: 2444041.