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Walden University

College of Health Sciences

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Nkwelle, Norbert Nicholas Njume

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Walden University
August, 2019

Abstract

The Long-Term Health-Related Outcomes of Breast Ironing in Cameroon

by

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MPH Walden University, 2010

MBA Greenwich University, 2004

BA University of Buea, 1997

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

August, 2019

Abstract

Breast ironing (BI) practice is a common practice in Cameroon. Most villages and towns continue with BI because they believe it constitutes a positive cultural lifestyle. However, public health officials and other advocates have branded BI as a harmful traditional practice because of the traumatic impact it has on the women who experience it. The purpose of this quasi-experimental study was to examine the perceived long-term health-related outcomes of BI and the quality of life changes on these women. Underpinning this study was the betrayal theory of trauma. A survey was used to collect data from 230 women. Descriptive analysis of the data showed, BI was more prevalent in some regions of Cameroon and among some ethnic groups more than others. A chi-square test revealed a strong relationship that women who experienced BI perceived long-term physical, psycho-social, and emotional health-related outcomes and negative quality of life changes during and after the practice. A multiple logistic regression model was conducted to examine the relative odds of exposure of other independent predictors on the outcome variable. The chi-square test on severe pain and marital/ family health; breast scars and frequent pain; stress and feeling inferior; sadness and pain, revealed a P-value $< .001$. The odd ratio (OR) of the confounding predictors breast scars, frustration, shame, depression, self-esteem; burns; abscesses revealed an $\text{Exp}(B)/ \text{OR} < 1$, which signifies a lower odds of exposure to influence the outcome variable. The study contributed to the knowledge around BI and provided recommendation for public health officials—local and national advocates—to promote BI eradication procedures locally and nationally.

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Dedication

I dedicate this work to the Lord my God and to my parents, Mr. Njume Nicholas and Epede Njume, who did not see this day come into being.

Acknowledgments

I am grateful to the Lord my God for the strength and the spirit of perseverance during this scholarly undertaking. I have immense gratitude to Dr. Patrick Tschida, my dissertation supervisor, and Dr. Michael Schwab, my committee member, for their continued coaching and encouragements throughout this process. To my wife, who constantly reminded me to hang in there when the thoughts of abandoning the process were lingering and my spirit were low. To my boys, Ian Njume, Sean Njume, and Jayden Nkwelle, who inspired me to keep the pace, with their questions about why and when would I finish school? To my brothers, Elime-Njume, NdimeElime-Njume, Ekah-Nzume, Epie-Njume, and sisters, Nsohle-Njume, Eboe-Njume, Ekume-Njume and Mbou-Njume, for their constant support and encouragement throughout this journey, they also told me “you will get there” when I expressed frustration.

Table of Contents

List of Tables	v
List of Figures	vii
Chapter 1: Introduction to the Study.....	1
Introduction.....	1
Background of the Study	3
Breast Ironing Prevalence	3
Breast Ironing: An Abuse	4
Traumatic Breast Ironing Process.....	5
Problem Statement	6
Purpose of Study	7
Research Questions.....	8
Theoretical Framework.....	10
Nature of the Study	11
Definitions of Terms	12
Assumptions.....	14
Scope and Delimitation.....	14
Limitations of Study	15
Significance of the Study	16
Summary	17
Chapter 2: Literature Review.....	19
Introduction.....	19

Literature Review Strategy	20
Theoretical Framework.....	22
Importance of Theory to Research.....	22
BI a Harmful Traditional Practice.....	24
Breast Ironing: A Public Health Issue	25
Breast Pain after Trauma	25
Breast Injury Incidence	26
The Effects of Trauma on Survivors.....	27
The Effects of Trauma on the Quality of Life of Survivors	28
Summary	29
Chapter 3: Research Method.....	30
Introduction.....	30
Purpose of the Study	30
Research Design and Rationale	31
Research Questions	32
Population, Sampling, and Sampling Procedures	33
Target Population.....	33
Sample Population	34
Sampling Procedure	35
Inclusion Criteria	36
Exclusion Criteria	36
Sample Size Determination.....	36

Participant Recruitment Procedures.....	38
Data Collection Procedures.....	39
Pilot Study.....	40
Instrumentation and Materials	41
Surveys.....	41
Instrument Validation	42
Operational Variables	43
Independent Variable	43
Dependent Variable	44
Data Analysis Plan.....	45
Descriptive and Inferential Tools.....	46
Statistical Test.....	46
Chi- Square Test or Crosstabulation.....	46
Multiple Logistics Regression Model.....	47
Threats to Validity and Reliability.....	47
Ethical Considerations	49
Summary.....	50
Chapter 4: Results	51
Introduction.....	51
Demographic Representation of the Sample.....	52
Reason and Advantages for BI Practice.....	55
The Impact of BI on Individual Health Outcomes.....	56

Research Question 1	60
Research Question 2	64
Research Question 3	73
Summary	73
Chapter 5: Discussion, Conclusions, and Recommendations	75
Introduction.....	75
Interpretation of the Findings.....	76
Demographics of Prevalence	77
Research Question 1	77
Research Question 2	80
Research Question 3	82
Theoretical Framework and Research Findings	83
Limitations of the Study.....	85
Recommendations for Action	87
Implications for Social Change.....	90
Recommendations for Future Research	92
Conclusions.....	93
References.....	94
Appendix A: Recruitment Announcement.....	105
Appendix B: Confidentiality Agreement	106
Appendix C: Survey Questions.....	107

List of Tables

Table 1. Reliability Statistics	43
Table 2. Frequency and Percentages of Participants According to Age.....	53
Table 3. Regional Distribution of BI Participants	54
Table 4. Ethnic Distribution of BI Participants	55
Table 5. Frequency of Exposure to BI.....	55
Table 6. Advantages of the BI Practice	56
Table 7. The Impact of BI on Individual Health.....	57
Table 8. Participants Traumatized During and After BI.....	57
Table 9. Participants Who Experienced Traumatic Symptoms After BI.....	58
Table 10. Types of Physical Trauma Experienced by BI Participants	59
Table 11. Psychological Trauma Factors Experienced by BI Women	60
Table 12. The Social Traumatic Factors Experienced by BI Women	60
Table 13. Multiple Logistic Regression for Covariates Predicting Family and Marital Health.....	63
Table 14. Multiple Logistic Regression for Covariates Predicting Perceived Health (Considered as Outcast)	65
Table 15. Frequency Distribution of Negative Quality of Life	66
Table 16. Negative Quality of Life Changes	68
Table 17. Chi-Square Test (Breast Scar and Often in Pain)	69
Table 18. Multiple Logistic Regression for Covariates Predicting Perceived QOL changes (Often in Pain).....	70

Table 19. Multiple Logistic Regression for Covariates Predicting Perceived QOL	
Changes (Feeling Inferior).....	71
Table 20. Multiple Logistic Regression for Covariates Predicting Perceived QOL	
Changes (Frustrations).....	73
Table 21. Multiple Logistic Regression for Predicting Perceived QOL Changes (Sadness)	
.....	75
Table 22. Chi-Square Test (Betrayal and Shared Information)	75

List of Figures

Figure 1. The relationship between severe pain and marital role	62
Figure 2. Influence of breast swelling and being considered an outcast in the community	64
Figure 3. The relationship between breast scar and pain	69
Figure 4. The relationship between stress and feeling inferior	71
Figure 5. The impact of marital problem and frustration.....	72
Figure 6. The relationship between sadness and pain.....	74

Chapter 1: Introduction to the Study

Introduction

The existence of traditional cultural practices that are harmful to women around the world is not a new phenomenon. Some traditional practices, such as female genital mutilation (FGM) or forced and/or early marriages, are widespread, while others, such as breast ironing (BI), are endemic to certain areas (Office of the United Nations High Commission for Human Rights [ONCHR], 2003). Harmful traditional practices are those that are embedded in beliefs held by a community. They usually transcend a single generation, and the groups that practice these traditional practices see them as beneficial. However, these practices are considered harmful by outside public health practitioners and other officials because of their negative impact on the individuals experiencing them (ONCHR, 2003).

The practice of BI occurs in other parts of Africa such as Guinea-Bissau, Chad, Togo, Nigeria, and Benin, but it is most widespread in Cameroon (Hall, 2013). BI, also called chest ironing or breast pounding, is a cultural practice common in all 10 regions of Cameroon, but is most predominant in the Christian and animist southern areas of the country. Regions with high levels of BI practice include the Coastal (Littoral), Southwest, Northwest, Western, and Center Regions, where ethnic groups such as the Duala, Manyu (Banyan, Ejagham, and Akwaya), Eton, Bamelike, and Bafut are concentrated (Drake, 2013). The practice of BI involves pounding or compressing the breasts of young girls with rudimentary tools, usually hot stones, wooden pestles (locally called “mortar-pistles”), wooden cooking spoons, warm towels, coconut shells, and banana peels (Bawe,

2011; Mancho, 2007). BI is performed primarily to suppress breast development so as to prevent the onset of girls' sexual debut or early pregnancies. It is also performed to provide or enhance the opportunity for girls to be educated, as young women often drop out of school because of early pregnancy (Drake, 2013; Ndonko, 2006).

The practice occurs when the girl shows physical signs of puberty, usually between 9 and 14 years of age (Ndonko, 2006). The ironing process generally occurs at dusk or at dawn and in the family kitchen to provide privacy and to prevent other family members, such as the father, from being aware of the practice. The practice is mostly carried out by the girl's mother or any close female relative (Drake, 2013). Ndonko (2007) found that 50% of the ironing is done by mothers, 7% by grandmothers, 9% by sisters, 9% by aunts, 10% by nannies, and 7% by the victim.

The practice is handed down from mother to daughter or aunt to niece and has occurred for generations (Hall, 2013). BI surfaced on the national and international scene as a harmful cultural practice after the Gesellschaft für Technische Zusammenarbeit (GTZ) and The National Network of the Association of Aunties (RENATA) in 2006. BI remains a part of the culture of the Cameroon people, with victims and families believing that it is a positive cultural lifestyle (Topscott, 2012). Contrary to the belief that BI is a positive cultural practice, approximately 24% of women who have received BI suffer from breast trauma (Hall, 2013), which has resulted in increased national and global concern of BI as a harmful traditional practice and abusive to young girls (Drake, 2013).

Background of the Study

Until recently, BI was known only to families and communities that practice it; thus, the practice continued for generations. BI was labeled a harmful cultural practice after a 2006 survey of 5000 Cameroon women, aged 9-to 82-years-old, revealed that 1 in 4 women had undergone BI at some stage in life (Ndonko, 2006). This report ushered in a proliferation of anthropological publications and documentaries about BI in the local and international media that reiterated the harmful side effects of the practice and called for action against the practice (Hall, 2013). Unlike FGM, with its reporting in numerous scientific journals, background information on BI stems from a combination of mostly nonscientific articles, television news, and newspaper publications.

Breast Ironing Prevalence

BI is prevalent in Cameroon, despite it being a harmful practice. BI is practiced to avert early pregnancy, rape, and forced marriages and to provide opportunity for young girls to attend to their education. Hall (2013), Drake (2013), Bawe (2011), and Ndonko (2006) suggested that a young girl who develops breasts between 9 and 14 years of age are the focus of unwanted attention from men or boys in Cameroon. To avoid personal shame from their families and communities, most families see BI as a means of assisting the young girl in erasing signs of puberty, enhancing the opportunity to attend school, and avoiding the traps of teenage pregnancy or rape (Hall, 2013). In Cameroon, the cultural stigma against teenage pregnancy and or rape is strong because most men in Cameroon perceive breasts as a sign of sexual maturity (Tapscott, 2012). To avoid tarnish and to prevent family shame resulting from rape or pregnancy, the parents (mother) or close

relatives continue the BI practice undetected, to create the illusion that the teenager is still a child, thus guaranteeing continuous education (Hall, 2013; Ndonko, 2006; Tapscott, 2012).

Breast Ironing: An Abuse

The historical onset of BI is not known nor recorded. The practice surfaced in 2006, after GTZ/RENATA (as cited by Ndonko, 2006) revealed that 1 in 4 women in Cameroon between 9 and 82 years have experienced BI at one point in life. The practice involves the use of rudimentary tools that are heated and then applied in a pounding motion to the developing breasts of the young girl (Bawe, 2011). The process occurs usually at night when everyone is asleep or early in the morning and will continue for months until the knot of the budding breast is crushed (Tapscott, 2012). The negative side effects of the BI process resulted in some sources calling the practice a harmful traditional practice and others an abuse to a child and a human right violation (Bawe, 2011; Mancho, 2007; Ndonko, 2006). These sources consider BI as a form of abuse or a betrayal of trust to the young girls because they experience BI from their intimate kinship, from those who are supposed to protect them, and it is done without their consent (Bawe 2011).

Although the paucity of sources made it difficult to ascertain the impact of BI on those who experienced the practice, Bawe, (2011), Mancho (2007), and Ndonko (2006) affirmed that women who experienced BI developed side effects related and/or associated with traumatic breast injury. In spite of these negative side effects, BI is seldom talked

about by both victims and perpetrators, and its practice in Cameroon continues to bring harm to the girls in those communities where it is performed (Hall 2013).

Traumatic Breast Ironing Process

The BI process, which entails pounding the breasts of a young girl with tools, is painful and causes damage to the breast tissue (Bawe, 2011; Ndonko 2012). Injuries resulting from BI can lead to long-term negative health outcomes. However, there is little or no medical or scientific research on the long-term HROs of BI, and scholars only revealed that BI can cause tissue damage and pain (Hall, 2013). Nonetheless, women who experienced BI reported side effects that include pain, high fever, abscesses, breast pimples, itching on the breasts, and chest pain (Bawe, 2011; Mancho, 2007; Ndonko, 2012).

These breast trauma side effects are similar to those experienced by BI women in other studies. For example, in Onder's study (2013), a 51-year-old woman suffered breast trauma (injury) due to a gunshot wound with projectiles in the inner quadrant of the breast and an exit lesion on the axillary tail with skin laceration and eruption. Breast injury has been caused by a car seat belt after a survivor was involved in a car accident (Presney, 2014). Furthermore, Paddle and Morrison (2010) found that an individual suffered blunt trauma after a punch on the breast and another after a fall from a horse. These survivors experienced significant blunt force trauma similar to the side effects associated with BI. However, none of these scholars exposed the long-term HROs of these traumatic activities on the victims/survivors. The lack of any scientific or scholarly research on the long-term HROs of BI opened a research gap. This knowledge fueled my

motivation to carry out a study about the long-term HROs of BI and its impacts on the quality of life (QOL) for the women, families, and community who experience the practice.

Problem Statement

Although BI is common in all 10 regions of Cameroon, it is most prevalent in villages and towns in the Southwest, Northwest, Littoral, West, and Central regions, and among ethnic groups such as the Duala, Ejagham, Banyan and Akwaya, Eton, Bamelike, and Bafut. This practice is undertaken by mothers, aunts, or sisters with the purpose of delaying the young girl's breast development in order to protect her from societal pressures that include rape and teenage pregnancy, while enhancing their opportunity for education (Drake, 2013).

Ndonko (2012) suggested that BI is encouraged by victims and perpetrators alike, with 50% of the BI practice being carried out by mothers, 7% by grandmothers, 9% by sisters, 9% by aunts, 10% by nannies, and 7% by victims themselves. Bawe (2011) noted that victims who experienced BI revealed that the rudimentary tools used included 24% use hot stones/spoons, 20% wooden pestles, 10 breast bands, 9% leaves, 5% towels, and 15% other tools. Victims and families believe that BI is a positive cultural lifestyle practice. Hence, many more children are subjected to the practice each year (Bawe, 2011).

BI is associated with short-term or side effects that qualifies the practice as harmful (Tapscott, 2012). In 2006, BI was recognized by the ONCHR (2003) as an ongoing harmful cultural practice. Numerous nongovernmental organizations (NGOs)

(ie., RENATA, Gender Empowerment and Development, Gender Danger, Women in Alternative Action, and Health Services Partner Cameroon) began advocating against this harmful lifestyle practice on teenage girls (Bawe, 2011). These NGOs have conducted non-scholarly investigations and published non-scholarly anthropological reviews or media documentaries and/or reports that have focused primarily on the harmful nature of the practice and why it should be considered an abuse and a violation of women. Other researchers have called for its eradication and for punitive measures against those who practice it (Bawe, 2011; Ndonko, 2012).

In a general, BI is associated with short-term or site effects (Roberts, Ferguson, & Crusto, 2013), such as behavior change because the practice is administered at a young age. Evidence of the long-term health outcomes of BI is lacking. This gap in the literature on the long-term HROs of BI and the impact on QOL presents an opportunity to conduct this investigation and explore this topic more deeply. The main focus of this study was on evaluating the long-term HRO of BI and examining the impact on the QOL of the victims, their families, and their communities. The outcome of this investigative evaluation may lead to the elimination of BI among Cameroon families, their communities, and beyond.

Purpose of Study

BI practitioners believe that girls who display visible signs of physical maturity will engage in sexual activities or become victims of unwanted sexual attention (Drake, 2013). Victims and their families believe that BI is a positive cultural lifestyle practice, such that BI is encouraged by both victims and perpetrators as a preventive measure to

protect young women from societal pressures (Hall, 2013). In the literature on BI, scholars have primarily recounted the short-term, personal impact accounts of women who have experienced the practice (Bawe, 2011; Ndonko 2012). There are no existing scientific data, resources, or literature that address the long-term HROs of BI or its impact on the QOL of the victims, families, and communities. Evidence of the long-term HRO or the QOL effects of BI on the victims is lacking. This gap in literature presents the opportunity to conduct an investigation. My interest was in evaluating the long-term HROs of BI and examining if the HROs negatively influenced the QOL of the victims, their families, and communities. The outcome of this study could lead to the elimination of BI among Cameroon families and their communities.

I adopted a quantitative, quasi-experimental research method. Specifically, a single group design was used to address the research question and hypotheses. Two main variables defined the study: the dependent variable, which was the HROs, and BI as the independent variable. HROs qualified as an outcome variable because it reflects the outcome of the study. BI was the predictive variable because it can be manipulated to examine its effects on the dependent variable.

Research Questions

Exposure to traumatic events such as BI, or abuse during youth or adulthood, has health-related consequences (Roberts et al., 2013). The focus of this study was on evaluating the long-term HROs of BI and examining its association with the QOL in women who experienced the practice. The main research questions (RQ) and corresponding hypotheses (H) are as follow:

RQ: What are the perceived long-term HROs from BI?

H_01 : There are no perceived long term HROs from BI.

H_a1 : There are perceived long term HROs from BI.

Women who experienced BI did so early in their youth and have lived with this traumatic experience through to adulthood. Thus, investigating this question enabled me to present evidence of the long-term health consequences of BI as a traumatic event.

Research question 2 enabled me to examine if the long-term HROs of BI resulted in negative QOL changes on the women who experienced the practice, their families, and communities.

RQ₂: What are the perceived negative QOL changes from the HRO of BI?

H_02 : There are no perceived negative QOL changes from the HRO of BI.

H_a2 : There are certain perceived negative QOL changes from the HRO of BI.

The third research question enabled me to explore the elimination or eradication of BI, self-reported by participants who experienced the practice or lived with someone who experienced it.

RQ₃: What are the perceived activities to encourage the elimination of BI?

H_03 : There are no perceived activities to encourage the elimination of BI.

H_a3 : There are certain perceived positive activities to encourage the elimination of BI.

I sought to determine if there was a long-term impact as a result of BI that could advance the elimination of it among Cameroon families, their communities, and beyond.

Theoretical Framework

I adopted the betrayal theory of trauma (BTT) as the framework for this study. BTT is used to account for reasons why victims of an abuse may appear to remain largely unaware of their abuser (Freyd, 2014). BTT was established by Freyd in 2001 to consider an implicit but central aspect of some situation, such as traumatic events. According to BTT, if a child is subjected to an abuse by his/her caregiver, the child sees the traumatic condition as a betrayal of trust by the caregiver because the child depends on the caregiver for survival (Freyd, 2014). This betrayal of trust has a long-term impact on the health outcome to the abused (child) through to adulthood.

BTT is a framework that can be used to conceptualize trauma and highlight the importance of social relationships, to better understand posttraumatic outcomes (Freyd, 2014). BTT occurs when people upon whom others depend on for survival violate that person in a significant way such as the physical, emotional, and/or sexual abuse of a child perpetrated by the care giver (Freyd, 2014). In BTT, the way traumatic events are remembered and processed has some relation to the degree to which the negative event represents a betrayal by the trusted needed other.

The BTT enabled me to understand the self-reported traumatic experiences of BI, evaluate the perceived long-term health outcomes of the practice, and examine the perceived influence on the QOL changes of the women who experienced the practice. This theory enabled me to understand the physical, psychological, social, and emotional relationship of a traumatic event. Additionally, BTT helped me to understand that traumatic events early in life can become problematic later in life. This theory was used

to construct some of the trauma-related questions in the survey. In context, BTT predicts that BI as a negative traumatic event is seen as a betrayal of trust by the victims towards the mother or relative who breast ironed them, and this betrayal impacted the HRO of its victims. The BTT is further reviewed in Chapter 2.

Nature of the Study

I adopted a quantitative, quasi-experimental design method, more specifically a nonequivalent single group design. This design was appropriate for this study because it allows for convenience sampling or the deliberate selection of women who have experienced BI. It also allowed for the appropriate exploration of the research questions and hypotheses (Salkind & Rainwater, 2011). A quasi-experimental design was selected for this study because it was ethically wrong and impossible to assign one group of women to receive BI and another not to, as would be done in a typical experimental design. The absence of pre-experimental sampling makes this design the most popular design of all quasi-experimental designs (Salkind & Rainwater, 2011). I used the design to categorize the research participants into groups based on their responses regarding questions on whether or not there are long-term HROs of BI and QOL influences on the individual, family, and the community.

This study included two main variables: BI and perceived HROs. The dependent variable was perceived HROs, and the independent variable was BI. The perceived HROs qualified as an outcome variable because it reflects the outcome of the study, whereas BI was the predictive variable because it can be manipulated to examine its effects on the dependent variable. I obtained data using the paper-and-pencil survey method to examine

the frequency of and relationship between the dependent and independent variables and also assist in describing the current state of the BI practice in Cameroon. As explained by Salkind and Rainwater (2011), the more systematic the researcher is in the collection of data, the easier every subsequent step will be. Analysis of data from this study included descriptive and inferential techniques. This combination of techniques presented a complete analysis of the data to explore the degree of association or relationship between the HROs and BI.

Definitions of Terms

It is important in this study that a clear understanding of the terms used is addressed. Three words—BI, health outcome, and trauma (physical, psychosocial and emotional)—were critical to this study.

Breast ironing: It is a practice whereby the breasts of a young girl are flattened or pounded to make them disappear, using tools such as hot stones, wooden pistles, hot towels, leaves, and banana peels (Bawe, 2011). This practice is usually performed by mothers or other female relatives with the purpose of protecting the young girl from early sexual harassment or rape, preventing teenage pregnancy, and promoting girl child education. BI is practiced in all 10 regions of Cameroon and also in other sub-Saharan countries (Drake, 2013; Hall, 2013).

Health related outcomes (HROs): HROs relate to changes in the health of an individual or group attributed to a life event or intervention (Velentgas, 2013). For example, the side effects of the BI process could affect the long-term HROs on the

victims, which could impact their physical functions; psycho-social and emotional wellbeing; QOL; and individual, family, and community activities.

Quality of life (QOL); Dominick, (2002) defined QOL as a perceived physical and mental wellbeing or qualities that influence goodness of life, personal happiness, and the ability to function independently and enjoy life. QOL includes standards of health comfort and happiness experienced by an individual. It is important in this study to examine the impact of the HROs of BI and its effect on the QOL of the women who have experienced the practice.

Trauma: SAR and Ozturk (2005) explained that trauma is not limited solely to a single traumatic situation, but it is also “a socio-psychological process which can be completed in the course of time if at all” (p. 10). SAR and Ozturk defined trauma as a threatening experience that turns an adaptive process to a maladaptive one. The American Psychological Association (2015) defined trauma as “an emotional response to a terrible event like an accident, rape or natural disaster” (p. 57). In this study, trauma resulting from BI was categorized into long-term HROs, such severe breast pain, abscesses, cysts, and scarification. The psychosocial effect includes lack of sexual esteem and shame (Hall, 2013). For example, Esegbe (2015) revealed that a 13-year-old female with a history of epilepsy had suffered facial trauma in the form of multiple facial scars, posttraumatic hypertrophy on both lips, and a healing scald injury on the trunk of her body. A patient’s behavior disorders and psychomotor retardation was associated with the effects of her epilepsy (Esegbe, 2015).

Assumptions

The success of this investigation depended on several assumptions. With regards to the choice of participants, I assumed that selecting participants between 18 years and older was appropriate given the questions and responses that were required for this investigation as younger participants would be less likely to fully comprehend the BI practice. Additionally, I made the following assumptions:

- That the age range of the participants presented an opportunity to explore the relationship between the long-term HROs caused by effects of BI on its victims.
- That all of the selected participants would be reasonably informed and knowledgeable about the subject matter and would present an honest and truthful survey response of their experience about BI including long-term traumatic effects.
- That information from these participants is true because participants were not aware of the questions beforehand. I am aware that erroneous data can skew the results.

Scope and Delimitation

The purpose of this study was to establish the impact of the effects of BI on the health outcomes of the victims or those who have experienced BI. Participation was open to women of Cameroonian origin, 18-years-old and older. However, participants with serious medical and mental health conditions within the selected range were excluded due to the potential that other conditions might contaminate or skew the data. Men were

excluded because the BI practice is performed only on women. Children under 18 were excluded from participating in the survey because of ethical issues and their likely inability to relate their experience accurately when answering the survey questions. The BTT is vital to the understanding of this study as it presents BI as a lifestyle practice with long-term HROs that impact the victims, families, and their communities.

BI is common in all 10 regions of Cameroon but predominant in five regions in particular. To generalize the results of this study to determine whether BI affects the long-term health outcomes of women who experienced the practice, I recruited 230 qualified participants. These participants were placed into groups depending on their experience with BI and health outcomes. The data collected and analyzed were used to create a generalized report on the long-term HROs of the women who experience BI and their QOL.

Limitations of Study

This study had limitations. First, the general conclusion of this study was based on the experiences and impact of BI on the women who experienced the practice. The paucity of scientific data on the practice within and beyond Cameroon also hinders the generalization of this study. Nonetheless, it opened up a potential research gap for this study to be undertaken. I used convenience sampling to recruit participants, which also hampers the generalization of the results because the selection of participants is not random. The recruitment of participants was based on the availability of the participants and the interest of the individuals to participate. Introducing a medium sample size and decreasing the attrition rate improved the results the study and minimized the

nonresponse rate. Recruiting only participants who have experienced the BI practice decreased selection bias. I used the pencil-and-pen survey method for data collection. Prior to the survey, participants were educated on the operational terms of the survey to promote a better understanding of the questions.

Content validity is another inherent limitation in a survey study, but it is an important aspect of this study because it indicates the extent to which the survey data answers the research question (Salkind & Rainwater, 2011). To achieve content validity, a structured paper-and-pencil survey was conducted, and sufficient time was devoted to scrutinizing the responses in order to ascertain that data collected were able to answer the research questions (Salkind & Rainwater, 2011). The selection of participants that could communicate their BI experience enabled me to overcome interview bias and account for accuracy and generate reliability of the study. For reliability, participants were educated on the importance and purpose of the research, and the questions were phrased to generate consistent answers.

Significance of the Study

BI is common in Cameroon, it has been a lifestyle practice for generations among certain ethnic groups such as the Bayangs, Ejaghams, Akwayan, Etons, Dualas, Bafuts, and Bamelike (Bawe, 2011). BI has continued among these populations because families believed the practice to be a necessary tradition to prevent the girl-child from experiencing early pregnancy and forced marriages, prevent unwanted sexual advances from men, and give the opportunity for the girl-child to attend school past puberty (Hall, 2013). Women who experienced BI were impacted with both short-term and long-term

trauma that stayed with them into adulthood. Although BI achieved its intended short-term goal, the effects of BI on its victims was reported in a survey by the GTZ that revealed that 25% women of Cameroonian origin had experienced BI at some stage in their life (Drake, 2013).

BI was branded by local, national, and international NGOs as a harmful traditional practice, a human rights violation, and an abuse of the girl-child. In spite of the efforts to call for its denunciation, the practice still exists in both villages and major cities in Cameroon. In this study, I sought to contribute to eliminating the BI practice by examining the long-term HROs resulting from BI and its influence on the QOL changes on the women who experience the practice. The central focus was on increasing awareness of the need to eradicate BI using a quantitative research investigation to generate scientific data and evidence of the long-term HROs of BI that could assist in the drafting of local, national, and international legislation or policy against the BI practice. I also wished to add to the knowledge about the long-term HROs of BI and the QOL changes because the impact of BI goes beyond preventing rape or pregnancy or providing an opportunity to attain education. The results of this study can serve as an additional tool for frontline NGO and individual advocates to strengthen the BI eradication argument and continue to increase social change endeavors that can harness positive social change in the long-term.

Summary

In this chapter, I introduced BI, the regions and ethnic groups where it is most commonly practiced in Cameroon, and defined it as a harmful traditional practice.

Background scholars presented early documented evidence on BI, and it was those studies that sparked my initial interest in the study. In the problem statement, I delineated the focus of the BI practice and shaped the structure, research questions, and hypotheses of the study. I elucidated the backbone of the study to associate or correlate the long-term HROs of BI women. The research questions and hypotheses reflected the concepts that framed this investigation. The use of BTT as a theoretical framework enabled me to understand the self-reported traumatic experiences of BI as a betrayal of trust of the perpetrators by the victims and the influence of BI on the victim's health outcomes. I used the single group design to explore the dependent and independent variables necessary to address the research questions. Furthermore, I presented the assumptions considered; the scope and delimitation; the limitation of the study; and the significance of the study to individual, local, national, and international audiences.

In Chapter 2, I will introduce the review of prior related and associated literature available on BI and its public health-related outcomes. I will provide information of how traumatic conditions such as BI influence the long-term health outcomes of the victims, their families, and their communities' activities and lifestyles.

Chapter 2: Literature Review

Introduction

In this section, I will present an in-depth literature review of BI as an abuse, its public health impact, the traumatic influence on the survivors, and the BTT. BI is one of the many cultural practices with potentially harmful effects on physical, mental, and emotional health. In Cameroon, BI is a common practice in all 10 regions. Although this practice is considered endemic, it has remained indigenous among the population of Cameroon because families and communities have continued to value the practice (Adams, 2007). The BI practice involves pounding the breast of a young girl with rudimentary tools primarily to suppress breast development, prevent the onset of her sexual debut, prevent teenage pregnancy, and enhance her opportunity for education beyond the elementary level (Drake, 2013; Ndonko, 2006). In Douala, the metropolitan economic capital with over 2 million inhabitants and home to the Duala ethnic group, 53% of women reported having experienced BI performed by their mothers (Ndonko, 2012). In spite of increasing national and global concern, the practice continues among the people who were the target population of this study because both victims and families believe BI is a positive cultural practice. Most advocacy groups, especially NGOs, have classified BI as a harmful lifestyle practice and an abuse of the girl-child and have called for its eradication. These efforts have not yielded any positive change, as the practice is still common in urban and rural regions of Cameroon.

The purpose of this study was to evaluate the long-term HROs of BI on women who experienced the practice, especially in the prevalent areas such as the Ejagham,

Duala, Baying, Bafut, and Eton ethnic groups of Cameroon. Young girls who develop breasts between the ages of 9 years to 14 years are the focus of unwanted attention from men or boys in Cameroon; to avoid personal shame to their family and community, most families see BI as a mean of assisting the young girl in erasing signs of puberty, attending school, and avoiding the traps of teenage pregnancy or rape (Fonjong, 2011; Rich, 2010; Rose, 2013; Tetchiada, 2006). To prevent family shame of rape or pregnancy, the parents (mother) or close relatives and the children, engage in the BI practice to create the illusion that the teenager is still a child, thus guaranteeing continuous education (Hall, 2013; Ndonko, 2012; Tapscott, 2012).

The side effects of the BI process resulted in some sources calling it a harmful traditional practice, with others claiming that it is an abuse to the girl child, family violence, and a human right violation (Mancho, 2007; Ndonko, 2006) because victims experienced trauma from their intimate kinship without their consent (Bawe, 2011). The victims also experienced short-term site effects during and after the BI process (Mancho, 2007; Ndonko, 2006). In spite of these side effects, BI is seldom talked about by both victims and perpetrators; thus, the practice continues to bring harm to the girls in whose communities it is performed (Hall, 2013). The lack of any information on the long-term HRO of BI paved the way to assess and evaluate the long-term HROs of BI and its impact on the QOL of the victims.

Literature Review Strategy

Scholars who have studied BI (Bawe, 2011; Hall, 2013; Mancho, 2007; Ndonko, 2006) either reiterated the short-term individual experience of the practice or called for

action against it. There is no scholarly literature on the long-term health outcomes or consequences of BI on women who experienced the practice and its influence on the victim's QOL. The sparsity of scientific literature on the long-term HROs of BI presents a research gap. In the literature search for this study, I concentrated on information from associated previous studies. To search for information, I used keywords such as *cultures and traditions in Cameroon, cultural practices, harmful traditional practices, breast ironing, breast pounding, breast flattening, childhood abuse, breast trauma, breast injury, health outcomes, breast abscesses, in Cameroon, QOL indicators, and health-related consequences and outcomes*. I concentrated on journal articles, periodicals, online dissertations, and theses. The Walden University Library supported the journal and periodical search as I consulted databases such as American Premier (EBSCO), Medline, PubMed, ProQuest, and Google Scholar.

Emphasis was placed on full-text articles, and I either requested them from the Walden library or purchased them. I also requested and/or purchased articles with only abstracts that contained keywords and information that led to an increase in my knowledge on the topic. In spite of the extensive search, related and associated literature was limited. Hence, I performed additional searches from analogous journal articles with a connection or relationship to traumatic events and trauma injuries to obtain additional resources that expanded the initial exploration. I concentrated on journal articles from 2006 to the present, which enabled me to acquire ample background information about the BI practice. Most of the articles selected were within a 5-year window; however, articles beyond that 5-year period were limited to those with a direct connection to the

subject matter. All of the selected literature consisted of peer-reviewed journal articles and periodicals with some seminal literature to buttress the research question.

Dissertations and conference proceedings on BI were limited to those providing a background for the study.

Theoretical Framework

I used the BTT as the framework for this study. According to the BTT, if a child is subjected to an abuse by his/her caregiver, the child sees the traumatic condition as a betrayal of trust by the caregiver because the child depends on the caregiver for survival (Freyd, 2014). BTT occurs when people on which others depend on for survival violate that person in a significant way, such as the physical, emotional, and/or sexual abuse of a child perpetrated by the care giver (Freyd, 2014). In BTT, the way traumatic events are remembered and processed have some relation to the degree to which the negative event represents a betrayal by the trusted needed other. I used the BTT to understand the self-reported traumatic experiences of BI and to provide the data to evaluate the long-term health outcomes of BI, as well as examine the influence on the QOL changes for those women who experienced the practice. In context, BTT predicts that BI is a negative traumatic event and could be seen as a betrayal of trust by the victims towards the mother or relative who breast ironed them and that this betrayal of trust can impact the HROs and QOL changes for the victims.

Importance of Theory to Research

To strengthen the choice of this theory, I examined the importance of BTT as presented in other sources. I used this theory to unfold the self-reported traumatic

experiences of BI by victims and also to examine the HROs on the QOL. BTT is used as a theoretical framework to understand memory disruption following interpersonal trauma perpetrated by a close other (Gagnon, Lee, & DePrince, 2017). BTT links interpersonal trauma to outcomes such as psychological stress, alienation, shame, poor cognitive functioning, partner violence expectation, and victimization risk (Gagnon et al., 2017). BTT has also been used to reveal that adults with high betrayal abuse will report poorer functional and mental health than the low betrayal abuse victims (George, 2012). For example, victims of adverse childhood experiences such as sexual abuse had a significantly lower functional health and reported higher depression, anxiety, suicidality, panic, and anger than the victims of low betrayal abuse (George, 2012).

Women who experienced high betrayal abuse show alterations in automatic emotional processes consistent with exposure in an abusive environment (Reichmann-Decker, DePrince, & McIntosh, 2009). Using a mimicry of emotional facial expression and affective modulation of startle, BTT predicts that women who reported childhood abuse by a close relative, such as a parent (high betrayal), showed more mimicry of happiness and less mimicry of angry faces, relative to those with no and/or low betrayal women (Reichmann-Decker et al., 2009). Women with high betrayal abuse revealed low affective modulation of startle than those with no and/or low betrayal abuse (Reichmann-Decker et al., 2009). This theory was suited for study because BTT provides the opportunity to explore the BI experience as recounted by the victims themselves. BTT enabled me to understand the self-reported traumatic experiences of BI: the physical, psychological, social, and emotional relationship of a traumatic event.

Traumatic events earlier in life can become problematic later in life. Owen, Quirk, and Manthos (2012) expressed that youths who reported betrayal trauma experienced relationship adjustments, perceived negative partner respect, and low romantic relationship function. Owen et al. also expressed the negative association between betrayal trauma and psychological wellbeing, anxious, and avoidant attachments. St. Vil (2018) reported that many survivors of intimate partner violence experienced betrayal trauma that affected their future intimate relationship. St. Vil pointed out that vulnerability, fear, relationship expectation, shame/ low self-esteem, and communication issues are barriers resulting from experiencing betrayal trauma.

BI a Harmful Traditional Practice

In Cameroon, high risk communities see BI as the proper step to be taken to prevent teenage pregnancy or forced marriages; thus, the practice has continued unabated for generations. Among other harmful practices listed by the United Nations (FGM, early marriages, female infanticide, and early pregnancy), the most common denominator is that these practices are harmful to the practicing individuals, groups, and/or communities (United Nations, 1996, 1999).

Cultural practices are beliefs and norms that help guide how a community should behave (Gebrekirstos, Abebe, & Fantahun, 2014). These norms or beliefs vary from region to region. In Cameroon, BI is considered as a practice and a belief that guides how girls are treated or should behave (Gebrekirstos et al., 2014). Although the BI practice is common in cities and villages, the lack of proper education has contributed to the practice still occurring with its primary purpose a way to prevent sexual debut. The negative side

effects outweigh these good intentions because BI affects the health and social wellbeing of the victims (Gebrekirstos et al., 2014).

Breast Ironing: A Public Health Issue

The historical onset of the BI practice cannot be determined because the practice is commonly practiced by women, and they hand it down to their children (Bawe, 2011). BI prevailed because victims and perpetrators engaged in BI mainly to avert early pregnancy, rape, and early marriages and to allow the opportunity for the girl-child to pursue education. Victims experienced negative short-term side effects for engaging in the practice. Local NGOs have branded the practice as a public health issue in Cameroon and beyond (Hall, 2013). In some African countries such as Guinea, Cote d'Ivoire, Nigeria, Togo, and South Africa and among African immigrant population in Great Britain, BI is reported to be on the rise. The call for its eradication has been increasing through national and global concern about the practice (Hall, 2013; Tapscott, 2012).

Breast Pain after Trauma

One fundamental negative side effect of BI ironing is breast pain (Drake, 2012). Breast pain is significant in women, especially during their cyclical period (Scurr, Hedger, Morris, & Brown, 2014). However, the pain exhibited during and after BI is noncyclical, and Ndonko (2012) revealed that victims of BI have experienced trauma. Other related sources reiterated breast pain after a review of an isolated case of breast trauma of a 51-year-old women was reported following a gunshot wound to the breast (Önder, Kapan, Girgin, Arıkanoglu, Taşkesen, & Beyazıt, 2013). Another incident of breast hemorrhage of a victim after a vehicle accident (Pessney, 2014) was associated

with severe breast pain. Also, trauma to the breast from a seat belt as a result of a vehicle collision was also experienced by the victim of the accident (Paddle & Morrison, 2011; Pessney, 2014). Breast pain experienced during a traumatic highlights the impact of pain on the HROs and the QOL.

Breast Injury Incidence

The intention of BI was not to cause harm, but to protect and prevent harm to young teenage girls. Thus, mothers or relatives sought to protect them and prevent harm. However, BI is now associated with breast injuries, which outweighs the initial good intentions of the mothers or close relatives. Foley, Jeeves, Davey, and Sparnon (2008) elucidated the long-term consequences of burns studied in patients with traumatic breast injury (i.e., burns) and found them to be at risk of significant long-term problems including breast scarring and breast reconstruction. Foley et al. also revealed that scarring and breast distortions resulting from burns of a prepubescent female can cause significant psychological burdens in the future.

Oksuz (2014) explored traumatic breast injury involving frostbite injuries to the breast as a result of faulty cryotherapy. The application of cold therapy is common to relieve pain and edema after a sport injury, but it is not common to apply cold ice to soft tissue, such as the breast, even in surgical procedures. Oksuz found that the breast injury resulted from continuous application of a self-prepared ice pack to the breast to relieve pain, resulting in frostbite. Accidental thermal damage to the breast is also common. A 76-year-old woman suffered a severe breast burn from using a hot water bottle to relieve back pain that later had contact with her breast while she slept, resulting in a full

thickness burn to her DIEP flap (Jabir, Frew, Griffiths, & Dziejulski, 2013). Trauma could affect the health outcomes of women who experienced BI.

The Effects of Trauma on Survivors

Trauma, whether severe or not, is associated with significant HROs for the affected person. Although there is minimal research or information on the long-term impact of BI, other scholars have ascertained the presence of physical and psychological trauma following chronic pain from survivors of a station nightclub fire (Egyhazi et al., 2014). Health outcomes such as chronic pain, depth of the burn, and depression were significantly associated with the pain outcome (Egyhazi et al., 2014). Schneider et al. (2012) studied the survivors of a large fire and examined their long term physical and emotional outcomes in relation to their occupational, psychological, and QOL.

Although pain and depression after trauma have been established to influence the health outcomes such as physical functioning, there is an association between pain, depression, and physical functions on individuals who experienced traumatic pain or injury (Ullrich, Askay, & Patterson, 2009). Ullrich et al. (2009) found that pain was associated with poorer physical functioning over time and was stronger among survivors with higher depression scores. The effects of BI could collectively or independently compromise the physical functioning of those who experienced BI, as the co-occurrence of pain and depression represented a greater risk for reduced physical functioning over time among burn survivors (Schneider et al., 2012).

Major or minor trauma could have long-term consequences for trauma victims (Holtslag, 2007). To quantify the long-term effects of trauma including the physical,

sociodemographic, and injury related outcomes, Holtslag (2007) examined patients with trauma who reported mobility limitations, self-care issues, daily activity concerns, pain and discomfort, anxiety or depression, and cognitive complaints. Holtslag also revealed that educational level and comorbidity were identified as independent predictors of long-term functional consequences after major trauma. Public health has focused on long-term HROs, particularly in light of advancements in medical science. Health outcomes are the changes in the health of an individual or group attributed to a life event, such as trauma or intervention (Velentgas, 2013). Trauma is a threatening experience that turns an adaptive process to a maladaptive one (SAR & Ozturk 2005). Trauma affects the health outcomes and limits and/or lowers the QOL of its victims (Zwingmann et al., 2016).

The Effects of Trauma on the Quality of Life of Survivors

The procedure of BI is traumatic, and it is an event that affects the QOL of the women who experienced the practice. Lamoureux-Lamarche and Vasiliadis (2017) accessed the impact of a lifetime traumatic event on the QOL of older adults and found that exposure to violence, an accident, or sexual abuse was associated with lifestyle changes in women. Lamoureux-Lamarche and Vasiliadis also expressed that experiencing violence, a natural disaster, a life-threatening disease, and sexual abuse were associated with lower QOL in women than in men. Courtney and Maschi (2013) investigated trauma and stress among older adults in the criminal justice system and found that past and current trauma affected the internal and external coping resources among older offenders. Gill and Page (2006) reported that all individuals will experience a traumatic event that will influence his or her QOL. Due to individual and environmental

factors, women are more than twice more likely to be influenced with life changes than men. Herrera-Escobar et al. (2018) revealed that chronic pain after trauma is associated with clinical and social burden. Herrera-Escobar et al. described how long-term pain affected the functional status of individual survivors and delayed their return to work. Herrera-Escobar et al. encouraged the care of long-term trauma patients to overcome functional limitations.

Summary

In this chapter, I presented literature on BI to enable a deeper understanding of the presence and practice of BI in Cameroon. The onset of this practice is not known, but the practice has continued for generations, and the consequences of this practice have created a public health issue. Trauma to the breast is associated with HROs that affect the lives of the victims into adulthood. The side effects of BI on the survivors called for its eradication. The purpose of this study was to evaluate the long-term HROs of BI on the women who experienced BI. The lack of public health research on the long-term HROs of BI presents a research gap. This research can contribute to advancing the elimination of BI by presenting scholarly findings on the impact and long-term effects of BI on the women of Cameroon. In Chapter 3, I present the methodology of the study.

Chapter 3: Research Method

Introduction

The quantitative research methodology can be nonexperimental or experimental. The difference between the two approaches is the causal relationship between variables (Creswell, 2013). In nonexperimental research, the researcher looks at the relationship between variables without any attention to cause and effect; whereas in experimental research, the researcher examines the cause and effect relationship between the variables (Salkind & Rainwater, 2011). Both approaches include multiple potential research designs. Experimental research includes true experimental, which addresses direct cause and effect relationships; the quasi-experimental approach focuses on cause and effect on preassigned groups (Creswell, 2013). I adopted a quasi-experimental design for this study because the participants had already been exposed to the BI practice, and they had experienced health outcomes as a result of the practice. This design provides the best alternative to true experimental design. True experimental design was not possible in this study because participants retrospectively self-reported their BI experiences and its impact on their health outcomes into adulthood.

Purpose of the Study

BI is an ongoing traditional practice in all 10 regions of the republic of Cameroon, typically viewed as physically, emotionally, and psychosocially damaging (Hall, 2013). The practice involves pounding a teenage girl's breasts with rudimentary tools, with the aim of delaying the development of the breasts and preventing early pregnancy, sexual harassment, and abuse (Bawe, 2011). BI practitioners believe that girls who display

visible signs of physical maturity will engage in sexual activities or become a victim of unwanted sexual attention (Drake, 2013). The origin of this practice cannot be determined, but it is often passed down from mother to daughter (Drake, 2013; Hall, 2013). Both victims and families often believe that BI is a positive cultural practice. Hence, the practice is encouraged by both victims and perpetrators (Hall, 2013). Advocacy groups, including national and international NGOs, have denounced the practice as an abuse of children and a human right violation. In spite of these efforts, the practice continues in the villages and major cities of Cameroon (Hall, 2013).

Scholars have indicated that trauma can influence the health outcomes of its victims. The aim of my study was to provide information on the long-term HROs of BI and its influence on the QOL of survivors. The findings of this study can contribute to enhancing the eradication programs of BI in Cameroon and beyond. In this chapter, I present the research design, target population and sampling procedures, participants, recruitment, data collection, and data analysis procedures. I also explore the threats to validity as well as ethical considerations.

Research Design and Rationale

I adopted the quasi-experimental, single group design because it allowed me to purposively select victims of BI, unlike in a true experimental design, where participants are selected using randomization. This design allowed me to explore and address the research questions and evaluate the long-term HROs of BI beyond ethical, moral, and practical concerns. This design is associated with several threats to validity compared to a true experimental design (Salkind & Rainwater, 2011); however, the quasi-experimental

design was appropriate for this study as it would be ethically inappropriate and logically impractical to assign one group of women to receive BI and another not to. The absence of preexperimental sampling made this design necessary for my study. I could not accommodate a nonexperimental research design because I aimed to evaluate the perceived long-term HROs of BI survivors.

To investigate the research question and hypotheses, I used two variables to describe the effects of BI. The dependent variable was perceived HRO, which included the long-term health outcomes of women who experienced BI through indicators such as physical functioning, psychological wellbeing, social, and emotional functioning. The independent variable was BI, and it included the physical, psychological, social, and emotional trauma of the women who experienced BI through to adulthood. HRO qualified as an outcome variable because it reflects the outcome of the study, and BI was the predictive variable because it can be manipulated to examine its effects on the dependent variable.

Research Questions

The purpose of this study was to evaluate the long-term HROs of BI as a culturally normative practice and its impact on the QOL of the women who experienced the practice. The focus of this study was on evaluating the long-term HROs of BI and to examine the association on the QOL of women who experienced the practice. The main RQs and corresponding H are as follow:

RQ: What are the perceived long-term HROs from BI?

H_0 1: There are no perceived long term HROs from BI.

H_{a1}: There are perceived long term HROs from BI.

Women who experienced BI did so early in their youth and have lived with this traumatic experience through to adulthood. Thus, investigating this question enabled me to present evidence of the long-term health consequences of BI as a traumatic event.

Research Question 2 enabled me to examine if the long-term HROs of BI resulted in negative QOL changes on the women who experienced the practice, their families, and communities.

RQ₂: What are the perceived negative QOL changes from the HRO of BI?

H₀₂: There are no perceived negative QOL changes from the HRO of BI.

H_{a2}: There are certain perceived negative QOL changes from the HRO of BI.

The third research question enabled me to explore the elimination or eradication solutions of BI, self-reported by participants who experienced the practice or lived with someone who experienced it.

RQ₃: What are the perceived activities to encourage the elimination of BI?

H₀₃: There are no perceived activities to encourage the elimination of BI.

H_{a3}: There are certain perceived positive activities to encourage the elimination of BI.

Population, Sampling, and Sampling Procedures

Target Population

The World Bank (2017) estimated the Cameroonian population at 21.7 million inhabitants, across 10 regions, two of which are English speaking and eight of which are French-speaking. Although BI is common in all 10 regions of Cameroon, the target

population from which a sample was drawn included five regions: the Southwest Region that constitutes 7% of the population (1.470 million), the Northwest Region that constitutes 9% (1.890 million) of the population, the Littoral Region that is 15% (3.150 million) of the population, the West Region that is also 9% (1.890 million) of the population, and the Center Region that made up 19% (3.990 million) of the population. These areas served as a target population because each of these regions have a large number of small ethnic groups that continuously practice BI, such as the Banyans and Ejaghams of the Southwest Region, the Bafuts of the Northwest Region, the Eton/Fang of the Center, and the Doulas of the Littoral Region (Hall, 2013).

Sample Population

The sample population for this study involved survivors of BI who were between 18- to 80-years-old and who had experienced BI at some stage in their life. The range from 18 to 80 years is important because young women who experienced BI did so at ages 9-14 years. At this young age, the girls cannot readily comprehend the long-term impact of the practice other than that it prevented them from early marriages and provided an opportunity to continue school (Roberts et al., 2013). At age 18, these women can differentiate between traumatic event and regular stress. Secondly, at age 18, these participants are mature; they confident to communicate and/or able to express the physical, psychological, social, and emotional effects resulting from a traumatic event such as BI. In addition, at age 18, participants developmentally are considered adults, and they are independent to exercise the liberty to speak out and communicate the effects of BI, the HROs they have experienced, and the QOL changes without reprisal from parents

or relatives. Fourth, the onset of the BI practice in Cameroon is unknown and has transcended generations; adopting a wide range of participants (18 to 80 years) provided me with an opportunity to determine the history of BI and establish the experience across and among participants from different generational age groups. I can also evaluate the public health impact of the BI process and address why BI is a public health issue. Finally, this sample population range was essential to evaluate the HROs of BI and the impact on the QOL because different age groups are impacted differently by a traumatic event.

Sampling Procedure

I used a convenience sampling strategy to recruit participants. Salkind and Rainwater (2011) explained that “a convenience sampling is a non-probability technique where subjects are selected because of their accessibility and proximity” (p. 97). This method is beneficial because it allowed me to voluntarily invite BI women from high-risk communities to participate in the study. Participants were recruited directly by me with the cooperation of several local women’s associations (village assemblies, church groups, and “njangi groups”), locally affiliated NGOs, and women’s advocacy groups and initiatives that fight against the BI practice. These advocacy and initiative groups assisted with placing research posters that informed and encouraged eligible participants to contact me and participate in the study after completing an informed consent form. An institutional review board approval (04-10-18-0125875) was obtained from Walden University.

Inclusion Criteria

The sample population was comprised of women between 18 to 80 years of age, Cameroon in origin, who had experienced BI, and were able to provide credible information by self-reporting their BI experience.

Exclusion Criteria

The population that was excluded from the study were men because the variables were specific to the female gender. Women who were less than 18 and over the age of 80 were excluded because of potential bias resulting from how the older women can disseminate their experience about BI and fear of reprisal from adult children who are now their care givers. Those who fell under the criteria of vulnerable status or who failed to provide informed consent, irrespective of their eligibility, were also excluded from the study. For example, prisoners or participants with documented psychiatric conditions, chronic illnesses (such as end-stage cancer), or those who are seriously medically ill were not allowed to consent or participate in the survey because of their frailty and inability to complete a survey.

Sample Size Determination

It is essential to determine the sample size before data collection commences so as to avoid biases in interpreting results (Fields, 2012). I adopted a medium sample size design because a small or large sample size was likely to skew the results, voiding the study's ability to be generalized (Ellis, 2010; Field, 2012). I determined the sample size, with the knowledge of statistical power. Statistical power is used to describe the probability that a test identifies a genuine effect and also answers the basic question of

how big the sample size needs to be or how much statistical power the study should have (Ellis 2010; Flikkema & Toledo-Pereyra, 2012). In this study, power analysis included the effect size, the sample size, the alpha significance, and the power of the statistical test. This provided the best answer to the sample size question for my study. The effect was used to describe the effects of BI on the overall health outcome of women who experienced the practice. Ellis (2010) explained that an effect size refers to “the magnitude of the results as it occurs in the population” (p. 59). Sample size was used to determine the amount of sampling error inherent in the results; the alpha significance criterion (α) defined the risk of committing Type 1 errors, and statistical power included chosen or implied Type II error rate of the test ($1-\beta$), (Ellis, 2010; Flikkema & Toledo-Pereyra, 2012). However, to determine the risk involved in sample size, confidence levels and the precision range must be specified.

I used the G*power version 3.1.9.2 (computer software) and the Sawyer sample size determination formula (Faul, Erdfelder, Buchner, & Lang, 2013) to determine the sample size. The precision range was determined at = 0.05 (α) of the population of Cameroon (12.7 million) at a 95% confidence interval and a power of 0.80 with a medium effect size index of 0.25 (Faul et al., 2013). I adopted a sample size formula as

Equation 1

$$n = NZ^2 \times .25 / [d^2 \times \{N-1\}] + [Z^2 \times .25]$$

Where

n = sample size,

N = total population size (estimated at 620,000)

d = precision level (0.05), and

z = number of standard deviation units of the sampling distribution corresponding to the desired confidence level (95% = 1.96)

This formula was appropriate because the precision level can be determined but the sample size for the survey is unknown; therefore

Equation 2

$$n = NZ^2 \times .25 / [d^2 \times \{N-1\}] + [Z^2 \times .25]$$

$$n = 620,000 \times (1.96)^2 \times 0.25 / (0.05)^2 \times 619999 + (1.96)^2 \times 0.25$$

$$n = 620,000 \times 3.8416 \times 0.25 / .0025 \times 619999 + 3.8416 \times 0.25$$

$$n = 595448 / 1550.9579$$

$$n = 383.9223 \text{ or } \approx 384 \text{ participants.}$$

Using the above formula, I determined that a sample size of 384 participants was appropriate for this study and indicated a positive effect on the research question and hypotheses. However, I increased the sample size by 1% (four participants) to account for attrition rates and to compensate for dropouts, incomplete data, and non-responders.

Therefore, the total sample size, 388, was appropriate to generalize the results and answer the research question on the effects of BI on the overall health outcome of the BI victims.

Participant Recruitment Procedures

Study participants were recruited through various means. I visited local women groups and initiatives, locally known as njangi groups, local NGOs, women faith-based gatherings, and women's traditional ceremonies to announce and distribute the research

fliers. I also met with the local initiative and community heads, pastors, and leaders of the various women groups within the target population areas to advertise and explain the purpose of my study. These community helpers posted recruitment fliers around the community to encourage participants to volunteer for the study. Participation in this study was open to all victims of BI in Cameroon and especially those from the Northwest, Southwest, Center, Western, and Littoral regions. All of the participants read the informed consent before they were allowed to participate in the study. However, before the survey commenced, I briefed the selected participants on the purpose of the study, the importance of the study, confidentiality, privacy issues, and their rights to decline or participate in the study.

Data Collection Procedures

I used the paper-and-pencil survey method to collect data for this study. This method is more systematic, easier, and appropriate (Salkind & Rainwater, 2011) because most of the participants of this study were not computer literate, and the research venue did not have readily accessible internet access. The collected data were analyzed with descriptive and inferential statistics to determine the frequency and relationship of the dependent and independent variables and to describe the HROs of the women who had experienced the BI practice. The paper-and-pencil survey consisted of five sections that included demographic information on the participants, the effects of BI and /or the impact on the HROs of the women, and QOL changes. The survey questions were structured and restrictive (close-ended). The participants also completed questions that required a dichotomous response to expand on their experiences with BI.

The survey questions were designed to explore the dependent and independent variables so as to evaluate the HROs of BI and changes to the QOL of the participants. Questions about the independent variable (BI) provided me the opportunity to examine the long-term effects of BI using traumatic indicators such as the physical, psychological, social, and emotional trauma experienced by the victims. The dependent variable (HROs) was used to explore the long-term HROs of BI through the self-reported health outcomes indicators such as the physical functioning, psychological wellbeing, the social and emotional functioning outcome of the victim, and OQLs (mistreated and betrayal). The paper-and-pencil survey was administered individually to increase confidentiality and privacy. The survey questions consist of 29 short and simple questions, void of ambiguity, and easy to understand and respond to.

Pilot Study

A pilot study was conducted to test and validate the survey questionnaire. This pilot study was conducted on four women who experienced breast trauma in the past. This pilot study was designed to test and gather information before the main research survey was conducted and to ascertain the strength and quality of the survey instrument. The participants involved in the pilot study were each given survey questions to answer and were asked to note any deficiencies. The discrepancies were addressed before the survey was presented to the study's eligible participants. Moreover, this pilot study provided information about the data collection procedure and helped ensure that the survey instruction was comprehensible, feasible, and uncomplicated. I used the pilot study also to provide a timeframe to complete the questionnaires, assess whether each

question gave an adequate range of responses, and provide an opportunity to either reword or modify the techniques to ensure that the survey was effective, as suggested by Lancaster, Dodd, and Williamson (2004).

Instrumentation and Materials

Surveys

A paper-and-pencil questionnaire survey was provided to the participants after an informed consent was completed. The survey was presented in simple English to enable participation across the target population for those who were able to read, write, and speak a basic level of English. The survey was designed to be simple enough to enhance understanding and improve participants' response time. However, in cases where participants were non-educated (never attained formal education), I interpreted the questions in the local language (Pidgin English) and allowed them to respond orally.

The questionnaire survey was comprised of 29 close-ended questions that were used to collect a complete and objective response from the participants. All of the questions required a dichotomous "Yes" or "No" to a variety of responses in which their replies were based on their individual experiences or outcomes. For example, participants were asked "What emotional impact did you encounter as a victim of BI?" They answered with a yes or no to various scenarios and emotional effects such as low self-esteem, no breast sensation, no sexual pleasure, suffered emotional distress, avoided unwanted sexual attention, felt uncomfortable among men, and other.

This survey was subdivided into five sections: (a) demographic information (age, ethnic group and region or origin), (b) effect of BI on victims, (c) victims HROs, (d)

changes in the QOL for the women who experienced the practice, and (e) issues of betrayal and trust. Participants' responses were largely self-reported outcomes of their experiences. Each survey question was used to elicit the experience, the impact of BI, and its effect on the HROs on the victims. The data collected were summarized in percentages and frequencies that were used to evaluate the response of the respondents. I chose the percentage or frequency for the instrument because it enabled me to easily assess respondents' knowledge and the debt of the BI impact, as suggested by Salkind and Rainwater (2011). Using this paper-and-pencil survey to obtain BI data is considered effective and reliable because respondents were able to provide answers in the convenience and privacy of their homes while also having sufficient time to think about their responses.

Instrument Validation

The paper-and-pencil survey instrument has been used by many other researchers in different research settings; however, I made some alterations to fit my study. To examine how unified the results of my survey results were, I conducted a Cronbach's Alpha test to determine the internal consistency as it allowed for multilevel responses to the survey questions (Salkind & Rainwater, 2011). For example, with a sample size of 388 participants, a response rate of 0.8 (194 participants) on Cronbach's alpha test is considered a good reliability. Table 1 shows the reliability of the statistics.

Table 1

Reliability Statistics

Cronbach Alpha	N of items
.841	230

Operational Variables

Variables are characteristics or attributes of an individual or population that can be observed or measured and vary among the people under study (Creswell, 2013). I used two distinct but broad categorical variables: the independent variable (BI) and the dependent variable (HROs).

Independent Variable

BI was the independent variable, and I used it to expose the traumatic effects experienced by the women, through adulthood, that were classified as physical, psychological, social, and emotional trauma. Participants answered questions from these subcategories that required a simple yes or no response from all applicable options. The data collected were summarized in percentages and/or in proportions. For example, the percentage or proportion of respondents who acknowledged physical effects as a result of BI was noted as a percentage of the total sample size. The reason for representing the data as a proportion or percentage was to expose the relationship between BI and HROs and to provide the best available statistical method to compute the variables. For example, the response for each variable or subcategory constituted a numeric ranking

order. The strength of the relationship between the variables was determined using the chi-square test. For instance, BI victims who experienced long-term physical trauma (PT), psychological trauma (PST), social trauma (SOT), emotional trauma (EMT), and others traumas (OT) answered yes (1 point) or no (2 points) to the various sections.

Dependent Variable

HROs were the dependent variable. The questions under this variable provided information on the long-term HROs and QOL. This variable was also divided into subvariables: physical functioning, psychological wellbeing, and social and emotional functioning. Questions for this variable were used to measure the self-reported impact of BI on the HROs and QOL functioning of the participants. Respondents answered either with a yes or no to all the applicable options. For example, using the physical functioning indicator, participants were presented with a question such as “What health conditions prevented you from engaging in physical activities?” The respondents answered with a checked yes or no to the corresponding answer options such as severe pain, abscesses, cysts, burns, uneven breast sizes, breast swelling, breast infection (boils), or other. Their responses described the overall HROs of the women with BI.

The paper-and-pencil survey questions used for this study were developed to remit data that addressed the research questions. They were adapted from the tools used in previous studies and those that had been used to investigate either traumatic events, and/or HROs, and QOLs. These included survey tools such as the 36- Item Short Form Survey, The Strength And Difficulty Questionnaire, The Glasgow Outcome Scale, The European Quality Of Life Score, Brief Trauma Questionnaire, Traumatic Life events

Questionnaire, Trauma Screening Questionnaire Functional Independence Measure, Ryff-Scale of Psychological Wellbeing (Ryff & Keyes, 1995), Patient-Reported Physical Activity Questionnaires, Outcome Definition and Measurement from the National Institute of Health and the Trauma Assessment Screening Questionnaire. A certification of permission to adapt these instruments was not necessary because the purpose of the study was to pursue an academic requirement.

Data Analysis Plan

To enhance the quality of the collected data, screening and cleaning were important. I cleaned the data by editing the data for suspected data abnormalities and searching for errors that included missing values, missing data codes, and typing errors during data entry, as suggested by Salkind and Rainwater (2011). Screening the survey data process presented an opportunity for me to distinguish areas with less and/or excessive data, while reviewing for outliers, inconsistencies, and other types of abstractions and inferences, as suggested by Salkind and Rainwater (2011). Analyzing the collected data was the key to communicating the study's findings to the intended audience. The Statistical Package for Social Sciences (SPSS) software was used for statistical analysis. Descriptive analyses and inferences enabled me to evaluate and answer the research questions and hypotheses. By using descriptive and inferential analyses, I sought to evaluate the participants' responses on the effects of BI and its impact on their HROs, using indicators such as physical, psychological wellbeing, social, emotional functioning, and/or trauma.

Descriptive and Inferential Tools

Descriptive analysis was used to analyze the data collected to showcase the quality of the data and what the data looked like (Fields, 2013). To determine the quality of the data, I conducted a frequency distribution (the number of times a certain subcategory appeared) in the overall data. I also used descriptive analysis to evaluate what the data looked like and to provide a snapshot of how the participants responded to the survey, as suggested by Fields (2013). Inferential analysis was necessary to determine the relationship between the effect of BI and the HROs and also the strength of this relationship in this sample. I examined this relationship through tables and charts. These helped me to determine if the collected data had a normal distribution and also helped determine what statistical test to use.

Statistical Test

Chi- Square Test or Crosstabulation

To examine the research questions, a chi-square test analysis was conducted. The chi-square is an appropriate statistical test as the purpose of this study was to determine the relationship between the effects of BI and HROs variables. The chi-square statistical test provided a basic picture of the interrelations and interactions between the two variables and determined the strength of the association between the two categorical variables (Fields, 2013). To evaluate the significance of the results, I compared the chi-square coefficient (χ^2) and the critical value coefficient to determine the strength of the relationship. To determine the degree of freedom for the chi-square, I used the following

equation: $Df = (r - 1)(c - 1)$, where r value is the number of rows and c value is the number of columns, as suggested by Fields (2013).

Multiple Logistics Regression Model

I used a multiple logistic regression model to understand the functional relationship between the dependent variable and the independent variable. A multiple logistic regression model enables the researcher to understand the changes on the dependent variable resulting from the influence of confounding factors. I chose a multiple logistic regression because of the binary nature of the variables and to know how the measuring variables affect the nominal variable. Multiple logistic regression allowed me to estimate the association between each variable, while controlling all the others. The odd ratios are used to compare the probability that the independent variables are risk factors to the outcome variable. The odd ratio is analyzed as $OR=1$ (exposure does not affect outcome), $OR>1$ (exposure is associated with higher odds of outcome), and $OR<1$ (exposure is associated with lower odds of outcome; Szumilas, 2010). I used SPSS software to transform data.

Threats to Validity and Reliability

To avoid errors, validity and reliability of data is important. Fields (2013) stated that “validity refers to whether an instrument measures what it is designed to measure” (p. 11). Because I used a questionnaire survey design, the validity of each instrument was accurate, truthful, authentic, and genuine (Salkind & Rainwater, 2011). To ascertain the validity of this study, I highlighted the potential research biases or limitations at the beginning of the survey by helping the participants understand the assumptions of the

study, as suggested by Creswell (2013). In addition, I provided operational definitions of the concepts, such as BI and HROs, and clarified the meaning of the instruments under consideration. This indicated the extent to which the survey data represented the items from which it was taken (i.e., how accurately an instrument measures the factors under study; Salkind & Rainwater, 2011). To achieve content validity, I increased the sample size to achieve a representative sample of the entire population. This strategy is used to increase the generalizability of the study (Creswell, 2013). The adoption of a medium sample size approach served to decrease the impact of the number of nonresponses or incomplete response from the participants. Moreover, I initiated all survey activities (i.e., conducting face-to face-surveys) and devoted sufficient time to scrutinizing the responses to ascertain that the data collected were within the construct of the study.

Reliability relates to how precisely the instruments would produce similar results if repeated with a similar group of respondents (Field, 2013; Salkind & Rainwater, 2011). To achieve reliability, I ensured that the respondents were informed of the purpose of the study and the importance of responding truthfully. Additionally, I ensured that the survey questionnaires were carefully phrased and accurate to generate similar answers. I tested the survey questionnaires in the field and conducted a pilot study on a few selected respondents (1% of the sample size) and then solicited feedback for clarity and relevance. The feedback generated some revision to the data collection instruments, which improved ascertained internal consistency that “examines how unified the items are on a test or assessment” (Salkind & Rainwater, 2011. p. 116).

Ethical Considerations

Using participants to collect data for answering any research question or hypotheses raises ethical issues. Salkind and Rainwater (2011) stated, “Ethical practice is a topic that simply cannot be ignored in any education or practice” (p. 79). Ethical considerations are important to determine because participants in this study have the right to be protected and prevented from any physical or psychological harm (Salkind & Rainwater, 2011). The first aspect I considered was the provision of the informed consent form. This form expressed the importance of the research, the study objective, benefits of the study, and a guarantee of privacy and confidentiality with respect to their information. The goal of the informed consent form was to “ensure ethical behavior” (Salkind & Rainwater, 2011, p. 198) and to establish honesty, respect, and trust between researcher and participants. Second, I advised participants that there were no physical, social, economic, or professional harm associated with participating in the study and that their participation was voluntary and free.

Another indicator of ethical consideration is the maintenance of participant privacy. Salkind and Rainwater (2011) explained that the maintenance ensures anonymity. The participants’ rights were protected by anonymously maintaining the data to ensure that no one other than me could match the information collected to the participant, as suggested by Salkind and Rainwater (2011). I implemented confidentiality by applying numbers and codes that can only be deciphered on the master data sheet to which no one but me had access.

Confidentiality is another ethical consideration to uphold, which means holding all information gathered from the participants in the strictest of confidence (Aschengrau & Seage, 2008). All information gathered by me was disguised when necessary and kept in a controlled location, as suggested by Salkind and Rainwater (2011). I ensured the confidentiality of the participants and the data collected by minimizing the number of individuals who had access to the information gathered by adopting electronic systems and secured storage units with password accessibility.

Summary

This chapter began by stating the purpose of the study and then establishing that a quasi-experimental, design was used to address the research question and hypotheses. I also emphasized the use of a convenience sampling method to recruit participants and place them into categories. The questionnaire survey method and instruments were developed and used to collect and represent data. I also explained how the data collected were interpreted and reported using a chi-square test analysis. Finally, I discussed threats to validity and reliability and concluded with ethical considerations.

In Chapter 4, I address the interpretation of the data collected and discuss the findings as reflected through the research questions.

Chapter 4: Results

Introduction

In this chapter, I present the results of the data collected from the survey of women who experienced the BI practice at some stage in their life in Cameroon. BI is a practice carried out on young girls by their mothers, or close relatives in Cameroon, for the purpose of preventing of early pregnancy, early breast development, forced or early marriage, and promoting education. To evaluate the long-term HROs of BI and to examine its influence on the QOL of women who experienced the practice, three research questions and hypotheses were examined:

RQ: What are the perceived long-term HROs from BI?

H_{01} : There are no perceived long term HROs from BI.

H_{a1} : There are perceived long term HROs from BI.

RQ₂: What are the perceived negative QOL changes from the HRO of BI?

H_{02} : There are no perceived negative QOL changes from the HRO of BI.

H_{a2} : There are certain perceived negative QOL changes from the HRO of BI.

RQ₃: What are the perceived activities to encourage the elimination of BI?

H_{03} : There are no perceived activities to encourage the elimination of BI.

H_{a3} : There are certain perceived positive activities to encourage the elimination of

BI.

Data collected were analyzed using descriptive and inferential statistics.

Descriptive statistics included the frequency distribution of survey responses, providing a snapshot of how the participants responded. For inferential statistics, a cross tabulation or

chi-square test was used to answer the research questions and to determine whether the null hypothesis was accepted or rejected, as well as to determine the relationship or the strength of association between the variables.

A pilot study was conducted on four women who had experienced BI. The purpose of the pilot study was to test the research instrument (survey) and determine its clarity and reveal any overt or covert survey deficiencies. This process revealed that the survey was feasible, the questions were accessible, and the wording and order of questions were effective. No major changes in the instrument or data collection strategy were necessary.

Demographic Representation of the Sample

Data were collected from 230 participants who had experienced BI at some stage in their life; who were 18 years and above; and who from all the regions of Cameroon and among all the ethnic groups, especially ethnic groups with high prevalence of the BI practice. The participants ranged from 18 to 80 years. Table 2 illustrates the age distribution of participants. There were some major discrepancies in the data collection when compared with the data collection process specified in Chapter 3. A total of 230 (60%) out of the 384 women contacted participated in the survey.

Table 2
Frequency and Percentages of Participants According to Age

Age	Frequency	Percentage (%)
18 - 30	33	15.2
31 - 40	57	24.8
41 - 50	72	31.3
51 - 60	43	18.7
61 - 70	11	4.8
71+	11	4.8
Total	230	100%

I found that participants within the age group 41-50 had the highest frequency and percentage of ($n=72$, 31.3%) participating in the study, followed by the 31-40 age group with ($n=57$, 24.8%), the 51-60 age group ($n=43$, 18.7%), and the 18-30 age group with ($n=35$, 15.2%). The 61-71+ age group had the lowest rate of participation ($n=11$, 4.8%).

The demographic frequency and percentage characteristics (the region of origin and the ethnic groups) of the women who participated in and completed the survey are documented on the table below.

Table 3
Regional Distribution of BI Participants

Region or origin	Frequency	Percentage (%)
Southwest	70	30.4
Northwest	75	32.6
Littoral	40	17.4
West	29	12.6
Center	7	3.0
Others	9	3.9

Participation to this study was open to all women of Cameroon origin, from all regions and ethnic groups; however, eligible participants must have experienced BI at some stage in their life. The participants completed the survey irrespective of the region they currently resided in if it was different from their region of origin. Table 3 represents the regional distribution of women who participated and completed the survey: Northwest region ($n = 75$, 32.6%), Southwest ($n = 40$, 30.4%), Littoral ($n = 40$, 17.4%), and West ($n = 29$, 12.6%). The Center and Other regions had the least participation with 3.0 % and 3.9 % respectively. The data collected revealed that five out of the 10 regions actively engaged in the BI practice. Of the five regions accounted for above, the Banyang, Ejagham, Akwaya, and Bafut in the Southwest and Northwest regions comprised the largest ethnic groups in these regions and also registered a high frequency of participants who had experienced the BI practice in the past. In Table 4, the Bayang, Ejagham, and Akwaya ethnic groups of the Southwest region accounted for $n = 49$, 21.3% and $n = 34$, 14.8%, respectively. The Bafut ethnic group in the Northwest Region had a frequency of $n = 41$, 17.8%. Other ethnic groups registered lower numbers of BI participation ($n=17$, 7.4%).

Table 4
Ethnic Distribution of BI Participants

Ethnic groups	Frequency	Percentage (%)
Banyang	49	21.3
Ejagham	49	21.3
Akwaya	34	14.8
Duala	19	8.3
Bamilike	14	6.1
Bafut	41	17.8
Eton	7	3.0
Others	17	7.4
Total	230	100%

The participants in this study revealed that they experienced BI at different ages. Table 5 reveals that most women experienced BI between the ages of 12 and 14 ($n=116$, 50.4%), followed by those at aged 15-17 ($n=56$, 24.3years) and 9-to 11-years-old ($n=43$, 18.7%). Women who experienced BI at 18 years of age or older were the smallest group ($n =15$, 3.5%).

Table 5

Frequency of Exposure to BI

Age	Frequency	Percentage
9-11 years	43	18.7
12-14 years	116	50.4
15-17 years	36	24.3
18+	15	3.5

Reason and Advantages for BI Practice

I found a high rate of frequency for the BI practice, which was attributed to the practice to enabling children to attend school, delaying their breast development, avoiding rape or early pregnancy, and/or preventing early or forced marriage. Table 6 revealed that most participants experienced BI to enable them to attend school ($n= 120$, 52.2%), delay breast development ($n=91$, 39.6%), avoid being pregnant like their peers ($n=181$, 78.7%), and avoid early or forced marriage ($n=199$, 86.5).

Table 6
Advantages of the BI Practice

	Attend school		Delayed breast development		Avoid pregnancy		Avoid early marriage	
	Freq	%	Freq	%	Freq	%	Freq	%
Yes Response	120	52.2	91	39.6	181	78.7	199	86.5
No Response	100	43.5	130	56.5	41	17.8	29	12.6
No response	10	4.3	9	3.9	8	3.5	2	9
Total (n)	230	100	230	100	230	100	230	100

The Impact of BI on Individual Health Outcomes

In spite of the positive advantages of BI (delaying the breast development of the young girl in order to prevent rape or early pregnancy, preventing early or forced marriage, and promoting education), the practice negatively affected the women (Table 7). The participants reported that BI affected them physically ($n=224$, 97.4%), socially ($n=193$, 83.9%), and psychologically ($n=186$, 80.9%) respectively. A small minority noted other impacts ($n = 22$, 9.6%).

Table 7
The Impact of BI on Individual Health

	Physical impact of BI		Social impact of BI		Psychological impact of BI		Other impact of BI	
	freq.	%	freq.	%	freq.	%	freq.	%
Yes	224	97.4	193	83.9	186	80.9	22	9.6
No	5	2.2	35	15.2	43	18.7	181	78.7
No response	1	.4	2	9	1	.4	27	11.7
Total	230	100	230	100	230	100	230	100

The participants reported having experienced varied traumatic symptoms before and after BI (Table 8). Most reported ($n=221$, 96.1%) that they were traumatized after the incident, while a smaller percentage reported they were not traumatized ($n=9$, 3.9%).

Table 8

Participants Traumatized During and After BI

	Frequency	Percentages (%)
Yes	221	96.1
No	9	3.9
Total	230	100

Most of the participants revealed perceived long-term traumatic effects such as anxiety, depression, anger, sexual troubles, and other symptoms (Table 9).

Table 9

Participants Who Experienced Traumatic Symptoms after BI

	Anxiety		Depression		Anger		Sex trouble		Other symptom	
	freq.	%	freq.	%	freq.	%	freq.	%	freq.	%
Yes	65	29.6	86	37.2	181	78.7	158	68.7	50	21.7
No	155	37.4	141	61.3	47	20.4	69	30.0	109	47.4
Response	7	3.0	3	1.3	2	0.8	3	1.3	71	30.1
Total (n)	230	100	230	100	230	100	230	100	230	100

Some of the women reported having experienced other traumatic symptoms such as anxiety ($n=68$, 29.6%), depression ($n=86$, 37.2%), anger ($n = 181$, 78.7%), and sexual troubles ($n= 158$, 68.7%).

The participants also revealed perceived physical HROs resulting from BI (Table 10) that included severe pain ($n=220$, 95.7%), skin burns ($n=217$, 94.3%), breast scar

($n=210$, 91.3%), breast swelling ($n= 175$, 76.1%), no breast sensation ($n= 132$, 57.4%), and uneven breast size ($n=126$, 54.8%). Among these various types of perceived physical trauma experienced by the participants before and after the BI practice, severe pain, skin burns, and uneven breast size were the most predominant types of perceived physical trauma experienced by these women who experienced the practice.

Table 10

Types of Physical Trauma Experienced by BI Participants

	Yes freq.	%	No freq.	%	No response freq.	%
Severe Pain	220	95.7	10	4.3	00	0.0
Developed Abscesses	104	45.2	115	50.0	11	4.8
Developed Cyst	91	39.6	123	53.5	16	7.0
Burns	217	94.3	13	5.7	00	0.0
Breast Scars	210	91.3	20	8.7	00	0.0
No Breast Sensation	132	57.4	93	40.4	5	2.2
Breast Swelling	175	76.1	51	22.2	4	1.7
Itches and Discharges	62	27.0	121	65.7	17	7.4
Uneven Breast Size	126	54.8	100	43.5	4	1.7
Breast Infection	96	41.7	121	52.6	13	5.7
Abnormal Growth	60	26.7	154	97.0	16	7.0
Others	5	2.2	152	66.1	73	31.8

The participants also experienced aspects of psychological trauma (Table 11) during and after the BI practice. These psychological trauma indicators included being ashamed of their appearance ($n=199$, 86.5%), avoiding sexual relationships ($n=186$, 80.9%), low self-esteem ($n=187$, 81.3%), shame ($n=176$, 76.5%), and frustration ($n=161$, 70.0).

Table 11

Psychological Trauma Factors Experienced by BI Women

	Yes freq.	%	No freq.	%	No Response	
					freq.	%
Shame	176	76.5	51	22.2	3	1.3
Depression	89	38.7	131	57.0	10	4.3
Low self esteem	187	81.3	42	18.3	1	0.4
Anxiety	103	44.8	117	50.9	10	4.3
Frustration	161	70.0	65	28.3	4	1.7
Developed depression	108	47.0	115	50.0	7	3.0
Ashamed of appearance	199	86.5	27	11.7	4	1.7
Avoided social gathering	140	60.9	80	34.8	10	4.3
Avoided sexual relationship	186	80.9	39	17.0	5	2.2
Others factors	4	1.7	143	62.2	83	36.0

The participants also revealed that BI resulted in the development of social trauma (Table 12). They expressed indicators such as rejection from peers, considered as outcast, and withdrawal from friends. A social trauma frequency distribution revealed that participants were considered as outcasts ($n=185$, 80.4%), rejected by their peers ($n=139$, 60.4%), or they withdrew from their peers and community ($n =134$, 58.3%)

Table 12

The Social Traumatic Factors Experienced by BI Women

	Yes freq.	%	No freq.	%	No response	
					freq.	%
Rejection by peers and community	139	60.4	79	8.7	12	5.2
Considered as outcasts	185	80.4	43	18.7	2	0.9
Withdrawn from peers and society other	134	58.3	95	41.3	1	0.4
	15	6.5	143	62.2	72	31.3

The perceived long-term impact of the physical, psychological, and social trauma resulting from BI led to the development of perceived long-term health outcomes among women who experienced the practice. To evaluate the relationship or association between the traumatic impact of BI and its influence on perceived health outcomes as reported by participants who experienced the practice, three research questions were tested using inferential analysis, specifically cross tabulation/chi-square tests and multiple logistic regression.

Research Question 1

The participants revealed that they experienced physical trauma (severe pain, skin burn, scar, breast swelling, no breast sensation, or uneven breast size), psychological trauma (shame, low self-esteem, frustration, ashamed of appearance, avoided sexual relationship) and social trauma (considered as outcast and felt rejected from peers and community) during and after the practice up into adulthood.

Cross-tabulation and chi-square tests were performed to determine the relationship and the strength of association between the impacts of BI (severe pain) on the perceived long-term health outcomes (marital and family role) as reported by the participants. The participants reported that they experienced severe pain during and after BI, and this practice affected their marital and family health/role in adulthood. A chi-square test was conducted to determine the strength of the relationship or association between severe pain and marital and family role. The chi-square test/cross tabulation revealed that a relationship existed between severe pain and long-term marital and family health/role impact on the women who had experienced BI. Thus, the (chi-square (X^2)) =

10.442, degree of freedom (df) = 1 and the P -value was .001 (where $P < 0.05$) indicated that women who experienced BI developed severe pain, which significantly impacted their health and affected their marital and family roles (Figure 1). Therefore, the null hypothesis was rejected. The bar chart confirmed this relationship.

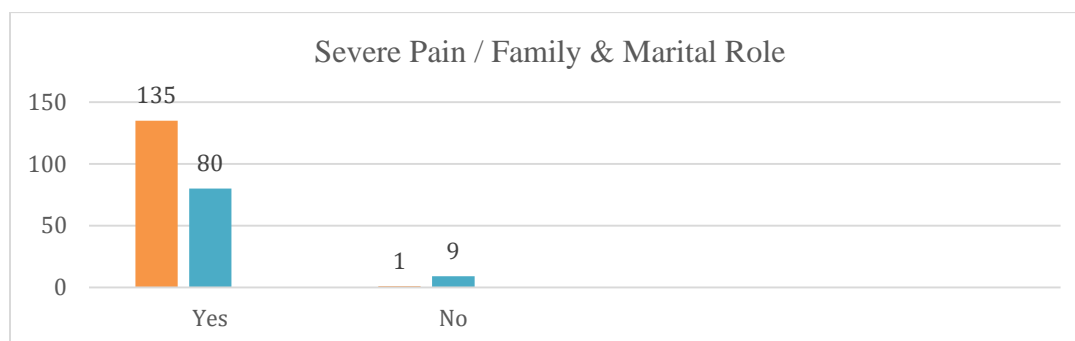


Figure 1. The relationship between severe pain and marital role.

A multiple logistic regression model was analyzed to determine if the perceived family and marital health outcome revealed by the participants was confounded by other independent predictors. An analysis between the dependent variable (family and marital health) was compared to the independent predictors to include sexual troubles, breast scars, avoiding sexual relationship, and frustration. The initial analysis confirmed that the chi-square test was significant (P -value < 0.05). The odds ratio analysis revealed three predictors (sexual trouble, breast scar, and dependent/outcome variable [perceived family and marital health] See Table 13).

Table 13

Multiple Logistic Regression for Covariates Predicting Family and Marital Health

Source	<i>B</i>	<i>SE</i>	Wald	df	Sig	Exp(B)	95% <i>CI</i> for <i>OR</i>
Sexual trouble	-1.078	.305	12.511	1	.000	.340	(.187, .618)
Breast scar	.342	.521	.430	1	.512	1.408	(.507, 3.911)
Frustration	.278	.331	.703	1	.402	1.320	(.690, 2.527)

The predictor sexual troubles was statistically significant, with a *P*-value < .001 and had an *OR* = .340, breast scar, *OR* = 1.408, and frustration *OR* = 1.320. The sexual troubles predictor had a lower *OR*<1, which suggested a lower odd that this predictor impacted the perceived family and marital health outcome. The other predictors (breast scar and frustration) had *OR* >1, which signified a higher odds of exposure to the perceived family and marital health outcome. This predictor had only a small influence to the outcome variable and sustained the alternative hypothesis that BI impacted the health of the participants during and after the BI experience.

In another cross tabulation (2x2) test, I evaluated the relationship between breast swelling and being considered an outcast in their community. The chi-square test revealed that there was strong evidence of a relationship between breast swelling and the feeling of being considered as outcast in the community. The chi-square (X^2) = 15.077, degree of freedom (*df*) =1 and *P* < .001 indicated that the null hypothesis stating there are no perceived HROs experienced by women who were impacted by the physical health outcome of BI was rejected for the alternative. Figure 2 illustrates that most participants (*n* =205) with breast swelling resulting from BI were perceived as outcasts by their community, while a small number (*n* =20) reported no change.

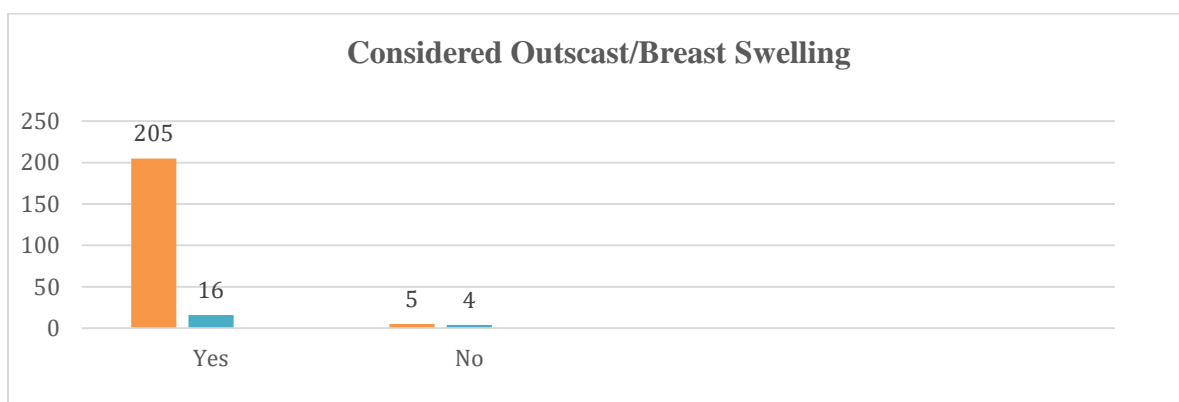


Figure 2. Influence of breast swelling and being considered an outcast in the community.

The physical, psychological, and social trauma experienced by BI participants impacted the health outcome as perceived by the women during and after the practice. Psychological trauma indicators included perceived health outcomes that included feelings of shame, low self-esteem, frustration, ashamed of appearance, and the avoidance of sexual relationships. Social trauma included perceived health outcomes such as being considered an outcast and feeling rejected from peers and community. The effects of BI also influenced the participants' perceived health relationship with their husband, relatives, friends, and their community. Participants ($n=179$, 77.8%) perceived that BI affected the relationship with their relatives (sister, aunts etc.), the relationship with friends earlier in their life (ashamed of appearance; $n=168$, 73.0%), and the relationship with their husband in adulthood ($n=130$, 56.5%).

A multiple regression model analysis was conducted to determine if other covariates influenced the perceived health outcomes of the women who experienced BI. The participants reported being considered as outcasts among their family, community and society. An OR analysis was conducted on four predictors (shame, depression, low self-

esteem, ashamed or appearance) to compare the relative odds of this covariates to influence the outcome variable. Table 14 presents the relative odds that a predictor is a risk factor to the perceived health outcome (considered an outcast) as self-reported by women who experienced BI. This analysis indicated that the predictor shame was statistically significant ($P < .001$) and the $OR = .252$, depression ($P > .584$, $OR = .828$), low self-esteem ($P > .015$, $OR = .395$), and ashamed of appearance ($P < .001$, $OR = .181$). The OR for these predictors was less than 1 ($OR < 1$), indicating that exposure to these predictors was associated with a lower odds of causing participants to be considered as outcast in their society or community. I sustained the alternative hypothesis and rejected the null, because these predictors had a lower association of experiencing the outcome variable.

Table 14

Multiple Logistic Regression for Covariates Predicting Perceived Health (Considered as Outcast)

Source	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	Sig	Exp(B)	95% <i>CI</i> for <i>OR</i>
Shame	-1.380	.359	14.787	1	.000	.252	(.125, .508)
Depression	-.189	.346	.300	1	.584	.828	(.420, 1.630)
Low self-esteem	-.929	.382	5.922	1	.015	.395	(.187, .835)
A shame of appear	-1.708	.425	16.115	1	.000	.181	(.079, .417)

Research Question 2

The participants reported that they suffered from frequent pain ($n=180$, 78.3%), feeling sick ($n=134$, 58.3%), and having marital problems ($n=195$, 84.8%). Forty percent of participants ($n=92$) reported levels of stress that affected their QOL after the practice

and throughout their adult life. (See Table 15). The participants who self-reported changes on the QOL after they experienced BI revealed their QOL remained poor ($n=79$, 34.3%); had a poor QOL ($n=52$, 22.6%), or reported neither poor nor good influences ($n=41$, 17.8%). Some participants reported experiencing a good QOL after BI ($n=47$, 20.4%).

Table 15
Frequency Distribution of Negative Quality of Life

	Yes		No		No response	
	freq	%	freq	%	freq	%
Healthy	26	11.3	180	78.3	24	10.4
Often In pain	180	78.3	44	19.1	6	2.6
Often sick	134	58.3	89	38.7	7	3.0
Marital problems	195	84.8	34	14.8	1	0.4
Stressful	92	40.0	114	49.6	24	10.4

The participants reported negative QOL changes that included physical, psychological, and emotional impacts (Table 16). For example, most participants reported that breast scars negatively influenced their QOL during and after the practice ($n=203$, 88.3%). Additionally, they revealed physical issues including physical shape ($n=193$, 83.9) and the uneven breast development ($n=142$, 61.8%), and breast disappearance ($n=80$, 34.8%) negatively impacted them. The participants experienced negative emotional QOL changes including such issues as feeling inferior ($n=198$, 86.1%), sadness, ($n=173$, 75.2%), frustration ($n=174$, 75.7%), and low sex drive ($n=117$, 50.9%).

Table 16
Negative Quality of Life Changes

		Yes		No		No response	
		freq	%	freq	%	freq	%
Psychological and emotional QOL changes	Low Sex Drives	117	50.9	108	47.0	5	2.2
	Not feeling satisfied during sex	53	23.0	160	69.6	17	7.4
	Bad thoughts or feeling during sex	69	30.0	148	64.3	13	5.7
	Being confused of my sexual feeling	64	27.8	147	63.9	19	8.3
	Having sex and not focused.	64	27.8	151	65.7	15	6.5
	Depression	63	27.4	152	66.1	15	6.5
	Sadness	173	75.2	48	20.9	9	3.9
	Feeling inferior	198	86.1	26	11.3	6	2.6
	Frustration	174	75.7	46	20.0	10	4.3
	My physical shape	193	83.9	33	14.3	4	1.7
Physical QOL changes	Breast scars	203	88.3	27	11.7	00	00
	Developed uneven breast sizes	142	61.7	83	36.1	5	2.2
	Breast disappearance	80	34.8	12.9	56.1	21	9.1

To answer this research question, a cross tabulation and chi-square test was conducted to determine whether to reject or accept the null hypothesis. Using breast scar and often-in-pain parameters, the chi-square test revealed that there is a strong evidence of a relationship between breast scars and breast pain (Table 17). Chi-square (X^2) = 37.991, $df = 1$ and the P -value < .001.

Table 17
Chi-Square Test (Breast Scar and Often in Pain)

	Value	df	Asymptotic Significance
P. Chi Square	37.991	1	.001

Figure 3 presents the negative QOL changes encountered by participants. Eighty percent of participants ($n=176$) acknowledged negative QOL changes while 44 (19.1 %) participants reported no effects.

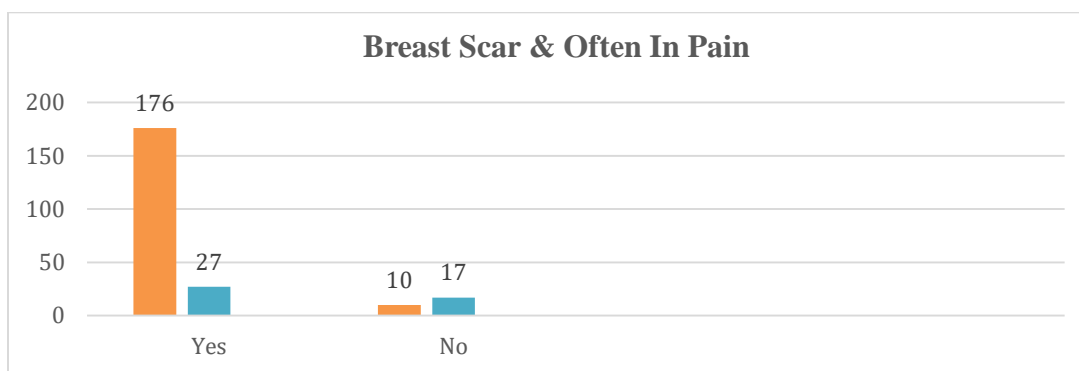


Figure 3. The relationship between breast scar and pain.

The results from the chi-square tests and the bar chart indicated that there was strong evidence to reject the null hypothesis because the impact of the breast scar resulted in perceived life style changes on the women as they were always in pain.

The multiple logistic regression in Table 18 shows the significance of the predictors on the outcome variable (often in pain). The predictors included burns, development of abscesses, and development of a cyst. In this analysis, the predictor burns presented a P value $>.017$, $OR = .248$; development of abscess revealed P -value $<.001$, $OR = .133$; and development of a cyst revealed a P -value $<.001$, $OR = .211$. The odd ratio

for these predictors were $OR < 1$ indicating that exposure to these predictors was statistically significant but had a lower odds of causing pain as perceived by the participants who experienced BI. I rejected the null hypothesis.

Table 18
Multiple Logistic Regression for Covariates Predicting Perceived QOL changes (Often in Pain)

Source	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	Sig	Exp(B)	95% <i>CI</i> for <i>OR</i>
Burns	-1.396	.584	5.705	1	.017	.248	(.079, .778)
Dev. Abscess	-2.018	.463	18.978	1	.000	.133	(.054, .329)
Dev. Cyst	-1.557	.438	12.669	1	.000	.211	(.089, .497)

Another chi-square test conducted between stressfulness and feeling inferior reported that ($X^2 = 22.901$, $df = 1$, P -value $< .001$), which showed a strong significance or relationship between stressfulness and feeling inferior. Thus, ($n=182$) women experienced stress resulting from the impact of BI that influenced their perceived communication with their peers and communities. Due to this experience, participants perceived to have felt inferior, which impacted their QOL. Figure 4 and Table 19 illustrate a relative significance that stressfulness caused participants to feel inferior. According to Figure 4, 79% of participants ($n=182$) acknowledged perceived QOL changes resulting from perceived feeling of inferior with self, peers, relatives, and the community.

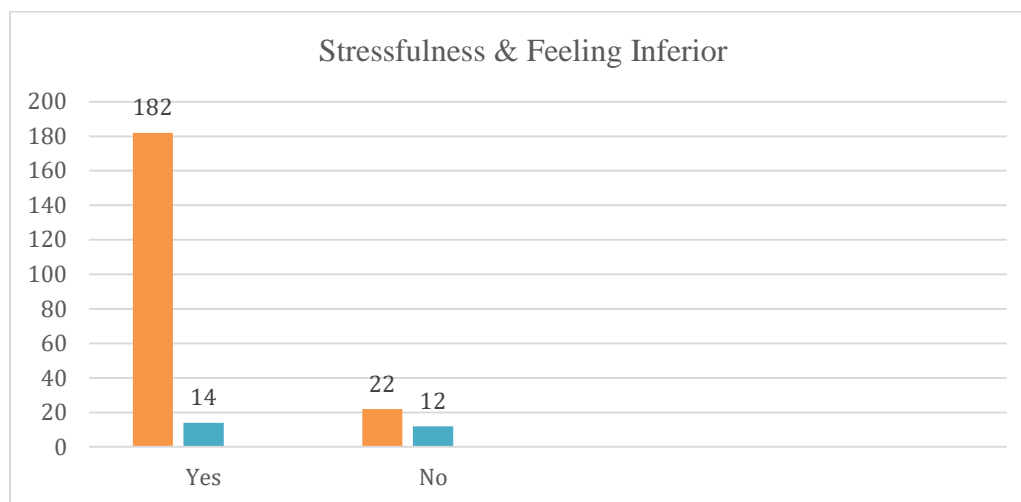


Figure 4. The relationship between stress and feeling inferior.

Table 19

Multiple Logistic Regression for Covariates Predicting Perceived QOL Changes (Feeling Inferior)

Source	B	SE	Wald	df	Sig	Exp(B)	95% CI for OR
Peer Avoidance	-1.476	.385	14.662	1	.229	.248	(.107, .486)
Limited Friends/ family	-1.110	.379	8.566	1	.003	.329	(.157, .693)
Isolate from Neighbors	-1.009	.378	7.133	1	.008	.365	(.174, .764)

The chi-square test revealed a statistically significant relationship that stressfulness experienced by the participants resulted in a perceived health outcome of feeling inferior. An odd ratio analysis was conducted to determine the level of the relative odds of the covariates to the outcome variable. The analysis used predictors such peer avoidance, ($OR = 0.248$), limited family and friends ($OR = .329$), and isolate from neighbors ($OR = .365$). The results of the $OR < 1$, which was interpreted as exposure of these predictors was associated with or have a lower odds of influencing or affecting the

outcome variables (feeling interior). The analysis also confirmed the rejection of the null hypothesis that there are no perceived negative QOL changes from the HRO of BI.

The BI participants also reported QOL changes such as frustration resulting from marital problems. A chi-square test ($X^2 = 14.820$, $df = 1$, $P\text{-value} < .001$) findings revealed that there was good evidence that negative QOL changes occurs (frustration) occurred among women who had marital problems. Figure 5 reveals that participants who perceived negative QOL changes ($n = 123$) from the health impact of BI were frustrated. This result presented a statistical significance of the variables, with $P < .001$ indicating the rejection of the null hypothesis that stated that there are no perceived QOL changes resulting from the health impact of BI the null hypothesis.

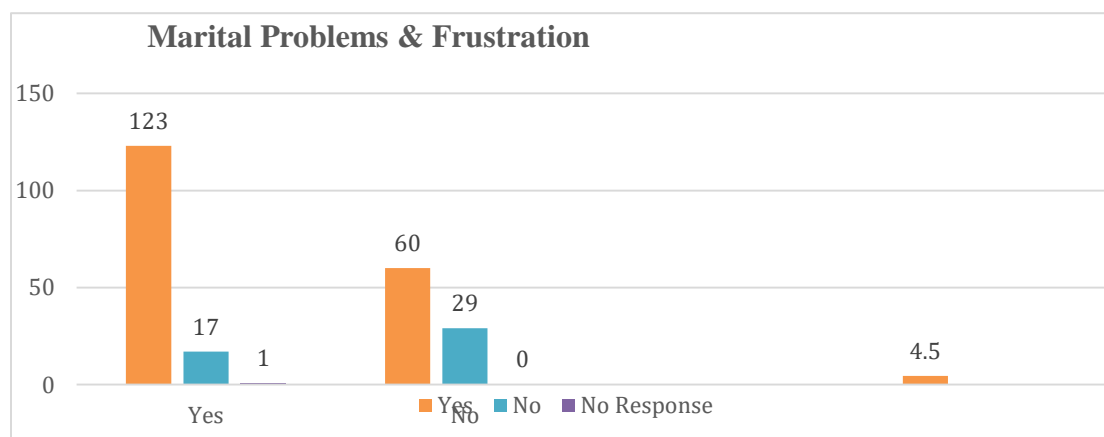


Figure 5. The impact of marital problem and frustration.

The outcome variable (frustration) was used to conduct an odd ratio analysis to determine whether other independent predictors influenced the outcome variable. Using predictors as noted in Table 20, low sex drive ($OR = .482$), not satisfied with sex life ($OR = .629$), and breast disappearance ($P < .001$, $OR = .165$), the analysis revealed an $OR <$

1, which indicated that these predictors are associated with a lower odds of affecting the outcome variables (frustration).

Table 20

Multiple Logistic Regression for Covariates Predicting Perceived QOL Changes (Frustrations)

Source	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	Sig	Exp(B)	95% <i>CI</i> for <i>OR</i>
Low sex drive	-.730	.335	4.743	1	.029	.482	(.250, .930)
Not Satisfy/ sex life	-.464	.424	1.193	1	.275	.629	(.274, .1.445)
Breast Disappear	-1.801	.462	15.236	1	.000	.165	(.067, .408)

Another chi-square test was conducted to determine the relationship or the strength of association between participants who were often in pain and sadness. The test revealed the presence of a statistically significant relationship between often-in-pain and sadness. A ($X^2 = 48.194$, $df = 2$, P -value $< .001$) in Figure 6 revealed that ($n = 162$) participants reported negative QOL changes (sadness) because they were always in pain. This chi-square tests found strong evidence of an association that women who developed long-term health problems also developed negative QOL changes after experiencing BI. I rejected the null hypothesis and accepted the alternative that there are negative QOL changes from the HRO of BI.

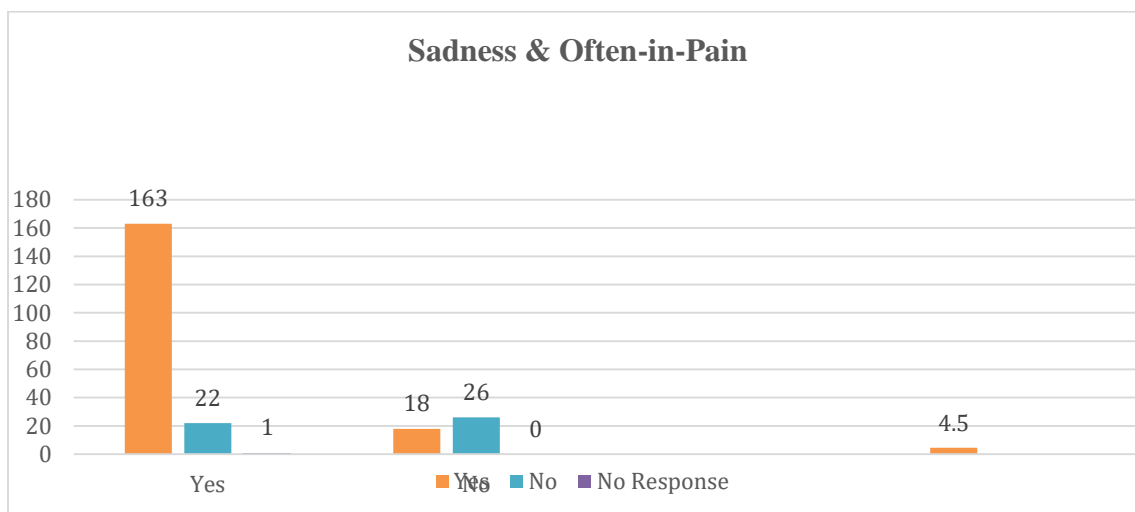


Figure 6. The relationship between sadness and pain.

Another odd ratio analysis was conducted to determine the level of exposure of the independent predictor on the outcome variable (sadness). Poverty was used to conduct the odd ratio, and the results revealed that poverty was not statistically significant because the $P > .005$ and the $OR = .374$, which was less than the 1 ($OR < 1$). Thus, the odd ratio revealed that poverty (predictor) had a lower exposure to influence the outcome variable. This strengthened the rejection of the null hypothesis stating that there are no perceived negative QOL changes from the HRO of BI; I accepted the alternative hypothesis that there are certain perceived negative QOL changes from the perceived HRO of BI and that pain is a contributive factor of sadness, as shown in Table 21.

Table 21

Multiple Logistic Regression for Predicting Perceived QOL Changes (Sadness)

Source	B	SE	Wald	df	Sig	Exp(B)	95% CI for OR
Poverty	-.984	.400	6.061	1	.014	.374	(.171, .818)

Research Question 3

In this study, the participants reported perceived long-term HROs associated with BI and certain negative changes to their QOL. During data collection, the participants were asked the question on whether or not they engaged in activities that could encourage BI eradication. A cross tabulation /chi-square test was conducted to determine whether and how participants shared information about BI, whether they felt betrayed by their abuser (mothers or close relatives), and what might hinder or promote the eradication of BI. The chi-square test revealed that there was no significant evidence between shared information and the feeling of betrayal by participants. The chi square test ($X^2 = .039, df = 1, P\text{-value} > .844$) as stated in Table 11 signified that participants did not share any knowledge of BI, because BI they considered as a betrayal by their mother, aunt, or sister.

Table 22
Chi-Square Test (Betrayal and Shared Information)

	Value	df	Asymptotic Significance (2x2)
Pearson Chi-square test	.039	1	.844

The null hypothesis that stated that there are no activities that encouraged the elimination of BI was sustained in favor of the alternative hypothesis. The participants who experienced BI felt betrayed by their close relatives whom were supposed to protect them. This hindered BI elimination process.

Summary

I found that women who experienced BI in their youth, self-reported and/or developed long-term health outcomes and experienced negative QOL resulting from a

lack of trust and/or betrayal and mistreatment by known others in the towns and villages of Cameroon. The sample of the women in the study adequately represents the targeted population of women who have experienced BI in the past and have lived with the traumatic effects and changes to their livelihood throughout their adulthood. I found statistically significant relationships that women who experienced traumatic events, such as BI in their youth, developed and perceived long-term HROs later in life, which later negatively affected their QOL. Hence, the null hypotheses of Research Question 1 and 2 were rejected in favor of the alternative hypotheses, and for Research Question 3, the alternative hypothesis was rejected in favor of the null hypothesis.

In Chapter 5, I discuss how the literature supports the findings and in elaborating the results of this study, and I provide recommendations to promote the eradication of BI.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to evaluate the long-term HRO of BI and its influence on the QOL on the Cameroonian women who have experienced the practice. This study was initiated because of the paucity of scientific scholarly literature on BI. Most of the literature available was anthropological, NGO field reports, and/or self-reported media statements on the vestiges of BI in Cameroon. Thus, this study was undertaken to provide evidence that women who experienced the BI practice developed or perceived long-term HROs that have influenced their QOL from childhood through to adulthood.

I adopted a grass-root approach, where I recruited eligible participants through cooperation partners, religious and traditional personnel, and women (njangi) group leaders from high risk locations in Cameroon. Participation was eligible to all women who had experienced BI at some stage in their life and who demonstrated the willingness to participate in the study. After informed consent was given, participants completed the survey instrument, which consisted of five sections: demographic information, the impact of BI, the long-term health outcome of BI, the QOL changes, and betrayal and trust impact of BI on the participants. Descriptive and inferential analysis, including the chi-square test and multiple logistic regression model, were used to answer the research questions.

I found that women who experienced this traumatic event (BI) developed and/or perceived long-term (physical, psychological, and social) health outcomes that negatively

affected their QOL. I also found the presence of a significant relationship between the impacts of BI, the perceived HROs, and QOL changes experienced by the participants. However, in RO 3, there was not enough evidence to reject the null hypothesis because of trust levels and betrayal among participants who experienced BI and their perpetrators as most considered their mother, grandmother, and sister as abusers. This study was conducted to increase public health awareness or knowledge that BI has perceived long-term health outcomes that influenced the QOL for women who have experienced it. This scholarly scientific endeavor has deepened the understanding of BI's impact on women and helped to enhance the BI elimination process and promote legislative procedures towards BI eradication in villages and towns in Cameroon.

This chapter provides a brief overview of the study, the findings in context with the literature, and the theoretical framework that incorporates the significance of this study and its contribution to future research. I also address the limitations, implications to social change, and recommendations for future investigations.

Interpretation of the Findings

Due to the dearth of typical scientific data on BI, other than the anthropological reviews and NGO field reports, most of the findings are reported for the first time. The results include the demographic representation of the women who experienced the BI practice; the pros and cons of the practice; its impact on individual perceived long-term health outcomes; as well as the strength of the relationship between BI, the perceived HROs, and the QOL changes experienced by the participants.

Demographics of Prevalence

The origin of BI is not known, but Ndonko (2006) reported that the practice has been carried out for generations, and it is usually handed down from mother to daughter. Ndonko stated that 1 in 4 women in Cameroon have experienced BI at some stage in their life. I found that women of all ages experienced BI earlier in life, but it is most common in women now in their 30s and 40s who come from high-risk ethnic groups. This confirms the finding by Bowe (2011) that BI is a common practice in Cameroon, it occurs in most towns and villages, and it is more predominant among some ethnic groups and some regions than others. The Southwest, Northwest, Littoral, and West regions showed a higher percentage of women who have experienced BI. These regions are inhabited largely by ethnic groups where girls are most likely to experience BI.

Most of the women in this study were young girls, aged 9-18 years of age, when they experienced BI. This is similar to studies by Bowe (2011)⁸⁹, and Tapscott (2012) who reported that BI is carried out on young girls as they approach puberty, generally between the ages of 9 to 14. In my study, the practice was done by the girl's mother or close relatives with the purpose of delaying breast development, preventing early sexual contact, delaying marriage and pregnancy, and promoting girls' education. Both the victims (daughters) and the perpetrators (mother or close relatives) thought BI was a good practice.

Research Question 1

In spite of the positive individual, family, and societal benefits claimed in support of BI in Cameroon, participants reported that they experienced traumatic health-related

symptoms during and after the BI practice. Gittins (2015) suggested that BI is a traumatic event because it is sudden, stressful, and limited in its duration and location. Hall (2013), Tapscott (2012), and Bowe (2011) all agreed that women who experience BI are traumatized during and after the practice. The participants of this study also reported that they were traumatized during and after the BI practice and experienced physical, psychological, and social trauma before, during, and afterwards.

Traumatic events such as BI impact the participants in the long-term (Egyhasi, 2014; Holtstag, 2007; Schneider et al., 2012; Ulrich et al., 2009). In this study, the participants reported or perceived long-term HROs that included physical, psychological, and social effects. The participants reported physical health outcomes from BI that included severe pain, skin (breast) burns, breast scarring, breast swelling, uneven breast size, and no breast sensation. Psychological health outcomes included being ashamed, depressed, prone to anxiety, low self-esteem, frustration, and avoidance of social sexual relationships. In regards to social trauma, the participants reported that they were considered outcasts and rejected, which caused them to withdraw from their society.

Traumatic events, irrespective of whether it is severe or not, are associated with significant HROs in the affected person. A cross-tabulation or chi-square test was conducted on the physical, psychological, and social effects of BI against the long-term health outcome indicators. This was done to determine the strength or significance of the evidence or relationship between the variables addressed in the research questions. A multiple regression analysis or odd ratio analysis was conducted to strengthen or compare the relative odds of the occurrence of the outcome variable of interest. Several

independent predictors were used to conduct an odds ratio to estimate the association between the predictor and the outcome variable.

The perceived physical effects of BI reported by the participants included severe pain, which affected their marital and family health of the participants. This confirmed the study of Hengstebeck (2017) who reported that there are physical, psychological, cognitive, and social effect of severe pain including the impact on a woman's ability to work. Herrera-Escobar et al. (2018) found a strong association between trauma with severe pain and other long-term outcomes, including posttraumatic stress disorder. Herrera-Escobar et al. concluded that participants with severe pain after trauma exhibited functional limitations. In my study, a total of 135 participants perceived to have experienced severe pain during and after BI, and they lived with severe pain into adulthood, which affected their marital relationship and family roles. Thus, the chi-square test result rejected the null hypothesis in favor of the alternative as there was strong evidence that severe pain contributed to marital and family issues in BI women. Also, a multiple logistic regression analysis was conducted using predictors such as sexual troubles, breast scars, and frustration. The analysis revealed an $OR < 1$ for sexual troubles stating exposure to this predictor has a lower odds of influencing the outcome variable. The breast scars and frustration predictors revealed $OR > 1$ indicating an association with high odds of influencing the health outcome.

Another cross-tabulation of physical trauma and health outcome was conducted between breast swelling and community rejection. The results revealed evidence of a strong statistical significance suggesting the presence of a relationship between breast

swelling and community pressure. This resulted in rejection of the null hypothesis (there are no perceived long-term HRO of BI) for the alternative. I found that 91.3% of the participants experienced breast swelling and faced long-term rejection from their peers and community. To confirm the result of chi-square test on the outcome variable, an odds ratio analysis was conducted using shame, depression, low self-esteem, and ashamed of appearance as predictors, and the results reported $OR < 1$ stating that these predictors have lower odds of influencing the outcome variable. This upholds the rejection of the null hypothesis. Other psychological and social effects of BI provided evidence of a relationship with the perceived HROs. For example, 77.8% of participants reported that the effects of BI influenced relationships with relatives, friends, and even their communities. The null hypothesis was rejected for the alternatives that stipulated that there are long-term health effects of BI as a traumatic event.

Research Question 2

In the analysis of the second research question, I rejected the null hypothesis (there are no perceived negative QOL changes from BI) in favor of the alternative. I examined how the perceived long-term HROs generated negative QOL changes in women, their families, and the communities. Holbrook and Hoyt (2004) suggested that the impact of a major trauma on QOL outcomes is greater in women than in men. Holbrook and Hoyt reported that women were more likely to be at risk of poor QOL than their male counterpart after a traumatic event or injury. Gill and Page (2006) reiterated that women are twice as likely as men to develop negative QOL after a traumatic event. Harris et al. (2012) highlighted the health issues experienced by women after traumatic

injury and identified service priorities that can promote better health and QOL within the female population. Lanourex-Lamarche (2017) assessed the association between lifetime traumatic events and the health-related QOL among older adults in the community and that exposure to violence, accidents, and sexual abuse was associated with lower QOL for women than with men.

According to the results, participants of BI reported that they experienced physical trauma (breast scarring, uneven breast sizes, and changes in their physical shape), psychological trauma (feeling inferior, frustration, and low sex drive), and emotional trauma (sadness, depression) that resulted in negative QOL changes. In a cross-tabulation of breast scar and the outcome variable (often in pain), I found a strong relationship that the HRO (breast scar) that resulted from the impact of BI negatively influenced their QOL (often in pain). A total of 79.1% of participants perceived or reported that they were often in pain from the breast scars they developed after the BI practice. The results of the chi-square were also confirmed with an odd ratio analysis using predictors such as burns, development of abscess, and development of a cyst. The analysis revealed $OR < 1$, which signified that these predictors had a lower odds of influencing the outcome variables, thus confirming the chi square analysis that there is a strong statistical significance that breast scar has a strong relationship to pain.

Another chi-square test was conducted that addressed the relationship between stressfulness and feeling inferior; the result led to the rejection of the null hypothesis that stated that there are negative QOL changes resulting from experiencing BI. In a study that explored the traumatic experience of prisoners after a stressful life event, Courtney and

Maschi (2013) reiterated that untreated trauma has been linked to decreased health and QOL among older adults in prison who have witnessed violence or other stressful experiences. Thus, 79.1% of women who experienced BI in this study perceived and reported that the long-term health impact (stress) was related to a negative QOL (feeling inferior) experienced after BI. A multiple regression analysis was conducted using covariates such as peer avoidance, limited family and friends, and isolate from neighbors to determine the relative odds that these predictors influenced the outcome. The $OR < 1$ revealed a lower odds of this predictor associating with the outcome variable. Hence, I sustained the alternative hypothesis and rejected the null.

Other similar test analyses were conducted to examine the strength of the relationship between marital problems and frustration and sadness and pain, and all ratified the rejection of the null hypothesis (there are no perceived negative QOL changes from BI) in favor of the alternate hypothesis (there are perceived negative QOL changes resulting from experiencing BI). Also, a multiple regression analysis was conducted to predict the value of the dependent variable from independent predictors, such as low sex drive, not satisfied with sex life, and breast disappearance. The analysis revealed $OR < 1$ indicating a lower odds that this predictors will influence the outcome variable. These results strongly confirmed that the perceived long-term health outcomes of BI negatively influenced QOL among women who experienced the practice.

Research Question 3

The analysis of the third research question supported the null hypothesis. The origin of BI is not known, and the practice is common among many families and

communities. The practice has continued unabated for generations because families saw BI as a positive tradition to avert early pregnancy and rape and to enhance the opportunity to continue education (Bowe, 2011; Ndonko, 2006). Thus, individuals and families did not engage in any activities that encouraged BI elimination even when women who experienced the practice felt mistreated and betrayed by their mothers or close relatives who were charged to protect them. These inactions have hindered BI elimination activities. Most of the initial literature (Bowe, 2012; Drake, 2013; Hall, 2013, Ndonko, 2006) only quantified BI as an abuse and recounted self-reported narrations of BI encounters. I found that participants did not engage in any activities, procedures, and/or processes that would support the elimination of BI. Thus, the alternative hypothesis was rejected in favor of the null. Notwithstanding, the data available could not adequately answer this question. However, the survey instrument provided participants the opportunity to recommend what processes or procedures could be used to help promote the eradication of BI. I found that 81.1% recommended good parenting, 74% peer education, mentoring 68.8%, and 77.9% a legislative decree or policy against BI. These self-reported recommendations resonate with the rejection of the alternative hypothesis for the null as stated above.

Theoretical Framework and Research Findings

In this section, I examine the importance of the BTT to the study. The BTT posits that children who are subjected to an abuse by their care givers (mother, aunt, sister) tend to see the traumatic event (BI) as a betrayal of trust by that care giver because the child depends on the caregiver for survival (Freyd, 2014). The purpose of this section is to

qualify BI practice as a betrayal of trust from the mothers who carried out the practice on their daughters whom they failed to protect. I found that 95.7% of women who experienced BI were traumatized by the practice, 93.9% believed that they were being maltreated by their mother and/or close relative, and 93.9% felt or considered the practice as a betrayal of trust by their mother aunt or other close relative whom they relied for safety. This study corroborates with previous studies that victims of traumatic events felt betrayed by their care giver (mother, aunts, grandmother.

According to Platt (2015), betrayal is a fundamental dimension of trauma, and it has far reaching consequences on posttraumatic distress. A high or low betrayal increases shame and disassociation in students who experienced trauma (Platt, 2015). St.Vil (2018) looked at the experience of betrayal trauma among survivors of intimate partner violence and their future relationships and affirmed that betrayal trauma increases vulnerability, fear, shame, low self-esteem, and communication on the victims. Participants in this study qualified BI as a mistreatment that eroded their trust (St.Vil, 2018). Owen et al. (2012) looked at the association between betrayal and psychological wellbeing, attachment styles, and romantic relationship among 18-year-olds and identified that anxiety and psychological wellbeing were significant mediators between betrayal trauma and partner respect. These studies corroborate the findings of this study, as participants of BI were traumatized and felt mistreated and betrayed by their care giver whom they depended on for survival.

Limitations of the Study

There were three limitations to this study: methodological, environmental, and those faced by me. The methodological limitations included the research design, the dearth of prior research studies on the topic, and self-reported data. First, I used the one group design because it was ethically wrong to have a control or treatment groups or randomly assigned participants to this study. The participants had already experienced the practice, and the one group design was the only quantitative approach to examine the functional relationship of the perceived effects of BI on the HRO and QOL changes of the women who experienced BI.

The onset of the BI practice is not known, and there is little literature or data available on the topic. Even those that do exist were not peer-reviewed literature. A bulk of the literature available consisted of anthropological and NGO field reports that established that BI exists and that it is a harmful practice. Although I did not concentrate on the history of BI specifically, the need for future research on the history and evolution of BI is necessary. Initially, the practice came into light during and after the anthropological survey by RENATA/GTZ in 2006, before then scientific research on BI is minimal, absent or nonexistent.

This paucity in literature presented the opportunity for me to research the perceived long-term HRO of BI and the changes in the QOL of the women who experienced the practice. Another concern is that the surveys required participants to self-report their experience of the impact of BI through a yes or no response format. This posed a limitation because the responses of the participants could not be independently

verified and instead were taken at face value, thus presenting the exposure to selective memory bias (memory of remembering their experiences that occurred in the past). However, I adopted a medium sample size to achieve greater representation and to contain the bias.

The environmental limitations included access, hostile communities, civil war, and terrorist and/or separatist insurgency at some of the research venues. BI is common in Cameroon, and it is predominant in towns and villages. Some of the villages and towns were located in the hinterlands, and accessibility was somewhat dangerous due to an active civil war and separatist insurgency. This affected the response rate because some eligible participants were unable to set up times to complete the survey instrument due to local movement curfews or road blockages and ghost towns enforced by national forces or separatists. Also, accessibility to some of the interior villages posed some challenges, as road infrastructure was also particularly challenging. However, I spent days on the road and at some venues, so as to acquire adequate participation and to enable participants the opportunity to provide data on their own freewill and at their own comfort level.

The limitations I faced during data collection was social desirability bias, even though participants were to respond using the yes or no dichotomy. I could not rate their interest in completing the questionnaire, and I could not accurately determine if their responses were an honest representation of their experience or false memory. Although the response of participants were anonymous and confidential, some participants could have been more conservative in their response to increase their anonymity. In spite of all

this, the results of this study depended on honesty, commitment, and willingness on the part of the participants.

Recommendations for Action

BI is practiced in villages and towns in Cameroon, but there are not enough public health activities to educate the communities on how serious the practice of BI is and its effect on their children, other than numerating the vestiges of the practice by some local NGOs. Because BI is common and has been practiced for generations, Participants postulated a combination of educational awareness programs and legislative policy needed to meet the objective of achieving the eradication of BI.

The first recommendation is to increase BI educational awareness programs for families and communities through the cooperation of NGO and women's health initiative groups. Health awareness through micro and macro-educational programs should be incorporated, the result findings revealed that health education awareness should emphasize good parenting, peer education, family focused activities and mentoring and legislative law. A combination of these programs would promote and increase the knowledge of BI in families and communities and lead to eradication.

Women are the forefront of BI, both as perpetrators and victims, according to the findings, (199, 86.5%) of participants recommended good parenting through warmth and affection in addition to some parental control plays a role (Smith, 2010). BI is passed on from generation to generation, usually from mother to daughter; thus, a well-informed parent can lead to a well-informed child (Smith, 2010). A woman who is aware of the vestiges of BI will educate the child against this practice, and when that child becomes a

parent, she will then pass on those good practice thanks to better parenting. This reciprocal relationship of parent and child can help to increase the child's social behavior particularly when it comes to the practice of BI (Daniel, Madigan, & Jenkins, 2016).

Another recommendation revealed from the findings is that of peer education, (177, 74.3%) with emphasis on the establishment of adult schools in the villages, towns, and communities. In an adult setting, mother-to-mother and daughter-to-daughter experiences and knowledge and about BI can be shared and discussed with those who have experienced BI themselves. Peer education training and programs will help raise awareness of the problems and concerns about BI. Additionally, peer education should be encouraged to happen freely in informal settings such as in Njangi groups, local women associations, meetings, and/or initiative groups. In these formal and informal settings, BI information should emphasize the impact of BI, its health outcomes, and its influence on the QOL for women. The spread of BI information from women to daughters in villages and communities will impact the continuity of BI and over time lead to the abandonment of the practice.

Peer education has been proven to be a veritable tool for adult learning (Parkin, 2006). Peer education program have been effectively used in Turkey to increase women's awareness of the importance of early detection and diagnosis of breast cancer (Gozum, 2010). In Gozum's study (2010), peer educators encouraged their peer members to arrange and get appointments for monograms. Peer education is an effective tool to increase awareness, belief, and practice. If used effectively, BI could achieve eradication much faster. Peer education programs on BI are also a good way to disseminate accurate

information, facilitate gender behavior, support learners, and delay the learners from engaging in the BI practice (Visser, 2007). Peer education should also target young children, so that they can reeducate their peers who may be experiencing traumatic event such as BI. This is an effective way to educate young girls about BI and its long-term health outcomes (Young et al., 2017).

Family-focused activities (174, 75.7%) and mentoring (159, 69.1%) programs were recommended to enhance the BI elimination process. These recommendation may be limited but are important in an African setting. In most African families and communities, the big sisters in the family tend to develop a one-on-one relationship with their young siblings; thus, the big sister serves as a natural mentor to the young girls. As mentors they are engaged in family-focused activities and share behavioral and emotional difficulties with their young sister (Rhodes, 2008). Additionally, these big sisters have the opportunity to educate the young girl not only about life challenges but also the disadvantages of some traditional or common practices such as BI. Hence a combination of adult education, peer education, mentoring, and family-focused activities can provide an evidence-based BI education awareness program that will promote BI eradication among families, villages, and towns.

Finally, instituting a legislative or public policy (180, 78.3%) through ordinances or decrees against the practice of BI is another tool necessary to promote the eradication of BI. This study has provided evidence that BI causes long-term health effects and contributes to a negative QOL. The health impact of BI contributes to structural and attitudinal barriers that can impede a normal life and promote health disparities and social

problems (Blauwet & Iezzoni, 2014). Thus, the adoption of public policy (legislative, health ordinances, and/or presidential decrees) will provide inclusive opportunities and participation toward the eradication of BI. Presently in Cameroon, there are no policies aimed at promoting BI eradication; thus, the need to declare BI as an illegal practice and enforced by law is plausible in Cameroon. The enactment of a law against BI will give health, social service personnel, and community leaders (chiefs) the powers to report cases of BI violations to law enforcement, and violators will be charged with abrogation and child abuse. Massive education on the health impact of BI should be a priority where partnerships and cooperation with families, communities, and NGOs have a role to play as they all contribute to the eradication of BI in Cameroon.

Implications for Social Change

The practice of BI has been in existence for generations. The onset of the BI practice is not known, but it surfaced as a public health problem after an anthropological survey was conducted in 2006. Most of the available literature was comprised of media reports, self-reported accounts, and NGO field notes, which emphasized only the existence of the practice, its short-term consequences, and a harmful traditional practice. The absence of adequate scientific investigation beyond the harmful nature of the practice provided the opportunity to undertake this study. This study provides a significant contribution to the knowledge on BI. The results of this study give public health practitioners, present and future researchers of BI, scholarly evidence of BI beyond it being a harmful traditional practice. With this study, these health advocates and researchers are now aware that BI is a traumatic event with perceived long-term physical,

psycho-social, and emotional outcomes and with negative QOL implications. Hence, this study shall trigger further research on BI and provide a platform for public health promotion programs to control gradual eradication of the practice in Cameroon and beyond.

The objective of this study was to provide scholarly information on BI, enhancing the possibility of BI eradication in Cameroon and elsewhere. The findings of this study present positive and progressive social change implications for the individuals, families, communities, organizations, and governments (local and national) levels that may result in a significant alteration in behavior patterns and cultural beliefs or norms about BI over time. BI is a traumatic event, and women who have experienced the practice suffer long-term physical, psychological, and social health outcomes and a negative QOL. Thus, NGOs, women's initiative and development groups, and public health advocates can use this information to organize educational awareness programs with the purpose of educating young girls, families, and the communities on the perceived long-term health impact of BI and its negative QOL implications. The use of these programs may enhance social change among families and communities as they will have the knowledge of impact of BI, which could trigger progressive social change and further enhance eradication procedures within and beyond the villages and towns.

Lastly, the results of this study provide an information base for public health advocates, NGOs, officials, and women's initiatives groups who champion courses against BI and who clamor for government policy or decrees to outlaw the BI practice. This study presents scholarly evidence on BI that can be used to fortify the fight for action

and provide knowledge that can be used to pressure for legislative policies and decrees. With the centralized nature of most of the communities in Cameroon, a legislative decree could have social change implications. Enforcement of a decree to abolish the practice using the state of the law provides the quickest solution towards BI eradication because individuals become the watchdog and traditional, local, and national law enforcement will execute the law by charging individuals and communities who continued to engage in the BI practice with fines and imprisonment.

Recommendations for Future Research

This study has expanded the knowledge base of BI and opened other research areas. Previous BI research provided information that BI was common in villages and towns and that BI was seen by victims and perpetrators alike as a positive event to prevent forced marriage, rape, early pregnancy, and promote the continued education of girls. This study brings to light the health impact of BI, its relationship with HROs, and its influence on the QOL for women who have experienced the practice. The results of this study open up a world of possible research questions that demand further attention. First, the traumatic effects of BI (the physical, psychological, and the social) could each be developed into a separate research focus. The long-term HROs of BI and the negative QOL influences emphasized could independently be expanded and studied into a separate scientific research project. Also, the question of betrayal and trust by the BI women could independently stand as a full psychological research project.

I adopted a quantitative research method with survey questionnaires as the data collection instrument. A new study could be conducted by adopting a qualitative

phenomenology study using interviews to gather data where victims of BI could recount their experiences and how BI has affected them. Finally, I also emphasized that mothers and or close relatives were the perpetrators who conducted the BI process on their young girls. I did not concentrate on the girls who conducted the practice on themselves; however, this was a concern raised by some participants during debriefing and should be explored in future research. BI of older girls by themselves is a growing public health challenge in the towns and cities now in Cameroon. It is important that researchers remain persistent and continue to develop research on BI even beyond eradication of the practice.

Conclusions

BI is common in villages and towns in Cameroon, and it is a traditional but harmful and traumatic practice with long-term HROs with a negative QOL impact. Virtually all of the 230 women in this survey reported the need for BI eradication, and the overall results of this study revealed a significant relationship between BI and the development of perceived long-term health problems including physical, psychological, and social outcomes. These findings echo earlier calls to accelerate the eradication of the BI practice. Recommendations generated from the study include educational awareness programs; adult education; peer education; mentoring; and family-based activities at the individual, family, and community's levels. I also recommend the implementation and enforcement of policy legislative action. These steps increase the possibility that BI eradication can be achieved.

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Appendix A: Recruitment Announcement

The public is informed that a research study will be conducted at the RENATA Headquarters in Yaoundé, the Gender Empowerment Center in Bamenda, the Health Services Partner Office in Kumba, and the University of Buea Campus. The study is aimed at gathering information from interested participants on their self-reported experiences and effects of the breast ironing practice. Prospective participants must be women of Cameroon origin between the ages of 18-80 years. Participation in this research study will be voluntarily, and participants will not be paid for participating in the study. However, the cost of transportation will be reimbursed to participants up to and equivalent of 1000 FRS (\$2). Please feel free to call or email the principal investigator, Nkwelle Norbert Njume, on [REDACTED] and at norbert.nkwelle@waldenu.edu, anytime from 6 am to 10 pm daily, if you are interested in becoming a participant. Selected participants will be notified on site at the various venues listed above.

Yours sincerely

Appendix B: Confidentiality Agreement

Name of Signer:

During the course of my activity in collecting data for this research: “**The Long term Health-Related Outcomes of Breast Ironing in Cameroon**” I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant’s name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I’m officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature:

Date:

Appendix C: Survey Questions

Breast Ironing Survey Questionnaire

Objective: The purpose of this survey is to collect information about the breast ironing practice in Cameroon and the impact on the health outcome and quality of life of the women who experienced it. All the information you provide will be kept private and confidential. No identifying information will be shared with anyone. You are free to skip any question which you do not feel comfortable answering.

Section A: These questions will provide the demographic information of the participants

Please check or circle the choice which is right to you

1. What is your current age group?

19 – 30years	31- 40years	41-50years	51-60years	61- 70years	≥71 years

2. Which is your region of origin?

Southwest	Northwest	Littoral	West	Center	Others

3. Which is your ethnic group?

Banyang	Ejagkam	Akwaya	Duala	Bamileke	Bafut	Eton	others

Section B: These of questions are about the long term effect of breast ironing. (Please check or circle all that apply)

4. How old where you when you experienced breast ironing? (Check all that apply)

9-11 years	12 -14 years	15-17years	≥18years

5. Which of the following good outcome can you associate to your Breast Ironing experience

I was able to attend school	Yes	No
Delayed by breast development	Yes	No
Avoided early pregnancy like my peers	Yes	No
Avoided early or force marriage like my peers	Yes	No

6. How did breast ironing affect your health? (Circle all that apply)

Physically	Yes	No
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Psychologically	Yes	No
Socially	Yes	No
All of the above	Yes	No
Others	Yes	No
None of the above	Yes	No

7. Where you traumatized during and after the breast ironing experience?

Yes	No

8. Did you experience any of the following trauma symptoms after breast ironing?

Anxiety	Yes	No
Depression	Yes	No
Anger	Yes	No
Sexual troubles	Yes	No
Other symptoms (Specify)		

9. Did you experience any of the following Physical health trauma as a result of breast ironing?

Severe pain	Yes	No
Developed Abscesses	Yes	No
Developed a Cyst (hard mass)	Yes	No
Burns	Yes	No
Breast scars	Yes	No
No breast sensation	Yes	No
Breast swelling	Yes	No
Itching & discharge of milk	Yes	No
Uneven breast sizes	Yes	No
Breast infection (boils)	Yes	No
Breast swelling & abnormal growth	Yes	No
All of the above	Yes	No
Other effects (specify)		
None of the above	yes	No

10. What psychological trauma or impact did you encounter after your experience of breast ironing?

Shame	Yes	No
Depression	Yes	No
Low self-esteem	Yes	No
Anxiety	Yes	No
Frustration	Yes	No
Developed depression	Yes	No
Ashamed of my appearance	Yes	No

Avoiding social gatherings	Yes	No
Avoiding sexual relationship	Yes	No
Other (specify)	Yes	No

11. What Social trauma or effects did you suffer because of your experience of breast ironing?

Rejection by peers and community	Yes	No
Considered as outcast	Yes	No
Withdrawn from peer and society	Yes	No
Other (specify)		

12. Do you have negative images, memories or thoughts about your breast ironing experience?

Not at all	A few times	Most of the time	All the time	everyday

13. Have you had any other traumatic experiences in your life?

Yes.	No.	Don't Know/remember

Section C: These questions relates to the health-related outcomes of BI_(Circle all that apply)

14. In general how would you rate your health after experiencing breast ironing?

Excellent	Yes	No
Very good	Yes	No
Good	Yes	No
Fair	Yes	No
Poor	Yes	No
Neither of the above	Yes	No

15. Has breast ironing impacted your physical health activities in any of the following ways?

Mobility	Yes	No
Household activities	Yes	No
Leisure activities	Yes	No
Family / Marital Role	Yes	No
Others	Yes	No

16. Which of the following physical activities were limited by your breast ironing experience?

Walk, Run & Play	Yes	No	Don't know
Self-care	Yes	No	Don't know
Domestic activities	Yes	No	Don't know

17. Have any of the following physical health problems related to your breast ironing experience?

Limited my family friends	Yes	No
Avoided my peer groups	Yes	No
Isolated from my neighbors	Yes	No
Others (specify)	Yes	No

18. Were any of the following relationships affected by your breast ironing experience?

Your Husband?	Yes	No
Your Relatives?	Yes	No
Your Friends?	Yes	No
Your community?	Yes	No
Attending meetings?	Yes	No
Going to parties?	Yes	No
Others (specify)		

Section D: These questions relate to the quality of life after breast ironing. (Check or circle all that apply)

19. How would you rate your quality of life after breast ironing? (Choose the appropriate answer)

Very poor	Poor	Neither poor or good	Good	Very good

20. How often do you try to forget or not think about the psychological experience of breast ironing?

Always	Sometimes	Often	Never

21. In general how would you rate your quality of life as someone who experienced breast ironing?

Healthy	Yes	No
Often in Pain	Yes	No
Often sick	Yes	No

Having marital problems	Yes	No
Stressful	Yes	No
Others (specify	Yes	No

22. What negative quality of life changes have you experienced since your breast ironing experience?

Psychological/and emotional changes	Low sex drives	Yes	No
	Not feeling satisfy with my sex life	Yes	No
	Bad thoughts or feeling during sex	Yes	No
	Being confused about my sexual feelings	Yes	No
	Having sex and not being focused or enjoy	Yes	No
	Depression	Yes	No
	Sadness	Yes	No
	Feeling inferior	Yes	No
	Frustration	Yes	No
	Depression	Yes	no
Physical changes	My physical shape	Yes	No
	Breast scars	Yes	No
	Developed uneven breast sizes	Yes	No
	Breast disappearance	Yes	No

23. Do you talk about your breast ironing experience to others?

Yes	No

24. Do you think any of the following activities might help stop the breast ironing practice?

Good parenting	Yes	No
Peer education	Yes	No
Family focused activities	Yes	No

Mentoring	Yes	No
Legislative policy or decree	Yes	No

Section E. These questions exposes the trust level with your family after experiencing breast ironing.

25. Have any of the following relationship been impaired by the Experience of breast ironing?

Mother	Yes	No
Aunt	Yes	No
Sister	Yes	No
Father	Yes	No

26. If “Yes” to question 25 above, did your experience with breast ironing influence your feeling of trust or connection with that other person

Mother	Yes	No
Aunt	Yes	No
Sister	Yes	No
Father	Yes	No
Other Family relatives	Yes	No

27. Do you feel betrayed by that person following your BI experience?

Yes	No

28. Do you feel mistreated emotionally or psychologically by that other person?

Yes	No

29. Further information and Debriefing

Anything else you would like to add? -----

I want to thank you for taking your time to participate in the survey. The objective of this study is to investigate the long term health related outcome of breast ironing and its impact on the quality of life of the women who experienced it. You are welcome to contact me at this telephone number [REDACTED] from 8am to 9pm.