POSTPARTUM HEMORRHAGE IN DEVELOPING REGIONS OF ABUJA, NIGERIA:
A BEST PRACTICE PROPOSAL OF AN EDUCATIONAL INTERVENTION FOR UNSKILLED
BIRTH ATTENDANTS

By

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Abstract

The purpose of this paper is to propose an educational intervention for unskilled birth attendants in the developing area of Abuja, Nigeria. This educational intervention provides a plan to demonstrate skills to anticipate, prevent, recognize and manage postpartum hemorrhage in home births and will teach non-pharmacological methods to Nigerian birth attendants. The use of Misoprostol will be presented for pharmacological use. Through verbal direction and visual demonstration, the instructor will teach unskilled birth attendants will have an opportunity to learn the causes of postpartum hemorrhage and be taught techniques to prevent, recognize, and manage it. Medical professionals of the Global Health Outreach organization will conduct this educational intervention at free medical clinics. Unskilled birth attendants and expectant mothers will receive an educational pamphlet to provide a future reference on the management techniques. Women’s acceptance of the intervention will be evaluated through a verbal interview after the educational demonstration and pamphlet distribution.
CHAPTER 1
INTRODUCTION

The purpose of this paper is to propose an educational intervention for unskilled birth attendants to anticipate, recognize, and manage postpartum hemorrhage in home births in the developing setting of Abuja, Nigeria. Chapter 1 introduces background information on global maternal mortality, including Millennium Development Goals for global maternal health and factors that contribute to maternal deaths in Nigeria. The focus is on the implementation of the intervention in one specific developing setting, Abuja, Nigeria. Chapter 1 presents research on home births, health care, and maternal health in this region. Identification of the significant problems surrounding health care in developing countries compared to the United States and other developed nations is presented. Episodes of postpartum hemorrhage are discussed as related to community health and nursing. Table 1 provides an overview of definitions and descriptions of terms necessary to understand postpartum hemorrhage and relevant terms. The information provided will develop a foundation for the proposed recommendations for improving the management of postpartum hemorrhage in developing settings, like Abuja, Nigeria.

Background

Around the world 800 women die every day from preventable causes related to pregnancy and childbirth (World Health Organization [WHO], 2012). Postpartum hemorrhage (PPH) is the primary cause of maternal mortality in the United States and globally (Magann et al., 2013). In 2010, a recorded 287,000 women died during or after childbirth (WHO, 2012). Almost all of these deaths (99%) occurred in developing countries (WHO, 2012). The highest maternal death rate occurs in Africa, and more specifically, the countries of Ethiopia and Nigeria.
POSTPARTUM HEMORRHAGE

(Udofia & Okonofua, 2008). These are the most densely populated countries in Sub-Saharan Africa (Udofia & Okonofua, 2008). In reaction to these high death rates, the United Nations established Millennium Development Goals (MDG) in the year 2000 (WHO, 2012). The MDG consist of eight different goals that the United Nation members agreed to achieve by the year 2015 (WHO, 2012). One of the eight goals focuses on decreasing the maternal death ratio by 75% (WHO, 2012). The annual number of maternal deaths fell from 526,300 in 1980 to 342,900 in 2008 and 287,000 in 2010 (WHO, 2012). Despite this successful drop in mortality rate, only 23 countries are on course for reaching the MDG for maternal death (WHO, 2012). As some countries improve, the mortality rates in Nigeria and surrounding countries are not improving (Brighton, D’Arcy, Kirtley, & Kennedy, 2012). The maternal mortality rate in sub-Saharan Africa is 400 times higher than the lowest maternal mortality rate in the world (Brighton et al., 2012). Examination of management of the primary cause of PPH is needed to stop the rise of maternal death.

The majority of the maternal mortalities are an outcome of preeclampsia, sepsis, postpartum hemorrhage, and toxemia (Ojanuga & Gilbert, 1992). The primary cause of PPH is uterine atony, when muscles of the uterus lack the ability to contract after birth (Miller, Lester & Hensleigh, 2004). There are various identifiable causes of uterine atony (WHO, 2008). Birth attendants need to be able to understand the causes and identify the symptoms of uterine atony after birth in order to successfully manage the complications (Miller et al., 2004). In many developing countries, births commonly transpire in the home and in the absence of a skilled birth attendant (Miller et al., 2004). This is the case in Nigeria, where 60% of births occur in the home (Udofia & Okonofua, 2008). Instead of skilled attendants, many traditional birth attendants are present during deliveries (Prata et al., 2012). In Abuja, these traditional birth attendants
attendants may be a family member, friend, or a woman who often attends births in the village (Tripathi, Stanton & Anderson, 2013). If these traditional birth attendants were educated on the symptoms of uterine atony, they may be better prepared to identify and manage PPH when assisting in a birth.

PPH is the major cause of maternal death not only in developed nations, but in Africa and Asia as well (Sanghvi et al., 2010). PPH affects women globally, highlighting the need for a greater awareness of the problem. The decreasing maternal death rates in developed countries, compared to a continual increase of rates in developing countries, signals the need for an intervention. Due to the lack of skilled birth attendants and the high number of homebirths, 14 million women experience PPH every year around the world and, of these, 125,000 result in death (Miller et al., 2004). The highest maternal death rates occur in countries that have large gaps between the rich and the poor as well as poor health services in general (WHO, 2012).

Today there is still an existing 50-fold divergence for PPH death between high and low-income countries (Prata, 2012). The mortality ratio in the United States is 16 deaths per 100,000 live births (WHO, 2012). This ratio is significantly lower than the 240 deaths per 100,000 live births in developing countries (WHO, 2012). Although rates have decreased over the past two decades, the need for preventative education still persists. The lack of health care and the lack of skilled birth attendants highlight the increased risks for maternal mortality and point to a need for a PPH educational intervention.

The lack of health care and the low number of skilled health care workers in sub-Saharan Africa and South Asia have been targeted for improvement in the past, but are still in need of enhancement (WHO, 2012). Due to the MDG, a substantial push for an increase in skilled birth attendants began (WHO, 2012). The thought was that most women are dying from PPH because
a skilled attendant is not present to provide care (WHO, 2012). The numbers of skilled birth attendants are increasing in health care facilities in developing countries, but women are not being reached in their homes. In developing countries, the skilled birth attendant rate remains low (Prata et al., 2012). The focus must be directed at the education of those who are traditional birth attendants, or unskilled attendants, instead of attendants in health care facilities (Prata et al., 2012).

Those who are privileged to have a skilled birth attendant in Nigeria usually have a nurse or a nurse midwife assisting in delivery (Kauser et al., 2012). The possibility of shock and death from blood loss is a substantial risk in every birth, and birth attendants are on the forefront of management techniques for PPH (Kauser et al., 2012). While a woman can die within ten minutes from a hemorrhage, or even within a couple hours with mild-moderate bleeding that is undiscovered and untreated, trained attendants need to discover the reason for hemorrhage and implement medical attention to control blood loss (Kauser et al., 2012). Techniques to control bleeding include pharmacological interventions where available. In developing areas where access to health care and skilled nurses is unavailable, there are non-pharmacological interventions that are highly effective and could be taught to unskilled birth attendants (Prata et al., 2012).

Due to the lack of pharmacological access, women in developing environments suffer from additional complications. In countries with low personal incomes, two thirds of pregnant women are nutritionally anemic (Ojanuga & Gilbert, 1992). Poor access to clean water, unhealthy living conditions, and unsanitary cultural standards contribute to the risks of unintended challenges of pregnancy (Ojanuga & Gilbert, 1992). With these unhealthy factors and the absence of prenatal care, women suffer from nutritional deficits (Ojanuga & Gilbert,
Almost all women in developed nations attend only four prenatal care visits, amounting to 46% of women in developing countries who attain prenatal care in pregnancy (WHO, 2012). Due to the cultural normalization and socio-cultural factors of women who are meant to work in the home, women in developing countries tend not to seek health services (WHO, 2012). These impinging factors of unhealthy living environments, lack of health care, and a negative perception of seeking prenatal care, increase the risk of insufficient nutrition and a lack of birthing education during a woman’s prenatal health period in Nigeria.

**Specifics Related to Abuja, Nigeria**

Nigeria’s maternal mortality rate is one of the highest in the world (Bankole, 2009). For every 100,000 live births, there are 1,100 maternal deaths (Bankole, 2009). Over 40% of women giving birth in Nigeria have received no prenatal care and no assistance from a trained health care provider (Bankole, 2009). Although the government has developed policies to reduce maternal death, the implementation of these policies has been ineffective due to low spending on health care in Nigeria (Bankole, 2009). The Safe Motherhood Initiative of Nigeria works through nongovernmental organizations and is funded by private donors (Bankole, 2009). Programs such as this have potential to be effective, but unfortunately fail to elicit enough funds to make a substantial impact. The government must provide additional funding (Bankole, 2009). In order to improve maternal outcomes, the providers, attendants, and expectant women must be trained and educated about birth risks and management of PPH.

In Nigeria, family members or traditional birth attendants assist most women during labor and childbirth (Tripathi et al., 2013). These assistants utilize many traditional birth practices and medicines (Tripathi et al., 2013). In much of Africa, a traditional herbal medicine, called imbelikisane, is used to induce labor (Tripathi et al., 2013). In Nigeria, herbal medications are
used as uterotonics to augment labor and help to expel the placenta (Tripathi et al., 2013). Despite the herbal medication’s proven uterotonic effect, there are also known adverse reactions such as uterine rupture and meconium aspiration (Tripathi et al., 2013). It is important for the persons executing the intervention to understand the practice and use of traditional birthing techniques and herbal medications in the Nigerian culture (Tripathi et al., 2013).

In developed countries, the recommended treatment for PPH is administration of an uterotonic, Oxytocin, after birth (Udofia & Okonofua, 2008). The use of Oxytocin in developing areas is limited due to the need for intramuscular or intravenous administration by a health professional (Udofia & Okonofua, 2008). An alternative uterotonic, Misoprostol, is a viable substitute because it is an oral tablet and can be easily administered by an unskilled birth attendant after minimal education (Udofia & Okonofua, 2008). With education, unskilled birth attendants can also learn management skills to use during childbirth and the immediate postpartum period, to prevent excessive bleeding. While many women choose to use traditional herbal medications, Misoprostol has been proven to be a safer uterotonic (Tripathi et al., 2013). There are also non-pharmacological techniques for managing PPH that many women are unaware of, including uterine massage, examination of the placenta, and breastfeeding immediately after delivery. Due to the high number of home births at which a skilled attendant is not present, additional techniques to prevent and treat excessive bleeding offer the hope of reducing maternal death from PPH. Understanding the history, culture and practice in the villages of Abuja may significantly help health care professionals extend contact to the women in need of this PPH education.

The city of Abuja is home to businessmen and much of the wealthy population (Oyeniyi, 2011). In recent history, an increase of the population in Abuja has resulted in a splurge of
slums, shantytowns, and villages outside the city (Oyeniyi, 2011). The large population in Nigeria is partly due to the lack of family planning and the dominance of men in society (Odu, Ijadunola, Komolafe, & Adebimpe, 2006). The view of family planning by men in Abuja, Nigeria differs significantly from predominant views in the United States. Men in Abuja frequently desire large families. Although they may be aware of family planning methods and contraceptives, the men have a negative view towards them, and many forbid their use for reasons such as religion, cultural beliefs, socioeconomic barriers, and health fears (Odu et al., 2006). This increases the rate of pregnancy and, in turn, PPH complications such as death (Odu et al., 2006). Men may be aware of family planning, but little is understood about pregnancy complications (Odu et al., 2006). The lack of knowledge and awareness of potential complications associated with pregnancy impedes women from obtaining health care. The rural villages outside Abuja are home to many women who cannot afford health care and give birth at home with unskilled assistance (Oyeniyi, 2011). In Nigeria, the largest risk for PPH is due to delivery by an unskilled attendant (Udofia & Okonofua, 2008).

Pathophysiology and Treatment of Postpartum Hemorrhage

Postpartum hemorrhage is defined as a blood loss greater than 500 ml after a vaginal delivery or greater than 1000 ml after a cesarean birth (Kauser, 2012). Early hemorrhaging, defined as within 24 hours after birth, is caused by uterine atony and lacerations (Chapman & Durham, 2014). Late hemorrhaging, or after the first 24 hours, is a result of hematomas, subinvolution, and retained placenta (Chapman & Durham, 2014). The primary cause of early hemorrhage, uterine atony, is a result of muscle fibers of the uterus failing to contract, which causes the uterus to not contract after a delivery (Kauser, 2012). When uterine muscle fibers fail to contract after birth, blood vessels from the placental site are relaxed and continue to bleed.
Excessive bleeding may also occur if the placenta delivers but leaves behind fragments attached to the uterine wall (WHO, 2008). This is referred to as a retained placenta (WHO, 2008). This results in an atonic uterus that is unable to contract the blood vessels (WHO, 2008).

Other factors that occur less often but also lead to PPH are injury to the genitals (from instruments and/or spontaneous trauma), blood clotting failure, and inversion of the uterus (WHO, 2008). When a woman begins to bleed due to these postpartum complications, it is necessary to determine the cause in order to immediately act to impede blood loss (WHO, 2008). Without training in the proper use of medication and emergency tactics, cessation of blood loss may be unachieved (WHO, 2008). Non-pharmacological techniques such as uterine massage, immediate breast feedings, and visual blood estimation can be introduced to Nigerian women to help detect and manage hemorrhage. While the treatment options for PPH currently depend on the available supplies, the introduction of these non-pharmacological techniques will enable unskilled birth attendants to manage PPH. In developing settings, simple techniques such as fundal massage and administration of oral uterotonic drugs, such as Misoprostol, can be used when these advanced methods are infeasible (Miller et al., 2004). Training is needed for birth attendants to use the non-pharmacological methods.

**Significance: Attributing Factors of PPH**

Without an intervention to subdue blood loss from PPH, a woman could lose her total blood volume, 5 liters, in as little as ten minutes to one hour (WHO, 2008). In the United States and other developed countries, the number of obstetric patients that need to be admitted into a critical care unit is a mere 0.2-0.9% (Bajwa & Bajwa, 2012). The significant improvement of maternal health in the United States has failed to sufficiently impact maternal care in developing
countries (Bajwa & Bajwa, 2012). Nigeria comprises 1% of the world population but accounts for 10% of all maternal deaths (Jadesimi & Okonofua, 2006). Emergency medical facilities and intensive care units are critical in lowering maternal mortality rates (Bajwa & Bajwa, 2012). In developing areas, multilevel care centers are ideal but infeasible (Bajwa & Bajwa, 2012). The ability of a woman to have access to at least a level one intensive care unit would significantly lower mortality rates (Bajwa & Bajwa, 2012).

Low levels of awareness and educational advancement, along with low literacy rates, contribute to the poor health access in Nigeria (Bajwa & Bajwa, 2012). The gap between the United States obstetric development and that of developing nations continues to widen (Bajwa & Bajwa, 2012). It is critical that interventions be developed and implemented according to a country’s culture, environmental setting, and equipment access. Steps have begun in Abuja to educate women on PPH and distribute medication, however the education and distribution strategies need to be strengthened and continued (Jadesimi & Okonofua, 2006). To reduce maternal mortality rates, global standards must be established according to evidence-based guidelines, more effective and affordable treatments, and feasible training materials that support health care workers (WHO, 2012). By increasing knowledge of the pathophysiology behind various risk factors, signs and symptoms leading to PPH, and pharmacological and non-pharmacological action, unskilled birth attendants will be more prepared for an emergency PPH situation. Implementation of an educational intervention in rural Abuja, Nigeria will improve the management of PPH.

**Purpose**

The purpose of this thesis is to design a best practice protocol for the education of unskilled birth attendants in developing regions of Abuja, Nigeria. The author will review the
literature surrounding PPH in developed and developing countries. Specific information about
the culture, traditions, and current practices surrounding maternal health in Abuja will also be
discussed. Educational strategies will then be presented in order to teach those who are assisting
with homebirths and lack supplies. With the additional distribution of an educational pamphlet,
birth attendants will have a future resource for PPH management techniques and will be more
prepared when assisting in deliveries. Literacy abilities will be taken into account.

Summary

In Chapter 1, the pathophysiology and background of PPH was briefly discussed. The
problem of increasing mortality rates in developing countries was highlighted and emphasized
the need for an educational intervention for those assisting in births. The United States has
resources that can be utilized through an informative protocol planned for unskilled birth
attendants. Relevant terms are defined in Table One for reference. An evidence-based review of
the literature on techniques to anticipate, prevent, and manage postpartum hemorrhage will be
presented in Chapter 2.
### Table 1. Relevant terms defined

<table>
<thead>
<tr>
<th>Terms:</th>
<th>Description:</th>
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<tr>
<td>Active management of third stage labor</td>
<td>The use of an uterotonic medication after delivery of the baby, controlled traction of the umbilical cord, and clamping the cord (Smith, Duell &amp; Martin, 2012).</td>
</tr>
<tr>
<td>Developing countries</td>
<td>Countries with a low living standard, a low industrial base development, and low Gross National Income compared to other countries (World Bank Group, n.d.).</td>
</tr>
<tr>
<td>Developed countries</td>
<td>Countries with a higher standard of living, industrial development, and Gross National Income (World Bank Group, n.d.).</td>
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<tr>
<td>Expectant management of third stage labor</td>
<td>No uterotonic used after the delivery of the baby, no cord traction, and variable cord clamping (Smith et al., 2012).</td>
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<td>Misoprostol</td>
<td>Misoprostol is a prostaglandin analog that is used for treatment of missed miscarriages, labor induction, and for prevention of gastric ulcers (WHO, 2008). This drug stimulates uterine contractions (WHO, 2008).</td>
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<tr>
<td>Postpartum hemorrhage (early and late)</td>
<td>Blood loss greater than normal, or greater than 500 ml within the first 24 hours after birth</td>
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<td>Postpartum Hemorrhage</td>
<td>(early) or after 24 hours (late) (Smith et al., 2012).</td>
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<td>Skilled birth attendants</td>
<td>Defined by the United Nations Population Fund (2004) “as an accredited health professional- such as a midwife, doctor or nurse- who has been educated and trained to proficiency in the skills needed to manage uncomplicated pregnancies, childbirth and the immediate post natal period and in the identification, management and referral of complications in women or newborns (p. 1).”</td>
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<tr>
<td>Third stage labor</td>
<td>Time of labor after the delivery of the baby to full delivery of the placenta with attached membranes (Smith et al., 2012).</td>
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CHAPTER 2

REVIEW OF LITERATURE

Chapter 2 provides a review of the literature on evidence-based clinical trials and studies on PPH. The literature review is comprised of the recommended treatments and techniques for managing PPH in environments with low resources. A review of maternal health in Nigeria and the management of PPH for women in that region in order to formulate conclusions specific to Abuja is presented. The information was gathered from PubMed and Ovid MEDLINE databases. The WHO was also used for relevant studies. A total of 33 articles were reviewed from multidisciplinary journals dated 2004 to 2013. The review was limited to maternal death and complications related to PPH. The evidence-based recommendations were derived from this exhaustive journal review with a focus on birth attendant management of PPH and education of birth attendants.

Evaluation of Birth Attendants

In developing nations, the need for a skilled health provider is high, but infrequently attained, due to the lack of health care settings, staff, and education. The lack of providers, and the inability of most women to seek or afford care leads to births occurring in the absence of trained attendants. It is possible for many different complications to occur during pregnancy and the birthing process; however, PPH is the most common cause of maternal death (WHO, 2012). For this reason, those assisting in home births need to become educated on the strategies to prevent and treat PPH. Many untrained birth attendants are unaware when PPH is occurring. The need for education and the capability of untrained birth attendants to learn interventions to implement will be examined. Studies from various developing settings will be reviewed in order to address current birth practices and feasible interventions for Abuja, Nigeria.
In a study by Prata et al. (2012), traditional birth attendants were trained to use Misoprostol and an absorbent delivery mat. The use of Misoprostol and the absorbent mat were tested among 77,337 births that took place in homes in rural Bangladesh (Prata et al., 2012). The purpose of the study was to examine traditional birth attendants’ knowledge, ability to retain the information, and changes in behaviors related to the management of PPH after the implemented training (Prata et al., 2012). Rangpur Dinajpur Rural Services (RDRS) trained 588, out of 696, field staff (Prata et al., 2012). After two days of training on Misoprostol administration and the use of the delivery mat, the birth attendants were given Misoprostol and a mat to add to their delivery kits (Prata et al., 2012). Through surveys and interviews, the birth attendants’ knowledge was tested prior to the training (Prata et al., 2012). Administration of the medication and use of the mat was assessed through interviewing the postpartum mothers (Prata et al., 2012). Additional knowledge was also analyzed after the training and implementation of skills (Prata et al., 2012). The study found that before training, 1% knew how to use the mat for estimated blood loss, while after training 90% knew how to use it (Prata et al., 2012). Out of 3016 mothers, 1280 had an RDRS birth attendant and 80% took or were given Misoprostol (Prata et al., 2012). Of the clients who took Misoprostol, 84% said they would use it in future pregnancies (Prata et al., 2012). The educational intervention was highly effective for the birth attendants and it improved the practice of drug administration and mat use during delivery. Adherence was also successful due to the retaining of information over 18 months of the study (Prata et al., 2012). Research reveals that community-based interventions for educating unskilled birth attendants are effective (Prata et al., 2012).

In a pilot study (Harvey et al., 2004) an evaluation of the competence of health care providers who attend clinic and hospital births in Benin, Ecuador, Jamaica, and Rwanda was
conducted. In this study, a doctor, nurse-midwife, nurse, traditional birth attendant, or relative are referred to as “providers” (Harvey et al., 2004, p. 207). While doctors and nurse-midwives are considered skilled birth attendants, defined as having the training necessary for management during normal deliveries and to manage or refer complications, no widespread study had been performed to assess their competence (Harvey et al., 2004). The evaluation of other providers, nurses and traditional birth attendants is also needed (Harvey et al., 2004). Nurses and nursing assistants are the type of attendant to most likely assist in a birth in Rawanda, Africa (Harvey et al., 2004). In an obstetric emergency, a nurse is the first responder and may lack the ability or time to refer a complication to a provider with higher skill (Harvey et al., 2004). Therefore, it is important to analyze the competency of skilled birth attendants and other providers so education may be implemented if needed (Harvey et al., 2004). To measure competence, the birth attendant’s knowledge was compared against the WHO guidelines. A 49 multiple-choice-question test was administered to 166 providers from 21 different facilities (Harvey et al., 2004). Five different skills were evaluated, using anatomical models (Harvey et al., 2004). Results revealed 55.8% of the multiple choice test questions were answered correctly and 48.2% of the skills were performed properly (Harvey et al., 2004). The results show a large discrepancy between standards of evidence based practice and level of competence of the health care professionals (Harvey et al., 2004). Education is necessary for unskilled birth attendants who are present during home births in order to improve competency and skill level.

To analyze the delivery of maternal care and educate clinical staff on implementing guidelines in the prevention of PHH, a study was conducted (Figueras et al., 2008). A multi-country education intervention was performed in five Latin American countries and within 17 hospitals (Figueras et al., 2008). The study was completed in two stages: a) using observation of
clinical records and b) implementing a study over 12 months, evaluating the changes after an education intervention and written guideline for the hospital (Figuera et al., 2008). After the initial instruction at teaching hospitals in Nicaragua, Peru, Guatemala, Argentina and the Dominican Republic, education was further extended to non-teaching hospitals in these countries (Figuera et al., 2008). The education program encompassed three months and was based on clinical-practice guidelines developed for each center (Figuera et al., 2008). The workshop included medicine, drug principles, theories of clinical practice guidelines, and how to implement and record them (Figuera et al., 2008). A follow up study analyzed how well the guidelines were adhered to in an actual delivery (Figuera et al., 2008). Prior to the guidelines, out of 2,247 pregnant women, 23.3% had active management of third stage and 22.7% had no prenatal care (Figuera et al., 2008). Active management of third stage increased to 72.6% at 3 months and 58.7% after 12 months (Figuera et al., 2008). The use of Oxytocin also increased to 85.9% of induced births and PPH decreased from 12.7% to 5% (Figuera et al., 2008).

Outcomes indicate that education interventions for health professionals during the completion of a clinical guideline can help improve health care quality and adherence to techniques (Figuera et al., 2008). With implementation of active management of third stage along with medicine administration, nurses and other providers were able to adhere to protocol and decrease PPH.

The need for education surrounding labor management is evident. Education for treatment of PPH in developing countries would be beneficial and successful in improving delivery outcomes. These studies reflect the success of instruction and adherence to new techniques for PPH management. The settings of the studies are similar to the developing setting of Abuja in relation to available supplies, patient population, and the number of skilled health
care workers. Teaching interventions for postpartum and complicated deliveries is a feasible method to decrease maternal death.

**Misoprostol**

Administration of an uterotonic medication during and after delivery is a leading treatment for PPH (WHO, 2012). Oxytocin is the first line medication for managing third stage labor and preventing blood loss during delivery (WHO, 2012). The use of Oxytocin in hospital settings is ideal. This drug must be refrigerated and it requires administration via injection (Prata, Gessessew, Abraha, Holston & Potts, 2009). Necessary storage and administration of Oxytocin render it infeasible for low resource settings (Prata et al., 2009). Therefore, other strategies or medications are needed that are cost effective, simpler to administer, and do not require refrigeration. Misoprostol is an alternative uterotonic drug that may be used as an alternative to Oxytocin. Misoprostol in administered orally under the tongue, it does not need refrigeration for storage and is less expensive than Oxytocin. The literature indicates the effectiveness, cost, and use of Misoprostol for PPH treatment.

In a clinical trial (Prata et al., 2009), the safety and feasibility of Misoprostol for PPH in home-based prophylaxis was evaluated. Through a field intervention trial, birth attendants in Ethiopia were trained to give 600 mcg of Misoprostol immediately after birth (Prata et al., 2009). Before the training, the birth attendants were interviewed and the results analyzed to develop an understanding of the knowledge and skill set they had previous to any intervention (Prata et al., 2009). It was found that bleeding went unmeasured during a delivery because it was seen as “expected” and as a “cleansing” (Prata et al., 2009, p. 90). As a part of the educational intervention, the attendants were trained to monitor blood loss along with vital signs and signs of weakness (Prata et al., 2009). The attendants were also taught to monitor the placenta for
complete, partial, or no detachment (Prata et al., 2009). If the placenta failed to deliver or fragments were not delivered, the protocol was to immediately refer and accompany the woman to a nearby health center (Prata et al., 2009). Of the 485 who took Misoprostol, 8.9% needed additional intervention compared to the 18.9% who did not take Misoprostol \((n=481)\) (Prata et al., 2009). Within the intervention group, a significantly smaller number needed additional referral compared to those outside of the intervention (Prata et al., 2009). The use of Misoprostol given to the mother directly after birth of the baby can reduce the need for additional intervention (Prata et al., 2009). The use of an oral uterotonic such as Misoprostol may be considered practical in a developing setting. Attendants can be trained to administer the medication and observe for signs of hemorrhage.

Winikoff et al. (2010) conducted a double blind trial to discover the effectiveness of sublingual Misoprostol versus Oxytocin as an agent to prevent PPH in women not exposed to Oxytocin during labor. The sample was taken from four hospitals in Ecuador, Egypt, and Vietnam (Winikoff et al., 2010). A total of 9348 women who were not treated with prophylactic Oxytocin had their blood loss measured after a vaginal delivery (Winikoff et al., 2010). The results were measured by the cessation of bleeding within 20 minutes and a blood loss of 300 ml or more after treatment (Winikoff et al., 2010). Of the sample, 978 had PPH and were randomly assigned to Misoprostol sublingual \((n=488)\), or Oxytocin treatment \((n=490)\) (Winikoff et al., 2010). Active bleeding for at least 20 minutes was controlled with treatment in 90% of the Misoprostol group and 96% of the Oxytocin group (Winikoff et al., 2010). Blood loss of 300 ml occurred in 30% of the Misoprostol group and 17% of the Oxytocin group. None of the women died or needed hysterectomies (Winikoff et al., 2010). Misoprostol was found to be a suitable first-line treatment for PPH in an environment where Oxytocin is not practical (Winikoff et al.,
Although Oxytocin should be used in hospital settings in developing countries as the first line agent, Misoprostol is practical and can be use in a developing setting (Winikoff et al., 2010). The complicated parameters of Oxytocin storage/administration render it unusable in low resource settings (Sanghvi et al., 2009). This is also true with Ergometrine (another uterotonic drug), which requires storage in a dark environment and has common adverse effects (Sanghvi et al., 2009). This leaves Misoprostol as the only oral tablet form that can be administered without a skilled provider for PPH prevention in home births (Sanghvi et al., 2009). A study (Sanghvi et al., 2009) tested the safety, effectiveness, and acceptability of Misoprostol using a community-based education trial in Afghanistan. The most effective treatment for PPH is the use of a skilled birth attendant to actively manage third stage labor (Sanghvi et al., 2009). This involves the use of an uterotonic after delivery of the baby (Sanghvi et al., 2009). In the trial, 3187 women participated and 2039 of them were in the intervention group (Sanghvi et al., 2009).

Acceptability of Misoprostol was examined through postpartum interviews and focus groups (Sanghvi et al., 2009). The interviews were conducted through postpartum home visits (Sanghvi et al., 2009). During the first visit, the women were provided with education on birth readiness, recognition of danger signs, and appropriate protocol in the case of a complication (Sanghvi et al., 2009). The women and their support persons were educated on Misoprostol administration and use (Sanghvi et al., 2009). If the women agreed to take Misoprostol following birth, after their second visit they received a package of three tablets with instructions (Sanghvi et al., 2009). From the distributed Misoprostol, 94% took it after their baby was delivered (Sanghvi et al., 2009). Of 1421 women who took Misoprostol, all (100%) took the medication correctly, and 92% said they would use it in their next pregnancy (Sanghvi et al., 2009). The rates of adverse reactions to Misoprostol were significantly low (Sanghvi et al., 2009). Interview questions
focused on the acceptance and use of Misoprostol after delivery of the baby but questions also included incidence of PPH (Sanghvi et al., 2009). Women who took Misoprostol were over six times less likely to report abnormal amounts of bleeding compared to those who did not take Misoprostol (Sanghvi et al., 2009). The administration and education of Misoprostol in this rural area was found to be effective and safe (Sanghvi et al., 2009).

Misoprostol is cost effective and a less expensive drug of choice, compared to Oxytocin. According to a study (Bradley, Prata, Young-Lin, & Bishai, 2006), the use of Misoprostol could save $115,335 while preventing 1647 cases of severe PPH. The study included the cost of referrals, IV therapy, and transfusions (Bradley et al., 2006). An analysis to evaluate cost effectiveness was completed by modeling hypothetical cohorts of 10,000 women (Bradley et al., 2006). One cohort received traditional birth attendant identification of PPH and administration of Misoprostol and the other cohort used standard treatment of Oxytocin administration (Bradley et al., 2006). The cost of Misoprostol ranges from 0.14 – 2.51 in United States dollars compared to the Oxytocin range of 3.6-23.9 in United States dollars (Nakintu, 2001). Misoprostol has the potential to prevent PPH and save a significant amount of money (Bradley et al., 2006).

To examine the use of Misoprostol in Nigeria, a study was conducted using a population in Abuja. This study by Fawole et al. (2011) assessed the outcome of Misoprostol as a sublingual tablet for PPH. Six hospitals in Nigeria were used to implement Misoprostol use. Each hospital employed a standard protocol for managing third stage labor (Fawole et al., 2011). In addition to the uterotonic, Oxytocin, which was administered as part of hospital protocol, the women received two tablets of sublingual Misoprostol or a placebo (Fawole et al., 2011). The outcome, either being affected by PPH or unaffected, was measured by blood loss of 500 ml within one hour of taking the tablets (Fawole et al., 2011). Blood loss greater than 500 ml was
recognized as PPH (Fawole et al., 2011). The control group received a placebo tablet, and blood loss was also measured (Fawole et al., 2011). From the sample, 672 women received Misoprostol and 673 received the placebo (Fawole et al., 2011). Results of the study showed that use of Misoprostol in third stage labor reduced blood loss, compared with the placebo (Fawole et al., 2011). Severe PPH was reduced by 44% when Misoprostol was used (Fawole et al., 2011). Misoprostol use showed small side effects, such as shivering (Fawole et al., 2011). The use of Misoprostol lowered the rates of manual removal of the placenta and hysterectomy and decreased the need for additional uterotonic use (Fawole et al., 2011). Misoprostol has been found to help prevent PPH and is a significantly easier drug to administer in an environment where Oxytocin administration is infeasible.

Nigeria uses numerous plants and traditional techniques when managing PPH (Tripathi, Stanton & Anderson, 2013). In a study, the use of herbs increased the risk of adverse outcomes, such as uterine rupture and meconium aspiration, during labor (Tripathi et al., 2013). With the option of Misoprostol for PPH management, women can be educated on the use and effects of this tablet in contrast to herbal medicine. Although some may choose to not use Misoprostol because of unfamiliarity with the medication, with education, many may decide to use it.

**Non-pharmacological Treatment**

In underdeveloped settings where birth assistants lack supplies and medication, additional treatments need to be implemented. Non-pharmacological options are available for the prevention and management of PPH. The following literature addresses the use of alternative interventions that can be taught to those assisting in home births in Abuja.

A clinical study (Heinemann, Sellick, Rickard, Reynolds, & McGrail, 2008) examined the accuracy and reliability of automated blood pressure machines compared to manual cuffs.
The reason for including this study in the review of literature is its relevance for possible interventions for preventative care using manual cuffs in developing countries. Birthing assistants can be educated on the significance of a blood pressure related to blood loss and become educated on how to monitor the blood pressure using a manual cuff. The convenience sample selected from a hospital in Victoria, Australia consisted of 63 stable, lucid, English-speaking patients over 18 years of age (Heinemann, et al., 2008). The randomized clinical trial consisted of two nurses measuring blood pressures with manual and machine cuffs. A pilot study was conducted by measuring two different nurses’ by comparing their blood pressure measurements. One nurse used an automatic cuff and the other nurse used a manual cuff to collect blood pressure readings (Heinemann, et al., 2008). The results of the trial indicated that the automatic systolic and diastolic readings were significantly lower than those taken manually (Heinemann, et al., 2008). When using the Dinamap 8100 (the automatic blood pressure machine tested), it can be used with some degree of confidence for systolic pressure, but must be used with caution while taking diastolic blood pressure (Heinemann et al., 2008). The results indicate accuracy of manual blood pressure cuff readings over automatic readings. Manual blood pressure monitoring techniques can be used for laboring women who have limited access to automated machines. Manual, cuffs may be considered reliable devices for health care professionals to use in developing regions.

A trial (Gulmezoglu et al., 2012) using 16 hospitals throughout Argentina, Egypt, India, the Philippines, South Africa, Uganda, Kenya, and Thailand assessed the elimination of controlled cord traction in active management of third stage labor without hemorrhage occurring. Those with limited knowledge of the birthing process may perform the use of cord traction incorrectly (Gelmezoglu et al., 2012). With education on the omission of this technique,
postpartum hemorrhage may be reduced (Gelmezoglu et al., 2012). WHO recommends use of an uterotonic after the delivery of the baby, followed by controlled cord traction, and a delay of clamping the cord (Gelmezoglu et al., 2012). Uterine massage is also included in the WHO guidelines (Gelmezoglu et al., 2012). This is compared to expectant management of the third stage in which the cord is cut early (Gelmezoglu et al., 2012). The procedure of cord traction includes a birth attendant pushing the fundus of the uterus upwards while pulling on the umbilical cord to retract the placenta (Gelmezoglu et al., 2012). Cord traction must only be practiced by those who are trained to perform the manual skill without increasing the risk of retained placenta (Gelmezoglu et al., 2012). The findings show that cord traction does not have a significant effect on the amount of blood lost and therefore may be eliminated from the delivery method. Birth attendants would then be able to focus on administration of an uterotonic, late cord clamping, or uterine massage. This study focused on the simplification of active third stage management (Gelmezoglu et al., 2012). Women received either a simplified package that included the use of gravity without cord traction ($n=11861$ women) or a full package group that included cord traction ($n=11820$ women) (Gelmezoglu et al., 2012). Findings indicated that only 6% of the women using the simplified package, of gravity only, needed cord traction (Gelmezoglu et al., 2012). The absence of cord traction has little effect on severe PPH risk, and therefore active management of the third stage can be completed with gravity only (Gelmezoglu et al., 2012).

An additional non-pharmacological technique for treating PPH is manual removal of the placenta that has been retained in the uterus. Retained placenta is a common cause of PPH (Beekhuizen, Lotgering, Pembe & Fauteck, 2011). Misoprostol treatment for retained placenta was tested in a study (Beekhuizen et al., 2011) but found to be an insufficient treatment. Manual
removal of the placenta is the treatment for removing a placenta that has failed to naturally pass following the delivery of the baby (Beekhuizen et al., 2011). A trained birth attendant ideally performs manual removal in a facility where anesthesia is available. A high risk of infection is associated with manual removal and therefore should be performed in the most sterile environment available (Beekhuizen et al., 2011). Unskilled birth attendants in Abuja should be educated on retained placenta and manual removal in emergency situations (Beekhuizen et al., 2011). In these emergency situations manual removal of the placenta may be the last line of treatment. Following the manual removal of the placenta, additional non-pharmacological techniques, such as uterine massage, should be used.

In a study (Hofmeyr, Hany Abdel-Aleem, and Mahmoud Abdel-Aleem, 2008) the use of uterine massage for preventing PPH was evaluated. When PPH occurs prior to 24 hours after birth, the main cause of bleeding is uterine atony (Hofmyer et al., 2008). The uterus does not contract again after delivery. Methods of massage can be used to reduce hemorrhage when this event occurs (Hofmyer et al., 2008). In this trial, 200 women were assigned to uterine massage or no uterine massage after delivery (Hofmyer et al., 2008). Massage of the uterus was provided every 10 minutes for 60 minutes (Hofmyer et al., 2008). Results showed that the number of women suffering from a blood loss of more than 500 ml was halved and the need for uterotonics was reduced by 80% in the group receiving the uterine massage (Hofmyer et al., 2008). Uterine massage was shown to be an effective technique for preventing PPH in this small study. With simple instruction, the uterine massage technique can be taught and applied to unskilled birth attendants. PPH is the leading cause of maternal death in Sub-Saharan Africa due to the low resources in the area (Hofmyer et al., 2008). In developing settings, anemia, poor nutrition; and malaria may increase the effects of PPH (Hofmyer et al., 2008).
In addition to uterine massage, another non-pharmacological method for PPH prevention is immediate breastfeeding after the baby is delivered. In a study (Sobhy & Mohamed, 2004), a sample of 100 pregnant women was divided into two groups. One of the sample groups (n=50) had their newborns breastfeed directly after delivery, and the other sample group (n=50) waited two hours after delivery before breastfeeding (Sobhy & Mohamed, 2004). The clinical trial tested whether or not immediate breastfeeding after delivery decreased the amount of blood lost in the fourth stage of labor (Sobhy & Mohamed, 2004). The fourth stage of labor is defined as the period immediately after delivery of the placenta through six weeks postpartum (Sobhy & Mohamed, 2004). The mothers were included in the study if they had no complications prior to delivery, gave birth to full term babies, had normal breasts with protruding nipples, and if the baby had no congenital anomalies that may interfere with breastfeeding (Sobhy & Mohamed, 2004). The women received no stimulants to accelerate or slow down the birthing process (Sobhy & Mohamed, 2004). An interview was used to gather data on age, education, occupation, and antenatal care of the women (Sobhy & Mohamed, 2004). Data were collected during and after delivery in regard to blood loss, uterine consistency, fundal level, time of breastfeeding, and number of feeds (Sobhy & Mohamed, 2004). The immediate breastfeeding group fed for 15-minute periods, 2-4 times throughout the first 2 hours (Sobhy & Mohamed, 2004). The control group had a rest period for 2 hours before initiating breastfeeding (Sobhy & Mohamed, 2004). The amount of blood lost was calculated through the weighing of perineal pads (Sobhy & Mohamed, 2004). This study was done over a 5-month period (Sobhy & Mohamed, 2004). Results showed that 82% of those who practiced immediate breastfeeding had a firm uterus in the first 2 hours after birth compared to the 54% of those who breastfed later (Sobhy & Mohamed, 2004). A decrease in blood loss, losing less than 200-250 ml, was found in
those who breastfed immediately compared to the 300 ml or more blood loss in those who waited to breastfeed (Sobhy & Mohamed, 2004). Breastfeeding immediately after birth stimulates the uterus to contract (Sobhy & Mohamed, 2004). This is a no cost method of lowering PPH blood loss. Methods such as breastfeeding and fundal massage are significant techniques that can be used in developing areas at no expense.

The use of an uterotonic is the recommended treatment of PPH, but emphasis must be placed on non-pharmacological techniques in case of situations where uterotonic use is unavailable. In the underdeveloped regions of Abuja Nigeria, birth attendants need to be educated and trained on alternative techniques to manage hemorrhage. With the implementation of manual removal of a retained placenta, uterine massage before and after the placenta is delivered, and immediate breastfeeding after delivery and elimination of cord traction, severe postpartum bleeding from uterine atony can be reduced.

**Summary**

The recognition of the need for management of PPH in developing regions has led to the study of methods for hemorrhage reduction. Home birth assistants in developing areas are in need of education consisting of warning signs of severe bleeding, use of uterotonics, and other non-pharmacological interventions for the prevention and treatment of PPH. The use of Misoprostol is seen as more feasible than Oxytocin in settings with untrained attendants and low resources. This is due to the simple storage and administration, along with the cost effectiveness of the medication. Monitoring blood pressure with a manual blood pressure cuff will allow for signs of excessive blood loss to be revealed. Non-pharmacological techniques for managing PPH can be taught to unskilled birth attendants and mothers where resources and health care are
scarce. The literature reviewed represents findings that support the various management options for PPH in a developing setting.
CHAPTER 3

A BEST PRACTICE PROTOCOL: AN EDUCATIONAL PAMPHLET FOR BIRTH ATTENDANTS MANAGING PPH

The purpose of this thesis is to develop an educational intervention for unskilled birth attendants in rural Abuja, Nigeria. The information on managing PPH will be presented to unskilled birth attendants through verbal explanation, educational demonstrations and an educational pamphlet. The pamphlet will include techniques to recognize PPH and manage blood loss with Misoprostol and non-pharmacological methods. Chapter 3 presents techniques for recognizing excessive blood loss due to PPH and management of PPH in a developing setting. This chapter also presents a pamphlet (Appendix A) comprised of the proposed educational information for unskilled birth attendants. Using a pamphlet that presents techniques for recognizing and managing PPH via descriptions and diagrams is a feasible way to educate unskilled birth attendants in rural Abuja, due to the inexpensive printing cost and the ability to use pictures alongside descriptions.

**Education Pamphlet**

The Global Health Outreach (GHO) organization, consisting of doctors, nurses, pharmacists, medical students, and nursing students, will be distribute the pamphlets, and present the techniques for recognizing and managing PPH. GHO is part of the Christian Medical and Dental Association and travels to developing cities all over the world to provide health care and love. The author has traveled with GHO on an outreach mission recently in order to understand the logistics of the trip. The author was able to work in a clinic and experience how GHO organizes their outreach. The pamphlet distribution and educational intervention will be based on the knowledge from the author’s experience. GHO has planned future mission trips to rural
areas in Abuja, Nigeria and is partnered with a church in the area. Additional information on the
distribution and implementation of the education and pamphlet will be presented in Chapter
Four.

A review of the literature, presented in Chapter 2, provides evidence for PPH prevention
and management techniques. The practice of using non-pharmacological techniques, is evidence
based and carries an expectation for improvement of PPH in developing settings. The techniques
that will be presented in the education pamphlet include evaluation of blood loss by a visual
estimate, hand massage of the fundus after placental delivery, examination of the placenta after it
is expelled, and immediate breastfeeding after the delivery of the baby. The amount of blood lost
during and after delivery is indicative of a hemorrhaging episode (Kauser et al., 2012). Blood
loss greater than 500 ml during and after a vaginal delivery indicates a PPH (Kauser et al., 2012).
Massaging the fundus after the placenta has been delivered stimulates the uterine muscles and
blood vessels to contract and stop bleeding (Hofmyer et al., 2008). One cause of PPH is retained
placenta (Beekhuizen et al., 2011). Examination of the placenta for any noticeable pieces
missing can identify if placenta fragments are still attached to the uterine wall, preventing the
uterus from contracting effectively (Beekhuizen et al., 2011). Breastfeeding releases natural
oxytocin in the body and stimulates contractions (Sobhy & Mohamed, 2004). Information
regarding the use of the uterotonic medication, Misoprostol, instead of herbal medicines will also
be included. Herbal medicines that are often used in Nigeria for uterotonics can cause uterine
rupture and meconium aspiration by the baby (Tripathi et al., 2013). The effectiveness of
administration of an uterotonic drug after placental delivery, will be incorporated with the non-
pharmacological methods of maintaining uterine tone. The uterotonic Misoprostol, in
comparison to Oxytocin, is a less expensive, more feasible drug to administer, due to the route of
oral administration and simple, nonrefrigerated storage (Prata et al., 2009). The administration of Misoprostol causes uterine contractions that lead to cessation of bleeding after the baby has been delivered (WHO, 2012). The educational pamphlet (see Appendix A) provides education on these PPH prevention and management techniques. Unskilled birth attendants and expectant mothers will receive a pamphlet in Abuja, Nigeria. The methods and feasibility of distribution will be discussed in Chapters 4 and 5.

**Recommendations for Abuja, Nigeria**

Implementers of this intervention will distribute the education pamphlet in the rural area of Abuja, Nigeria where skilled birth attendants and access to a hospital during delivery are rare and unskilled birth attendants are often assisting in births. Unskilled birth attendants have not had certified training and education on the birthing process. The author compiled the content of the pamphlet after extensive review of the literature. Illustrations in the pamphlet are extracted from the WHO Midwifery Education Module (2008). Illustrations are a significant part of the pamphlet due to low literacy rates in Nigeria (Bajwa & Bajwa, 2012). Illustrations that are linked closely to verbal or written text can increase the adherence to the information of health education (Houts, Doak, Doal, & Loscalzo, 2006). The pamphlet was designed to be visually attractive, but structured with a simple layout, appropriate language (English), and reading level. English is the predominant language spoken in this region. Educational ideas were modeled after the WHO Midwifery Education Module (2008). When the pamphlet is distributed in clinics throughout the community, verbal and visual education will also be provided. Reading material, verbal education and visual demonstration will all be used to ensure understanding of the PPH prevention and management techniques.
In picture 1 of the pamphlet, the demonstration of blood loss is described. Visual demonstration will be presented in the clinic by filling a 1-liter bottle halfway, or a 500 ml bottle full with red artificial colored liquid. The blood loss of greater than 500 ml will be explained, and then demonstrated by pouring the liquid onto a blanket. Women will be told that more blood than this is not normal and is an indicator of PPH. Additional verbal education and physical demonstration will be given on uterine massage, urinating after birth, breastfeeding directly after birth, examination of the placenta with a demonstration model, explanation of manual removal of the placenta, and warning of the use of herbal medicines. Misoprostol tablets will be distributed to those identified as birth attendants. Education of Misoprostol use, action, dosage and method of intake will be provided. Although many women plan to deliver at home, women will also be educated on the extreme importance of delivering in a hospital environment if they are at risk (have had any complications or unusual symptoms throughout anytime of their pregnancy) of complications during labor. If it is possible for the women at risk to deliver in a higher resourced setting than that would be the recommended delivery environment.

**Summary**

Chapter 3 explained the education intervention, including a description of the content of the educational pamphlet. The pamphlet is one form of material that will be distributed to women and those who identify as birth attendants. A verbal explanation of the information as well as a demonstration of techniques will also be provided. These different forms of education are important in order for women to fully comprehend the techniques to prevent, recognize and manage PPH. Distribution of the educational pamphlet, along with additional teaching on PPH, may reduce the number of maternal deaths from PPH. Unskilled birth attendants will be able to identify the signs of PPH and learn skills to manage blood loss. The pamphlets can be kept for
reference and shared with others in the community. Distribution of Misoprostol may discourage the use of dangerous herbal uterotonics.

The importance of obtaining birthing assistance in a health care facility will be emphasized for women who have had complications or unusual symptoms during their pregnancy. The educational pamphlet will not provide enough education in cases that require surgical intervention or intensified care, but it will increase awareness of PPH. Increased awareness may lead to improved outcomes due to the ability to identify excessive bleeding and understand ways to manage it. The logistics and feasibility of the education strategy and distribution will be discussed in more detail in the following chapter.
Appendix A

**POSTPARTUM HEMORRHAGE**

- **Massage the stomach over the uterus**
  - Picture 3

- **Press down and find the top of the uterus. It will be around the belly button. Massage the top of the uterus while supporting the bottom with the other hand. Massaging the uterus helps it to contract and start to return to the size it was before pregnancy. When the uterus contracts, the bleeding stops. You will feel it become hard as you massage.**

- **Stop bleeding after delivery**

- **Breast-feed right after delivery**
  - Breastfeeding just after the baby is born will help the bleeding to stop. Breastfeeding causes a natural hormone to increase in the body and makes the uterus contract. The contractions will stop the bleeding.

- **Empty your bladder**
  - Bleeding may continue if the bladder is full of urine and pushing against the uterus. Go to the bathroom after delivery.

- **How much blood is too much?**
  - Use half of a 1-liter bottle to practice looking at blood loss. More than 500 ml of blood is too much blood loss.
Look at the placenta

When the placenta is delivered after the baby, it should be in one piece. There will be a rough side to the placenta, where it was attached to the uterine wall, and a smooth side where the umbilical cord is attached. Look at the rough side to see if any pieces are missing. Pieces of the placenta may be left inside the uterus. If this happens, the uterus thinks the placenta is still attached and will not contract. Bleeding will continue until all the pieces are removed.

Picture 6

Taking out the placenta or pieces of the placenta

THIS TECHNIQUE SHOULD BE DONE IN A HOSPITAL SETTING
WASH YOUR HANDS WITH SOAP
WEAR GLOVES

To remove parts of the placenta that were left behind, first hold the top of the uterus from the outside like you were massaging. With the other hand, enter into the vagina with the back of your fingers and hand on the bottom wall. Feel up the wall for fragments of placenta with two fingers.

WARNING: Using herbal medicines can be dangerous. Herbal medicines like, imbelikisane, cause the uterus to rupture and can hurt the baby.

INSTEAD: Use the medicine misoprostol without herbal medicine. Give two pills by placing them under the tongue, after the placenta has been delivered. It will cause contractions that stop bleeding.
Chapter 4 presents the hypothetical implementation of the educational demonstrations and distribution of pamphlets in a rural area of Abuja, Nigeria. The culture and environment of Abuja is taken into account for implementation. Unskilled birth attendants and expectant mothers of Abuja are the target population for the distribution of information. The acceptance of the information can depend on the presentation. In order to establish acceptance, Everett M. Roger’s (2003) Theory of Diffusion of Innovations is the framework. Roger’s (2003) theory explains how an intervention or idea is accepted and diffused into a population. Four of the five stages of Rogers’s theory, knowledge, persuasion, decision, and implementation, will be used to describe the distribution strategy of this intervention (Everett & Rogers, 2003). The fifth stage, confirmation, outlines the evaluation of short-term and long-term goals. These five stages outline the methods of distribution, expected acceptance and expected adherence of the intervention and are discussed in detail below.

Prior to Implementation

This first stage assesses the knowledge level among targeted women in the community regarding postpartum hemorrhage, its significance, and current management techniques. In the knowledge stage, the population or individual receiving the idea seeks information about the idea followed by how and why the idea would work (Everett & Rogers, 2003). An individual must be aware of the need for the innovation, understand how to use the innovation properly, and recognize that the innovation is attainable (Everett & Rogers, 2003). For this particular innovation or idea, unskilled birth attendants and mothers must acknowledge that complication by postpartum hemorrhage is a potential problem.
This recognition may come from unskilled birth attendant’s experience with postpartum hemorrhage, lack of resources (medications, blankets, gloves, etc.) during a birth, and women’s death due to PPH in the village. The recognition factors of experience, death, and demand for resources may influence the acknowledgment of a need for intervention. Assessing the knowledge of postpartum hemorrhage will be extracted from informal communication, or the communication among the village people and health care workers (Everett & Rogers, 2003).

GHO spends time organizing and administering a clinic in the community they are helping. They also take time to understand the culture of their mission field and then form relationships with the local inhabitants. This relationship building will allow insight to current birthing practices and knowledge of health concerns.

**GHO Partnership**

GHO is partnered with a church organization in Abuja, Nigeria. Prior to planning a trip to set up a clinic, GHO must establish their international partnership. The church partnership then provides transportation, the building for the clinic, materials such as chairs, tables, examination curtains, as well as additional volunteers. Medical and nursing professionals from the partnership’s region also work with GHO to provide more care for those who seek health attention at the clinic. Volunteers wishing to obtain experience abroad and in developing countries fund GHO. Each volunteer provides funding for their trip and the funding covers travel cost, food, and housing, and the funds contribute to the cost of additional medications and supplies for the clinic. The trip to Abuja, Nigeria costs $1,995 plus airfare (CMDA, 2014).

GHO is a not for profit organization and the doctors work on a pro bono basis. GHO creates a medication formulary prior to each trip. These medications are either donated or purchased by the organization and are the most helpful intervention provided (A. Koon, personal
communication, Dec 13, 2013). If medications are donated, they must have an expiration date of greater than one year out from the date of the trip (A. Koon, personal communication, Dec 13, 2013). For example, medications for a trip in May 2014 will need an expiration date of at least May 2015 in order to be used for the mission. The Misoprostol and additional supplies will also be gathered from these contributors (A. Koon, personal communication, Dec 13, 2013).

Misoprostol is estimated to cost from $0.80-$1.00 a pill (200 mcg) and is less expensive when bought in bulk (Misoprostol recommended dosage guidelines, 2012). A dose of 200 mcg is recommended by the WHO for prevention of PPH (WHO, 2011). Each birth attendant will receive 15 misoprostol tablets, and is estimated that 30 birth attendants will be supplied. This is estimated to cost $450.00 for the misoprostol tablets. The main focus of the intervention will be on the non-pharmacological methods and education of the birthing process.

Prior to the distribution of the pamphlet, health professionals and the church staff partnership receive a copy of the pamphlet to approve acceptability for the community. Partnering with those in Abjua prior to implementation assists in the persuasion method discussed in Roger’s theory (Everett & Rogers, 2003). Persuasion of the women to accept the education and methods of PPH management continue into the implementation stage. Literacy levels are discussed with the partners, and translations of the pamphlet from English to other common languages of the community are done through the partner’s translators. Orem’s self-care deficit nursing theory was used to evaluate the education materials (Wilson, Mood, Risk & Kershaw, 2003). Orem’s theory assists in “the conceptual framework in the development, design, selection, an evaluation of appropriate written patient education materials patients with low literacy skills” (Wilson et al., 2003, p. 1). For those who are illiterate, instruction via oral communication and pictures will be used. Currently, most health information is produced at a
tenth grade reading level (Plimpton & Root, 1994). Over 40% of the audience in Nigeria is unable to read at this level and therefore a pamphlet must be designed for a third grade to sixth grade reading level (Plimpton & Root, 1994). Oral instruction must also be clear and concise in order for the audience to understand the message (Plimpton & Root, 1994). Nurse and student demonstrators are trained to use simple and short words to describe the pathophysiology of the birthing process and PPH management skills.

The Clinic

The clinic site will be located at a church in Abuja, which the Christian Medical and Dental Association (CMDA) Nigeria partners with (GHO, 2014). The CMDA Nigeria partnership provides additional doctors, students and volunteers from the community to assist in the clinic. Clinic days are advertised through word of mouth and announcement at the church. Past clinic experiences have been very well attended with over 5000 patients during the two week period (GHO, 2014). The clinic is organized with a station for triaging, which allows for patient division based on health concerns.

A demonstration table for instruction on fundal massage, bleeding measurement, and medication education will be set up in the clinic. Pamphlets will also be available at the table. Individuals from the community who attend the clinic will be triaged by nurses and students. At this time, individuals will be asked if they have been involved in a birthing process or have given birth before. If they have, they will be sent to the PPH management table. Demonstrators at the table provide education about PPH management and distribute the pamphlet. Demonstration of fundal massage, examples of blood loss, examination of the placenta, and verbal education on the importance of urination and breast-feeding directly after delivery will also be provided. Placenta and fundus models will be purchased prior to the trip from “Child Birth Graphics”.
Women will be able to practice on the models and ask questions. Individuals from the community who claim to assist in births (when asked in triage) will be sent to a doctor in order to receive Misoprostol. The mission team will provide Misoprostol instruction and pamphlets.

Roger’s decision stage occurs at this time and the proposal, brought forward by the implementers, is officially accepted or rejected (Everett & Rogers, 2003). The targeted audience shows interest and seeks further information during the implementation stage (Everett & Rogers, 2003). The stages of the implementation are displayed in Table 2 along with a cost evaluation of supplies needed for this proposed intervention.

Table 2

<table>
<thead>
<tr>
<th>Stage of implementation</th>
<th>Description</th>
<th>Cost estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage one</td>
<td>12 Individuals from GHO Demonstration models (Childbirth Model Set: Pelvis, Fetal doll, Perineum, and Placenta) from Child Birth Graphics (Bolane).</td>
<td>Provide approximately $1,995.00 each ($23,940.00) $190.05</td>
</tr>
<tr>
<td>Stage two</td>
<td>Implementation of education Demonstration at clinic</td>
<td>No cost</td>
</tr>
<tr>
<td>Stage three</td>
<td>Distribution of Misoprostol</td>
<td>$450.00 for the Misoprostol tablets</td>
</tr>
<tr>
<td>Stage four</td>
<td>Evaluation of acceptance via non-formal interview</td>
<td>No cost</td>
</tr>
</tbody>
</table>
Evaluation

During the final confirmation stage, individuals are evaluated for acceptance of the educational intervention. Evaluation of the Abuja women’s acceptance occurs after each educational demonstration. Acceptance is evaluated through a non-formal oral questionnaire. Women are asked if they understand why too much bleeding can occur during birth, if they understand how to tell if there is too much blood, and if they are able to describe techniques that can be utilized during every birth to manage PPH. The numbers of women who participate and listen to the educational intervention are recorded. The acceptance is also recorded using a scoring system of numbers 1-3. The woman receives a score based on the number of criteria she understands or questions she correctly answers: 1) the reason why too much bleeding can occur, 2) how to identify too much blood loss, and 3) description of management techniques. Throughout the five days of the clinic, the scores are recorded and compared.

The attainment of a score of three by each woman is the short-term goal for each day of the intervention at the clinic. Evaluation will also occur annually when GHO returns for a clinic. It is likely that the same individuals return each time GHO provides a clinic, due to the familiarity with the GHO organization and the additional variety of medical care provided. Women will be asked to return to the church or clinic annually. This return is probable due to the general GHO acceptance in prior trips and the Abuja-community continual involvement. Returning women will be asked the three prior evaluation questions and if they have used any of the management techniques. The long-term goal is that women report successful use of the management techniques and a repeated score of three for the question evaluation.
Recommendations

Additional in depth study on the mortality rate in Abuja, Nigeria is recommended. Further study of the cultural birthing techniques that are used and accepted along with current PPH management is recommended. The implementation of Misoprostol use will need to be evaluated in this specific population. Strengths of this intervention include the low cost intervention and the GHO partnership use. A limitation is the inability to evaluate appropriate Misoprostol use and outcome. The successes of the management techniques to stop PPH are difficult to evaluate. Further research and long-term studies will need to be conducted to determine the effectiveness of the techniques on maternal outcomes. Further studies are also needed to apply this proposed intervention to other populations.

Summary

The purpose of this thesis was to describe the educational intervention for PPH management in developing countries, specifically Abuja, Nigeria. The intervention was introduced through evidence-based literature and the need for PPH management in developing countries was described. The GHO organization was introduced as the implementer of the intervention. The education pamphlet was displayed and the management techniques were described. The cultural acceptance and understanding techniques for the intervention were explained. Everett M. Roger’s (2003) Theory of Diffusion of Innovations was used in part with the implementation process. Evaluation of the intervention was based on the target population’s acceptance of the intervention.
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