

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 Background Information

More than 350,000 women die annually from complications during pregnancy or childbirth, almost all of them, 99 per cent occurring in developing countries including Zambia (WHO, 2012). The maternal mortality rate is declining slowly, even though the vast majority of deaths are avoidable. In the Sub-Saharan Africa, a woman's maternal mortality risk is 1 in 30, compared to 1 in 5,600 in the developed regions (WHO, 2012).

Zambia is a landlocked country in Sub-Saharan Africa with a population of 13 million (51% female and 49% male). Its average population growth rate is 2.8%. Total fertility rate is high at an average rate of 6.2 children per woman. Zambia is among the countries with the highest maternal and child health mortality levels in the world. Although infant and maternal mortality rate have been declining over the years from 95 per 1000 live births in 2002 to 70 in 2007 and 729 per 100,000 live births in 2002 to 591 per 100,000 live births in 2007 respectively, the mortality rates are still among the highest in the world (ZDHS, 2007).

There was also a reduction in the Under-five Mortality Rate (U5MR) from 168 per 1000 live births in 2002 to 119 in 2007. Although neonatal deaths constitute approximately half of the proportion of infants who die, the reduction in neonatal mortality remains insignificant, from 37 per 1000 live births in 2002 to 34 in 2007, leading to concerns of poor peri-natal care in the country. While significant improvements have been reported over the past 10 years and the gains in mortality reductions acknowledged by the Zambian Government, the prevailing rates are still unacceptably high, and of major concern to the health sector (MOH, National Strategic Health Plan, 2011 to 2015).

Mkumba (2005), states that there are direct and indirect causes of maternal morbidity and mortality. The indirect causes are the pre-existing diseases that are aggravated by pregnancy and are attributed to diseases such as malaria, anaemia, malnutrition, sexually transmitted infections and HIV and AIDS. The direct or obstetric causes of maternal morbidity and mortality are attributed to eclampsia, sepsis, obstructed labour, ruptured uterus and postpartum haemorrhage. Postpartum haemorrhage (PPH) causes more morbidity and mortality.

Mkumba (2005), further says that most of the obstetric complications such as postpartum haemorrhage cannot be predicted; the survival of the woman depends on the treatment she receives. However, when postpartum haemorrhage occurs, death can be prevented. It is important, then, that those who develop postpartum haemorrhage have the means to access and receive prompt treatment at a health facility with basic or comprehensive emergency obstetric care (EmOC) equipment. In low-income countries, equipment are mostly not available, especially the non-pneumatic anti-shock garment (NPASG) which prevents shock in haemorrhaging women. Therefore, health care providers who care for women during pregnancy, labour and delivery should give the women all the necessary information on how to prevent postpartum haemorrhage. No matter where they live, women need to access information and care that keeps them healthy and safe during the birthing process. Women in need of this service should be referred promptly to the nearest health facility with qualified midwives. Prompt referrals and action will help lower maternal and infant mortality rates which stand at 591 per 100, 000 live births and 70 per 1,000 live births respectively (CSO, 2007). According to the 2007 Zambia Demographic and Health Survey (ZDHS 2007), Maternal Mortality Ratio (MMR) reduced, from 729 deaths per 100,000 live births in 2002, to 591 in 2007, Under-Five Mortality Rate (U5MR) reduced from 168 per 1000 live births in 2002, to 119 in 2007, and Infant Mortality Rate (IMR) from 95 to 70, respectively. Zambia is facing a critical shortage of qualified midwives to help in the improvement of delivery of care to pregnant women. Skilled care at delivery has increased across all developing regions. However, in some countries, and in sub-Saharan Africa as a whole, where maternal mortality is highest, delivery care has not improved significantly.

### **1.1.1 Overview of Postpartum Haemorrhage**

Postpartum haemorrhage is one of the complications of pregnancy and child birth. It is also one of the leading causes of death and disability for child bearing women in many parts of the world. Myles et al., (2006), defines postpartum haemorrhage as “excessive bleeding from the genital tract at any time following the baby’s birth up to six (6) weeks after delivery”. The bleeding which occurs during the third stage or within twenty-four (24) hours of delivery is known as primary postpartum haemorrhage. The bleeding after 24 hours of delivery, up to the 6<sup>th</sup> week, is called secondary postpartum haemorrhage.

Miller (2007), states that postpartum haemorrhage is the most common cause of obstetric haemorrhage and one of the leading causes of maternal mortality in developed and developing countries. Miller (2007), defines postpartum haemorrhage as vaginal bleeding in excess of 500 mls after vaginal delivery and in excess of 1,000 mls after caesarean section. Miller (2007), further explains, “a delays framework” which causes women in developing countries to die from obstetric haemorrhage. This delay framework includes:

- Delay in recognising a true haemorrhage,
- Delay in seeking medical attention due to transport problems
- Delay in being attended to at the health facility due to shortage of staff

Postpartum haemorrhage is of special concern to health professionals because data above has shown that it is the leading cause of maternal deaths, hence the focus of the study. World Health Organisation (2012), states that postpartum haemorrhage is one of the direct causes of maternal deaths and it causes about twenty-four percent (24%) of the maternal deaths; obstructed labour causes about seven percent (7%), eclampsia, thirteen percent (13%), unsafe abortions, almost thirteen percent (13%) and infections cause about fifteen percent (15%) of maternal deaths. The indirect causes, such as malaria and HIV and AIDS constitute about twenty percent (20%) of maternal deaths.

Postpartum haemorrhage is an obstetric complication which requires emergency care. It may be due to uterine atony, retained placenta, lacerations or ruptured uterus. The two main methods of managing the third stage of labour are the physiological (expectant) and the active management. All midwives are required to be knowledgeable and skillful in the prevention of postpartum haemorrhage by applying the active management of the third stage of labour, (AMTSL).

### **1.1.2 Predisposing Factors of Postpartum Haemorrhage**

Predisposing factors leading to increased risk of postpartum haemorrhage include maternal anaemia with haemoglobin below 10g/dl, HIV and AIDS, because of severe immunosuppression and with lowered platelet count and any minor blood loss will cause severe morbidity or death. In multiparity, postpartum haemorrhage is more likely to occur due to uterine atony (Myles, 2006).

### **1.1.3 Causes of Postpartum Haemorrhage**

The causes of postpartum haemorrhage include atonic uterus which could be due to prolonged labour or multiparity. This is due to the ineffective contraction and retraction of the uterine muscle (myometrium) at the placental site to control bleeding. Retained cotyledon, placental fragment or membranes can also cause postpartum haemorrhage. A full bladder, because of its proximity to the uterus causes ineffective uterine contraction and retraction (Myles, 2006).

Uterine inertia can also occur in high parity because of fibrous tissue which replaces muscle fibres with each successive pregnancy, the uterus is not able to contract and retract effectively to control the bleeding. Postpartum haemorrhage can be as a result of mismanagement of the 3<sup>rd</sup> stage of labour which can come about due to fiddling of the fundus, thus causing ineffective contraction of the uterus leading to partial separation of the placenta and resulting into postpartum haemorrhage (Myles, 2006).

#### **1.1.4 Signs and Symptoms of Postpartum Haemorrhage**

Signs of postpartum haemorrhage include:

1. Visible bleeding
2. Pallor
3. Rising pulse rate (more than 100 beats per minute)
4. Falling blood pressure (below 100/60 mmHg)
5. Change in level of consciousness, the mother will either be drowsy or restless
6. Enlarged uterus as it fills with blood or blood clots

All the above will signal maternal collapse (Myles, 2006).

#### **1.1.5 Prevention of Postpartum Haemorrhage**

Postpartum haemorrhage is the major cause of maternal death worldwide and can occur in 10-18% of all births. Three percent of vaginal deliveries will result in severe postpartum haemorrhage and 25% of all maternal deaths are caused by severe hemorrhage (Noble, L. 2013). In Africa, postpartum haemorrhage contributes to an even higher proportion of maternal deaths. In Zambia, the Ministry of Health has embarked on the prevention of postpartum haemorrhage by introducing the use of Misoprostol which is now on trial in three provinces (Prata et al., 2006).

In Tanzania women who delivered at home and did not use Misoprostol were almost nine times more likely to need additional interventions for the treatment for postpartum haemorrhage than those who used Misoprostol. In Nepal, the experience with the use of Misoprostol was that uterotonic coverage increased from 12% to 74% in 30 months, with no decrease in institutional deliveries (USAID, WHO & MCHIP, 2011).

Misoprostol acts on the uterus to make it contract. Misoprostol tablets are a good alternative when neither Oxytocin nor Ergometrine is available. It can be used when other preventive measures fail and can reduce postpartum haemorrhage and maternal mortality where most maternal births occur at home. Women who are predisposed to

postpartum haemorrhage in areas where Misoprostol is on trial, such as Kapiri Mposhi (Central), Petauke (Eastern) and Kalomo (Southern) are advised to take the tablets after the delivery of the placenta. The dosage for Misoprostol is 5 tablets (1,000 mcg) rectally or 3 tablets (600 mcg) sublingually. Its advantages include being safe, effective and inexpensive. It can be stored at room temperature as it has a long shelf life and can be taken without a skilled birth attendant. Its disadvantages include shivering, nausea and vomiting, diarrhea, fever and the fact that it takes longer to act than injectable uterotonics, (Prata, et al., 2006). Current research shows promising developments in the potential use of rectal misoprostol as a first line drug for the treatment of primary postpartum haemorrhage; however, more research is needed (Versaevel, N. and Darling, L., 2006).

Misoprostol has been evaluated for prevention of postpartum haemorrhage because of its advantages in resource-poor areas: it is inexpensive, heat and light stable, and can be administered without the use of syringes. The World Health Organization lists misoprostol as an essential medication for preventing postpartum haemorrhage. However, Oxytocin remains the drug of choice for the prevention of postpartum haemorrhage when available (Eversen and Anderson, 2013).

Prevention of postpartum haemorrhage could also be achieved by thorough scrutiny of mothers antenatally and treating them appropriately. For example, mothers with low haemoglobin are treated adequately so that they go into labour with a haemoglobin level of more than 10g/dl. Good management of the first, second, third and fourth stage of labour is also important in order to prevent postpartum haemorrhage (Maye's, 2006).

There are two methods of managing the third stage of labour and these are:

- Physiological (Expectant) management of third stage of labour
- Active management of third stage of labour (AMTSL)

### **Physiological Management of Third Stage of Labour**

Physiological (Expectant) management of third stage of labour starts after the delivery of the baby. The midwife waits for the cessation of pulsation of the cord. Then she clamps the cord near the perineum and puts it in a kidney dish in between the client's legs. She then waits for signs of placental separation which include cord elongation, gushing of blood from the birth canal and contraction of the uterus. The uterus is held backwards abdominally using the left hand to prevent inversion of the uterus as the placenta is delivered (Myles, 2006).

### **Active Management of Third Stage of Labour**

Active management of third stage of labour involves the use of uterotonic agents/drugs, controlled cord traction and carrying out uterine massage. Use of uterotonic agents involves giving Oxytocin 10 units intramuscularly/intravenously within one minute of delivery of the baby after ensuring that there is no undiagnosed twin. Oxytocin is effective after 2-3 minutes and can be used on all women. Ergometrine 0.2mg intramuscularly or Syntometrine (1 ampoule) intramuscularly can be used if Oxytocin is not available, but should not be given to a woman with pre-eclampsia, eclampsia or high blood pressure (Myles, 2006).

Controlled cord traction involves clamping the cord near the perineum and holding with slight tension in one hand above the woman's pubic bone as you wait for a strong uterine contraction (2 to 3 minutes). When it occurs, deliver the placenta as you apply counter-pressure and encourage the mother to push. When it appears, hold the placenta in two hands and gently turn it to ensure complete delivery of membranes. Carry out placenta examination (WHO, 2006).

Massage the uterus to ensure that it is well contracted every 15 minutes and repeat during the first four hours. Use active management of third stage of labour to save mother's lives. The midwife advises the mother to empty her bladder more frequently because it prevents adequate contraction of the uterus which may lead to postpartum

haemorrhage. The midwives should be equipped with life-saving skills to attend to women with either primary or secondary postpartum haemorrhage (Maye's, 2006).

Active management of third stage of labour is the most effective means of preventing postpartum haemorrhage. Compared to physiological (or expectant) management, active management has been shown to reduce by more than 50% the risk of postpartum haemorrhage, low haemoglobin levels postpartum, and the use of blood transfusion. Active management decreases severe postpartum haemorrhage, reduces the risk of postpartum anemia, and shortens the third stage of labor with no significant increase in cases of retained placenta. A reduction in the incidence of postpartum haemorrhage also occurs if Oxytocin is given after placental delivery. Active management of third stage of labour (AMTSL) is recommended by the American College of Obstetricians and Gynecologists (ACOG), International Federation of Gynecologists and Obstetricians (FIGO), International Confederation of Midwives (ICM), and the World Health Organization (WHO). Hospital guidelines that encourage the use of active management result in significant reduction in the incidence of severe postpartum haemorrhage (Evensen and Anderson, 2013).

### **1.1.6 Management of Primary Postpartum Haemorrhage**

Primary postpartum haemorrhage is defined as excessive bleeding from the genital tract in the first 24 hours after delivery (Queensland Clinical Guidelines: PPH, 2012). Three basic principles to consider under the treatment of primary postpartum haemorrhage include: calling for help/doctor, resuscitating the mother and stopping the bleeding by rubbing up a contraction, giving Oxytocin and emptying the bladder.

- A doctor should be called to attend to the woman in case the condition worsens (if it is at the hospital). At a health center, other skilled health personnel should be called to help manage the woman.
- Clear the airway and give oxygen if necessary.
- The mother is resuscitated by putting up an intravenous infusion, such as Ringer's Lactate. This will also provide a route for Oxytocin infusion. The



mother's legs are lifted to allow blood to drain to the central circulation but do not raise foot end of the bed to prevent pooling of blood in the uterus making it difficult for it to contract and retract.

- Bleeding is stopped by rubbing up a contraction if the uterus is soft. Oxytocin 20 units or Ergometrine 0.25 to 0.5 mg is given intravenously. The baby may be put to the breast to allow physiological release of Oxytocin from the posterior lobe of the pituitary gland to effect contraction and retraction of the uterus. If the uterus is well contracted, empty it if the placenta is not yet delivered. If the placenta is delivered, the clots are expelled by gentle but firm pressure on the fundus. The bladder is emptied by catheterization to ensure effective contraction and retraction of the uterus if the woman is not able to pass urine.

If the placenta is delivered but the uterus is atonic, 40 units of Oxytocin should be added to 1 liter of Ringers Lactate in order to help the uterus contract effectively. Placenta and membranes are examined for completeness because remains will cause ineffective contraction and retraction of the uterus. Bimanual compression of the uterus is carried out if the bleeding continues despite the above measures in order to apply pressure to the placental site with the intravenous infusion in progress. If bleeding continues, exclude a clotting disorder before carrying out exploration under general anaesthesia.

A partially-adherent placenta is delivered by controlled cord traction. If it fails, the doctor should remove it manually. A wholly adherent placenta is removed by the doctor aseptically under general or spinal anaesthesia and the placenta is checked for completeness. In morbid adherence of the placenta to the uterine wall (placenta accreta), an emergency hysterectomy may be done (WHO, 2006).

If bleeding occurs in a well contracted uterus, it could be due to ruptured uterus, hysterectomy could be necessary. Bleeding could be due to trauma to the vagina, cervix perineum or labia. Source of bleeding is identified by placing the woman in lithotomy

position and suturing is carried out. Bleeding due to blood coagulation disorders is identified by non-clotting of the blood. Treatment is by Blood Transfusion (Myles 2006).

Maternal observations following postpartum haemorrhage should be carried out to check if the condition is improving or not, for example, increased pulse rate (> 100 beats per minute) and falling blood pressure (diastolic < 100 mmHg) could indicate that the condition is deteriorating.

In health institutions which are implementing the use of the nonpneumatic anti-shock garment (NPASG) in the postpartum haemorrhage management, the garment is applied. The non-pneumatic anti-shock garment is a new innovation to prevent a haemorrhaging woman from going into shock. It was adapted from the garment used by soldiers in World War 11 to treat shock. The nonpneumatic antishock garment is lightweight and washable, designed in three segments on each leg (one segment on the ankle, lower leg and thigh), one segment over the pelvis and the other segment over the abdomen. The garment can apply 20 to 40 mmHg of pressure from the ankles to the level of the diaphragm. This amount of pressure is effective in reversing hypovolaemic shock by shunting blood from the lower extremities and pelvis to the vital organs such as the brain (Miller, 2007). The nonpneumatic antishock garment is one of the new innovations in EmOC equipment. Health care providers should know how to use this garment in order to manage patients with postpartum haemorrhage more effectively and prevent them from going into shock.

The use of nonpneumatic antishock garment (NPASG) has been reported in a before-and-after study of 634 women with obstetric haemorrhage (43% with uterine atony) in Egypt. Women treated with this garment had a median blood loss 200 ml lower (range 300–100 ml lower) than women who received standard treatment of hydration with intravenous fluids, transfusion, uterotonics, vaginal or abdominal surgery, as needed) in the “before” period (i.e. before the introduction of nonpneumatic anti-shock garment) (WHO 2009).

When a primary postpartum haemorrhage occurs, early recognition, communication, and attention to resuscitative measures and cause of bleeding will assist the midwife in managing this rare but potentially life threatening situation. With careful management, third stage can remain an anti-climatic and uneventful part of one of the most important days of a woman's life (Versaevel, N. and Darling, L., 2006).

### **1.1.7 Management of Secondary Postpartum Haemorrhage**

Secondary postpartum haemorrhage is bleeding occurring after 24 hours and it is due to retention of fragments of the placenta or membranes or the presence of a large uterine blood clot (Myles, 2006). The doctor should be called and the woman and caretakers reassured that everything possible is being done to save the woman's life. Rub up a contraction and expel the clots. Administer Ergometrine or Oxytocin intramuscularly or intravenously to stimulate uterine contraction. If bleeding persists, arrange for theatre for evacuation and send blood specimen to the laboratory for grouping and cross matching (Myles, 2006).

Two (2) antibiotics, Ampicillin and Gentamycin are given in postpartum haemorrhage lasting more than 24 hours after delivery (Myles 2006). Manual removal of the placenta is carried out if the placenta is not delivered one hour after delivery of the baby or if heavy bleeding continues despite massaging and giving Oxytocin and Ergometrine. If the placenta cannot be delivered by controlled cord traction, or is incomplete and bleeding continues, manual removal of the placenta should be performed. If not successful, refer the woman urgently to hospital. Myles (2006) states that an antibiotic preferably Ampicillin should be given when labour lasts more than 24 hours or if there are retained products in order to prevent or treat any infection.

Manual removal of retained products of conception is performed by massaging the uterus and expelling the clots if postpartum bleeding persists after placenta is delivered or the uterus is not well contracted. If bleeding is severe, Oxytocin 10 units is given

intramuscularly or intravenously in order to facilitate effective contraction and retraction of the uterus.

## **1.2 Statement of the Problem**

In 2005 the world had an estimated total of 536 000 maternal deaths. Developing countries accounted for 99% (533 000) of the deaths. Slightly more than half of these maternal deaths (270 000) occurred in sub-Saharan African region, followed by South Asia (188 000). Thus sub-Saharan Africa and South Asia account for 86% of the global maternal deaths. Zambia is one of the developing countries where 400 000 women and girls die of complications related to pregnancy and childbirth each year (Maternal Mortality, 2006).

Globally, around 80% of all maternal deaths are the direct result of complications arising during pregnancy, delivery or the puerperium. The major causes of these maternal deaths are excessive bleeding, infection, unsafe abortion, high blood pressure and obstructed labour. The single most common cause accounting for a quarter of all maternal deaths is severe bleeding generally occurring postpartum. One of the Millennium Development Goals set by the United Nations in 2000 is to reduce maternal mortality by three-quarters by 2015. If this is to be achieved, maternal deaths related to postpartum haemorrhage must be significantly reduced (WHO, 2009).

Postpartum Haemorrhage (PPH) is a major cause of maternal mortality globally, especially in under-resourced settings. World Health Organisation (WHO) estimates that at least 166,000 deaths annually are due to postpartum haemorrhage accounting for 28% of direct maternal deaths. It is a leading cause of maternal death and severe morbidity in Sub-Saharan Africa, the continent with the highest maternal mortality rates in the world. It is also a major cause of severe acute maternal morbidity in well-resourced settings. For example in Scotland which has an ongoing audit of severe acute maternal morbidity, obstetric haemorrhage accounted for 50% of all severe morbidity during 2003-2004. Postpartum haemorrhage seriously tests the functioning of the health system and the skills of health workers, because it is often unpredicted and patients

deteriorate very rapidly after onset. Patients often do not survive referral to another level of care. Effective management including resuscitation needs to be available at the first point of contact, often the district hospital (Moodley et al, 2010).

Women do not have to die from postpartum haemorrhage. Whether they give birth with a skilled birth provider at home or in a health facility, most cases of postpartum haemorrhage can be prevented using safe, low cost and evidence-based practices (USAID, ACCESS, 2013).

It has been proven that successful management of postpartum haemorrhage can be achieved if a skilled birth attendant is available to attend to the woman in labour. In the two study locations, Chipata General and St Francis Mission Hospital, both second level hospitals and trained midwives conducting deliveries, there should be little or no maternal morbidity or mortality due to postpartum haemorrhage (CARMMA, 2010).

However, the data below shows that St Francis Mission Hospital had less maternal morbidity and mortality cases compared to Chipata General Hospital. Hence this comparative study was undertaken to find out how Chipata General Hospital staff could improve their knowledge and practices in order to improve their provision of care to mothers experiencing postpartum haemorrhage after delivery.

#### **Narration of information between the two health facilities**

PPH cases for CGH from 2007 to 2008 = 116

Maternal Deaths due to EmOC cases at CGH from 2007 to 2008 = 39

Maternal deaths due to Postpartum haemorrhage = 7

Case fatality rate = 9%

PPH cases for St Francis Mission Hospital from 2007 to 2008 = 135

Maternal Deaths due to EmOC cases at St Francis from 2007 to 2008 = 23

Maternal Deaths due to postpartum haemorrhage at St Francis Mission Hospital = 4

Case fatality rate = 1%

World Health Organization case fatality rate = 1%

The problem is that St Francis Mission Hospital, which receives more women experiencing postpartum haemorrhage, has lower maternal deaths compared to Chipata General Hospital which receives less women experiencing postpartum haemorrhage. Morbidity or mortality in women due to postpartum haemorrhage can be prevented in both hospitals but the opposite is the case.

Comparatively at St Francis Mission Hospital, most women admitted with emergency obstetric complications were due to postpartum haemorrhage (135) while mortality due to the same cause was four. This means that Chipata General Hospital which receives less number of emergency obstetric cases due to postpartum haemorrhage (116) had more maternal deaths 7 due to postpartum haemorrhage compared to St Francis Mission Hospital.

According to the World Health Organisation (WHO), the United Nations International Children's Emergency Fund (UNICEF) and United Nations Family Planning Agency (UNFPA) (2006), the case fatality rate, that is the proportion of women with obstetric complications such as postpartum haemorrhage admitted to a health facility and who die stands at one percent (1%).

Between 2007 and 2008, Chipata General Hospital had the case fatality rate of 9% due to postpartum haemorrhage (CGH HIMS, 2009). St Francis Mission Hospital had the case fatality rate of 2.6% due to postpartum haemorrhage (St Francis Mission Hospital HIMS, 2009). Therefore, this comparison shows that Chipata General Hospital had a higher case fatality rate due to postpartum haemorrhage which exceeds the international standard when compared to St Francis Mission Hospital.

Postpartum haemorrhage is the leading cause of maternal mortality in low-income countries and the primary cause of nearly one quarter of all maternal deaths globally. Most deaths resulting from postpartum haemorrhage occur during the first 24 hours after birth: the majority of these could be avoided through the use of prophylactic

uterotonics during the third stage of labour and by timely and appropriate management (WHO, 2012).

Potential sequelae of postpartum haemorrhage include orthostatic hypotension, anemia and fatigue which can make breastfeeding and maternal care of the newborn more difficult. Postpartum hemorrhage may increase the risk of postpartum depression and acute stress reactions (Evensen, A. and Anderson, J. 2013).

The death of a mother from whatever cause, impacts on the contemporary issues of child abuse and brings about street children. Maternal morbidity and mortality affects children, the household and her community. Children from such homes become vulnerable because they depend on their mothers for their survival. These may end up on the street as orphans due to neglect and may suffer the many vices that are found on the street such as crime, rape, prostitution, drug abuse, Sexually Transmitted Infections (STIs) and HIV and AIDS. This increases social pathologies in communities. Thus increased maternal mortality can cause an increase, not only in infant mortality but also in street kids and orphan phenomena in Zambia. Since children are the future of Zambia, these issues can affect the socio-economic development of the country. The researcher has done a comparative study on the care of women with postpartum haemorrhage between Chipata General Hospital and St Francis Mission Hospital. Both hospitals are 2<sup>nd</sup> level health facilities and are funded by the government.

Death of women due to postpartum haemorrhage can be prevented with skilled management. Postpartum haemorrhage often occurs because the uterus does not contract vigorously enough to expel the placenta and stop the bleeding. This condition is known as uterine atony. Other causes of severe bleeding before, during, or after delivery are prolonged labour, uterine rupture, tears in the cervix or vagina from traumatic deliveries or from poorly performed abortions, abnormal position of the placenta, or early separation of the placenta from the uterine and pre-existing or acquired coagulopathy. These causes are categorized as the “4 T’s” namely tone, tissue, trauma, and thrombin (Queensland Clinical Guidelines: PPH 2012).

The increasing maternal morbidity and mortality due to postpartum haemorrhage has been a source of concern for the Chipata General Hospital management, hence it has set up a maternal death review which meets monthly to see what can be done to the numbers. As a country, the Ministry of Health in Zambia has been conducting workshops to train more midwives on how to manage postpartum haemorrhage. Despite all these efforts the Maternal Mortality Rate continues to rise at Chipata General Hospital. Hence, the reason of carrying out this comparative study.

### **1.3 Theoretical Framework**

#### **Bertrand, et al., (1995) Conceptual Framework for Monitoring and Evaluating Provision of Care to Women with Postpartum Haemorrhage (Gage et al., 2005)**

The framework is organised around the standard input-process-output-outcome-impact schema which suggests a typical chain of programme events. For example, inputs are assembled to manage postpartum haemorrhage. When resources are made available, planning is carried out to strengthen the delivery of services to women with postpartum haemorrhage by healthcare providers. Because of the experiences health care providers go through as they provide care to women with postpartum haemorrhage, changes occur in their knowledge, attitudes and practices. Improvement in the health care providers' behavior, and practices as a result of knowledge, practice and attitudinal changes have an influence on the outcome of provision of care to women with postpartum haemorrhage. Good behaviours and practices by healthcare providers attending to women with postpartum haemorrhage would mean acceptable outcome of such women (alive and well) while bad behaviours and practices would lead to unacceptable outcome of women with postpartum haemorrhage (with complications, even death). The impact of acceptable outcome is reduced maternal mortality rate while the impact of unacceptable outcome is increased maternal mortality rate.

Inputs which include financial or staff resources, innovative equipment like non-pneumatic anti-shock garment, material supplies, infrastructure, treatment protocols and



essential drugs (from the government and donors) and the government's administrative systems also influence provision of care to women with postpartum haemorrhage.

Processes which include planning and implementation of activities such as capacity building, advocacy and formulation of clear policies, guidelines and protocols necessary in the provision of care to women with postpartum haemorrhage also contribute to the strengthening of service delivery to such clients.

Service outputs include the technical performance, efficiency in service delivery and interpersonal relationships of health care providers as they offer services to clients with postpartum haemorrhage.

Improvement in the knowledge, attitudes and practices of the care providers in the management of clients with postpartum haemorrhage brings about a favourable outcome in the lives of such clients and as a result a reduction in the maternal mortality rate (Gage, et al., 2005).

### **1.3.1. Advantages of using this model for the study**

Both the government and donors are committed to working together to serve the people when they put their resources together such as the donation of the nonpneumatic anti-shock garment and other equipment in order to offer quality services for haemorrhaging mothers during postpartum. The other advantage is that planning and implementation of the activities ensure that resources are used properly and not wasted or misused.

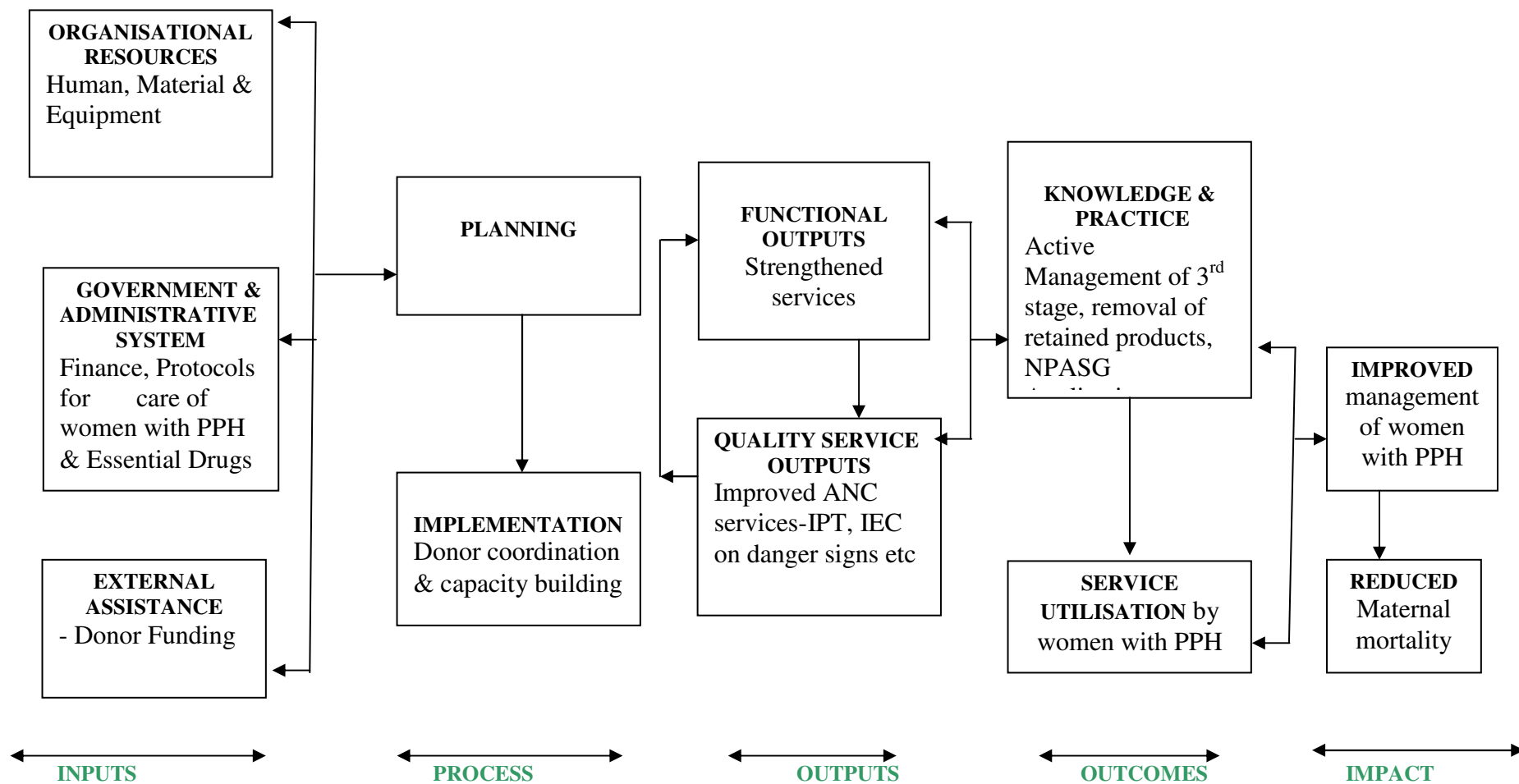
Capacity building of the health care providers helps to ensure that they are adequately equipped with knowledge and practical skills in the care of women with postpartum haemorrhage, for example, the application of the nonpneumatic antishock garment to women experiencing postpartum haemorrhage and how to actively manage the third stage of labour. In addition, the delivery of quality services to women with postpartum

haemorrhage will encourage them to make use of the services. Maternal deaths would be prevented or reduced and consequently reduce the case fatality rate.

### **1.3.2. Limitations/Disadvantages of the model of the study**

Dependence on the government and donors for financial and material support by health facilities for service delivery is a limitation because it becomes a challenge when the government or donors are not able to give any financial or material support to the institution. The other limitation is that it is not spelt out how the supervision on the use of resources by the health facilities would be carried out by the government and the donors. The nonpneumatic anti-shock garment is only available at the University Teaching Hospital. Health care providers need to know how to apply it on hemorrhaging women since it is the latest and effective equipment in use for the prevention of shock.

**FIGURE 1: THEORETICAL FRAMEWORK FOR MONITORING AND EVALUATING PROVISION OF CARE TO WOMEN WITH POSTPARTUM HAEMORRHAGE**



## **1.4. Factors Contributing to Maternal Deaths Due to Postpartum**

### **Haemorrhage at Chipata General Hospital**

The following are some of the factors contributing to maternal deaths due to postpartum hemorrhage at Chipata General Hospital:

#### **1.4.1 Socio-Cultural Factors**

##### **Age at marriage and unwanted pregnancy**

Most women in Chipata and surrounding areas get married in their teens, when their pelvis has not reached full maturity to stand the effects of pregnancy and labour. Because of the immature pelvis they end up with obstructed labour which leads to ruptured uterus leading to postpartum haemorrhage and death if not well managed.

The other factors attributed to poor safe motherhood include, maternal age at first pregnancy, lack of family planning and high parity, lack of knowledge for risk factors and complications, healthy behaviours, poor economic status and unaffordable transport to health facilities (National Reproductive Health Policy, 2008).

Young adolescents face a higher risk of complications and death as a result of pregnancy than older women. The risk of maternal mortality is highest for adolescent girls under 15 years old. Complications in pregnancy and childbirth are the leading cause of death among adolescent girls in most developing countries. The probability that a 15 year old woman will eventually die from a maternal cause is 1 in 3800 in developed countries, versus 1 in 150 in developing countries. The major complications that account for 80% of all maternal deaths are mostly due to severe bleeding after childbirth (WHO, 2013).

## **1.4.2 Traditional beliefs and practices**

### **Use of African Medicine**

The National Reproductive Health Policy (2008), states that harmful traditional practices such as the use of African medicine during labour and delivery is one of the factors contributing to poor safe motherhood.

The use of African medicine to hasten labour and for protection against any obstetric complication, is common in Chipata District and women admit to the use of these herbs. The concoctions are often homemade, sometimes toxic, and prepared in unhygienic conditions. All this increases the risk that the mother could have sudden vomiting or diarrhoea while in labour, These herbs, sometimes cause severe contractions with poor descent of the fetal head and the woman usually ends up with ruptured uterus which could lead to death of both the mother and the baby due to haemorrhage (World Organisation Against Torture ( OMCT), 2007).

### **Literacy Levels and Health Seeking Behaviour**

Low social and economic status of girls and women limits the access to education and good nutrition including economic resources needed to pay for health care and family planning services. In developing countries such as Zambia, limited access to economic resources and basic education leads to not being able to make decisions such as going to a health facility for treatment, ( WHO, 2012). It is also a taboo in some communities to inform husbands about complications, especially when they relate to excessive bleeding. He is informed only when the condition is far advanced – a delay that further impedes any decision to seek care, (World Organisation Against Torture ( OMCT) 2007). Culturally decisions are made by the husband or family members. This makes women prone to repeated pregnancies and with poor diet; they are prone to poor maternal outcome (WHO, 2012).

Women in Zambia suffer poor health outcomes disproportionately, and for the most part, are voiceless in the development of policies and services that affect them. Cultural norms that result in higher rates of girls' illiteracy and that support male control of

household decisions constitute important barriers to women's participation in all levels of society. However, the Patriotic Government in its gender policy would like to ensure that gender considerations are taken into account when current and future health sector policies are being shaped and formulated (MOH, National Health Strategic Plan 2011 to 2015).

### **1.4.3. Service-Related Factors**

#### **Government Policy on Availability of Midwives**

Zambia is facing serious Human Resources for Health (HRH) crisis, both in the numbers and skills mix. The critical shortage of skilled manpower is a major obstacle to the provision of quality healthcare services and to the achievement of the national health objectives and millennium development goals. There are three main problems, namely the absolute shortages of health workers, inequities in the distribution of health workers and skills-mix, which all favour urban areas, than rural areas (MOH, National Health Strategic Plan 2011-2015).

The Government policy, however is working towards having a skilled attendant with midwifery skill present at every delivery by increasing the number of student enrollment in training schools as health care providers. This has been identified as one of the key strategies for reducing maternal and infant mortality. In developing countries such as Zambia, many women are assisted by traditional birth attendants or only relatives while many deliver alone. Only 53% of women in developing countries have assistance of skilled health personnel (a midwife or doctor) who do not have midwifery skills (WHO, 2013).

As a provincial referral hospital, Chipata General Hospital has an establishment of an obstetrician and thirty-eight (38) midwives (Squarre, 2006). But currently the hospital has only 14 midwives and no obstetrician working in the Obstetric unit maternity ward (this includes Labour Ward, Antenatal, Postnatal and Special Baby Care Unit). In health centres', obstetric cases are attended to by, at least, one trained staff, although in some centres' there are no midwives. This shows that there is a critical shortage of

skilled midwives. This has been caused by the brain drain because of poor conditions of service. The other reason is that many medical personnel have died due to the HIV and AIDS pandemic (Squarre, 2006). This critical shortage of staff has resulted in inadequate information and care being given to pregnant women regarding emergency obstetric complications such as postpartum haemorrhage.

### **Referral Systems**

Shortage of ambulances to take mothers with obstetric complications from health centers to hospital for further management is critical. Women are referred only when they develop complications and because of transport problems they are referred late. The Patriotic Front Government has bought ambulances which have since been distributed to different hospitals and districts to help in the referral of patients for further management. Health planners and managers should ensure that services are in place by seeing to it that referral systems are strengthened through supportive supervision, regular communication and ensuring that, essential drugs and supplies such as blood are available for use in women with complications (MOH, 2013). Otherwise, women would die due to postpartum haemorrhage and other obstetric complications even in the hospital when resources are not available. Chipata General Hospital being the only referral hospital in the district, receives a lot of maternity cases from the surrounding health centres.

### **Staff Attitude – Safe motherhood is a human rights issue**

The death of a woman during pregnancy or childbirth is not only a health issue but also a matter of social injustice. Women have the right to access appropriate health care during pregnancy, delivery and after complications. Of the human rights currently acknowledged in national constitutions and in regional and international human rights treaties, many can be applied to safe motherhood delivery. They should not be discriminated against certain health care services and exposing them to obstetric complications. The government should ensure that, it implements the laws set for these women (WHO, 2009). Poor staff attitude to mothers who go to facilities for delivery should not be tolerated by supervisors as it may affect the use of services in these

centers. Good attitudes encourage mothers to deliver at the health institution while bad attitudes make mothers shun health centres and deliver at home under the care of their relatives or friends with no delivery skills. Women complain of bad attitudes by health care workers. Some say the nurses shout at them for not buying things like razor blades, baby clothes, and gloves. The presence of male nurses is also off-putting to some women (World Organisation Against Torture (OMCT), 2007).

### **Staff Practice**

The health institutions do not have guidelines to guide the practice of health care personnel on the use of equipment such as the nonpneumatic anti-shock garment for prevention of shock in a woman experiencing postpartum haemorrhage. Therefore, there are no minimum set standards for practice in mothers with postpartum haemorrhage. Procedures, such as bimanual compression of the uterus, are carried out by doctors only and not nurse (Mkumba, 2005).

### **Availability of Equipment**

Most health facilities do not have the necessary equipment such as the nonpneumatic anti-shock garment to prevent shock in women with postpartum haemorrhage. However, Mkumba (2005), in her study, the Needs Assessment, noted the absence in the country of the nonpneumatic anti-shock garment in hospitals. The nonpneumatic anti-shock garment is a compression suit with 5 panels secured with Velcro tags which, after application, compress the 4 limbs and abdomen. It appears to improve venous return, maintain blood pressure and improve signs of shock. These garments are currently not available in South Africa. They are reusable and are currently being field tested in Zambia and Zimbabwe for use during transit from peripheral clinics. If shown to be of value in improving outcomes they should be acquired for South Africa (Moodley et al, 2010).

Zambia has however had many achievements in a number of areas. However, despite these achievements, the country continues to face major challenges, which include high disease burden, inadequate medical staff, weak logistics management in the supply of



drugs and medical supplies, inadequate and inequitable distribution of health infrastructure, equipment and transport, and challenges related to health information systems, inadequate financing, and identified weaknesses in the health systems governance. During the National Health Strategic Plan of 2011 to 15, the government would focus on overcoming these constraints and challenges, in order to ensure effective implementation of the plan, and attainment of the national health objectives. One of the objectives is to achieve Millennium Development Goal 5 – to reduce the number of maternal deaths.

#### **1.4.4 Disease Related Factors Affecting the Health of the Mother**

##### **Chronic Diseases of the mother**

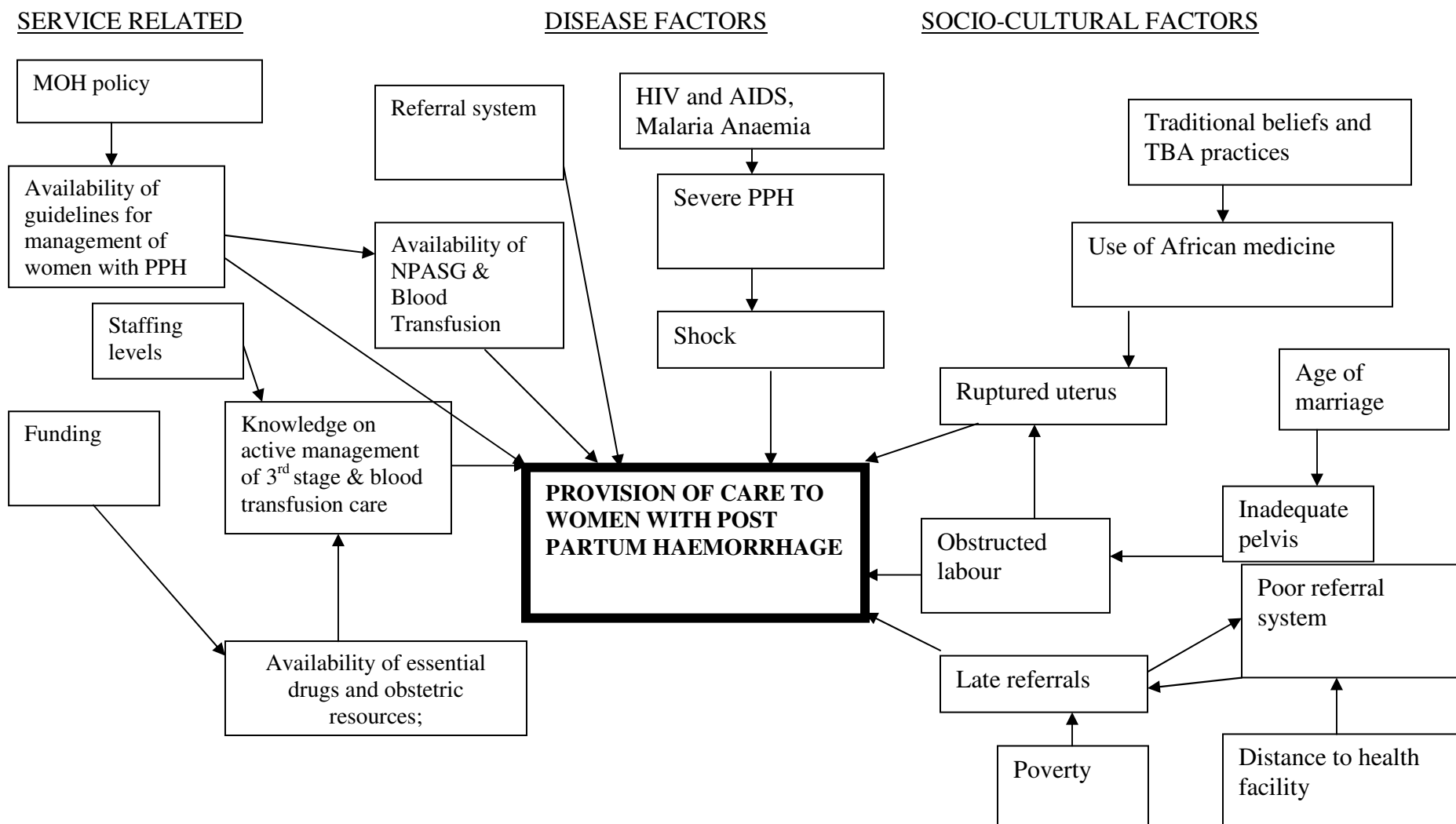
A lot of pregnant women are HIV positive. The average HIV prevalence rate among women of reproductive age is eighteen percent (18%) making the risk of HIV infection a threat to expectant mothers and their babies (National Reproductive Health Policy, 2008). Infection with HIV is a rapidly growing threat to women's health and AIDS is a common cause of maternal death. Poor health of the mother also contributes to poor outcome of labour, either the mother or the baby or both die. The health of some women is generally poor due to poor nutrition, anaemia as well as chronic diseases such as Tuberculosis and HIV and AIDS. Anaemia is also caused by repeated attacks of malaria with inadequate treatment. Any amount of blood loss in the woman would lead to postpartum haemorrhage. Puerperal sepsis is quite common in women with poor health, especially if the immunity is compromised (National Reproductive Health Policy, 2008).

##### **Nutritional Deficiencies**

Poor nutrition before and during pregnancy contributes to poor maternal health leading to poor pregnancy outcome. Stunting during childhood due to severe malnutrition exposes women to risk of obstructed labour due to cephalopelvic disproportion. Anaemia may be due to several causes such as inadequate intake, loss of blood due to

parasitic infestations or malaria. Fifty percent of the women are anaemic worldwide (WHO, 2012). Anaemic women are prone to infections during pregnancy and childbirth and are at increased risk of death due to postpartum haemorrhage and poor operative risks in case of caesarean section.

**FIGURE 2: FACTORS ON PROVISION OF CARE TO MOTHERS WITH PPH CONTRIBUTING TO MATERNAL DEATHS AT CHIPATA GENERAL HOSPITAL**



## **1.5 Research Question**

Does St Francis Mission Hospital provide better care to women with postpartum haemorrhage than Chipata General Hospital?

## **1.6 Research Objectives**

### **1.6.1 General Objective**

The general objective is to compare the management of postpartum haemorrhage between Chipata General Hospital and St Francis Mission Hospital in order to identify their strengths and incorporate them into the management of postpartum haemorrhage at Chipata General Hospital.

### **1.6.2 Specific Objectives**

Specific objectives were:

- To compare the doctors/licentiates and midwives' knowledge levels, on management of postpartum haemorrhage between the two hospitals.
- To compare the practices of the doctors/licentiates and midwives on management of postpartum haemorrhage between the two hospitals.
- To review records of mothers who had postpartum haemorrhage in order to identify contributing factors to postpartum haemorrhage.
- To compare the outcome of care rendered to mothers with postpartum haemorrhage between the two hospitals.
- To make recommendations to the Chipata General Hospital Management on effective management of postpartum haemorrhage

## **1.7 Justification of the Study**

Normally, no woman should die from pregnancy related complications in the face of trained skilled birth attendants (CARMMA, 2010). Miller, et al. (2007) stated that annually, 500,000 women die from haemorrhage and shock globally. In sub-Saharan Africa women face a 1-in- 13 chance of dying, as compared to a 1-in- 4,100 chances in industrialized countries (WHO, 2007).

Literature reviewed has shown that globally, postpartum haemorrhage is the third major cause for maternal deaths (Myles, 2006). Postpartum haemorrhage is one of the obstetric emergencies which require the use of critical care items. Within the sub-region, specifically in Uganda, the maternal mortality stands at 1000/100,000 live births and this is due to inadequate provision of items required to care for women who experience postpartum haemorrhage and other obstetric complications (WHO 2007).

Locally, postpartum haemorrhage accounts for thirty-four (34%) of all maternal mortality among women aged 15 to 49 years (Mkumba, 2005). She also relates the high maternal mortality rate to postpartum haemorrhage as a result of poor quality service provision to mothers who experience postpartum haemorrhage.

Target number six (6) of Goal five (5) of the Millenium Development Goals (MDGs) focuses on reducing the maternal mortality ratio by three-quarters ( $\frac{3}{4}$ ) between 1990 and 2015. Chipata General Hospital has been holding monthly death review meetings in order to identify the cause of maternal deaths and make improvements. Despite these efforts, the maternal mortality at Chipata General Hospital due to postpartum haemorrhage stands at five percent (5%) against the WHO, UNICEF and UNFPA acceptable case fatality of one percent (1%). Chipata General Hospital is the Provincial Second Level Health Care Hospital, but also serves as a District Hospital. The district has thirty eight (38) health centres (Chipata District Health Management Team, 2007), mainly spread out in the rural areas.

Chipata General Hospital receives emergency obstetric cases such as postpartum patients referred from five districts; Lundazi, Mambwe, Chama, Chadiza and Chipata district. In 2008 the hospital served a total population of 1,445,811 which falls within its catchment area. The expected number of pregnancies is 78,000 (5.9% of the total population) and the expected number of deliveries is 75,000 (5.2%). The number of child bearing women is 57,832 (4%) of the total population. In addition, the hospital has only 6 delivery beds while the main ward (Antenatal and Postnatal) has 33 beds and three incubators in the nursery. Maternity services are offered 24 hours a day.

Chipata General Hospital is also the practical centre for Registered Nurses and Direct Entry Midwives. It also provides practical training for trainee Clinical Officers and Pharmacy Technologists from Chainama College of Health Sciences and Evelyn Hone College respectively. The hospital is linked to the capital city of Zambia, Lusaka, by the Great East Road and by air from Chipata and Mfuwe Airports. There are three (3) doctors who attend to women with complications after delivery. The Obstetrician from St. Francis Mission Hospital also attends to women with obstetric/gynaecological problems at Chipata General Hospital on a monthly basis.

St. Francis Mission Hospital is also a Second Level Referral Hospital for Eastern Province, particularly for Surgery, Obstetrics, Orthopaedics and Eye patients. Two doctors and two licentiates attend to women with complications after delivery. One of the doctors is an Obstetrician and Gynaecologist. The hospital also houses training schools for Enrolled Nurses and Midwives. The Ministry of Health also uses it as a centre for Internship for newly qualified Medical Doctors, Medical Licentiates, Pharmacy Technologists, Physiotherapists and Radiographers.

The projected population for Katete District stands at 233, 582 (15%) of the total population of the province which is 1, 567, 925 (Katete DHMT Action Plan, 2007). The hospital also receives clients from Chadiza, Chipata, Mambwe, Nyimba and Petauke districts, causing St. Francis Mission Hospital to attend to more patients than Chipata General Hospital.

Another justification for this study is that it will compare the provision of care to mothers who experience postpartum haemorrhage between Chipata General Hospital and St. Francis Mission Hospital. St Francis Mission Hospital receives more emergency obstetric cases experiencing postpartum haemorrhage than Chipata General Hospital but has very few maternal deaths due to postpartum haemorrhage compared to Chipata General Hospital. Both are second level hospitals and are funded by the government. There is an urgent need to find out the reasons for the negative correlation between the two hospitals in order to improve on the provision of care to women with postpartum haemorrhage.

This study provides a baseline data to base future improvements on the care of women who experience postpartum haemorrhage at Chipata General Hospital. Thus far no study has been conducted in this area between Chipata General Hospital and St Francis Mission Hospitals. The findings of the study will devise strategies that will institute evidence-based management of women who experience postpartum haemorrhage at Chipata General Hospital. Therefore, this study is providing much needed literature on the problem under study in the district. Also, the findings of the study will be used to make recommendations to the hospital management on measures to improve management of women who experience postpartum haemorrhage for better outcome.

## **1.8 Hypothesis**

### **1.8.1 Alternative Hypothesis**

There is better management of postpartum haemorrhage at St Francis Mission Hospital than at Chipata General Hospital.

## **1.9 Operational Definitions as used in this Study**

**Standards** – are policies and procedures developed to guide operations of the institution, for example, set guidelines for active management of third stage of labour (Gage and Suzuki, 2005).

**Postpartum Haemorrhage** – this is bleeding from the genital tract exceeding 500mls after delivery. Primary postpartum haemorrhage is up to 24 hours after delivery and secondary postpartum haemorrhage is up to 6 weeks after delivery (Myles, 2006).

**Emergency Obstetric Care** – this is defined as the care given to pregnant women with obstetric complications to prevent maternal deaths. It includes services that can save lives of the majority of women with postpartum haemorrhage (Mkumba, 2005).

**Active Management of Third Stage of Labour**– Prophylactic routine administration of a uterotonic drug either orally or intramuscularly or intravenously to reduce the risk of postpartum haemorrhage. It is carried out in conjunction with clamping of umbilical cord soon after birth and delivery of placenta by controlled cord traction (Myles, 2006).

**Uterotonic drugs**- include such drugs as Oxytocin, misoprostol and ergometrin used after third stage of labour to prevent postpartum haemorrhage (Myles, 2006).

**Bimanual Compression** – a manoeuvre carried out to arrest severe bleeding in atonic uterus. The right hand is introduced into the vagina and made into a fist while the left hand is on the abdomen applying pressure forward (Myles, 2006).

**Good Maternal Outcome** – a mother delivers with no complications (Mkumba, 2005).

**Maternal Death**- is the death of a woman due to pregnancy or childbirth within 42 days after abortion or childbirth (WHO, 2007).



**Maternal Morbidity** – disease or illness resulting from effects of pregnancy, labour or puerperium (WHO, 2007).

**Maternal Mortality Rate** – maternal deaths per 100,000 women of reproductive age of 15 to 49 years per year. The current Maternal Mortality Rate is 591 per 100,000 live births (CSO, 2007).

**Manual Removal of Placenta** – the introduction of the hand into the uterus to remove the retained placenta (Myles, 2006).

**Case Fatality Rate** – proportion of mothers who die with obstetric complications admitted to facilities. It is a process indicator that measures the quality of care offered to women experiencing postpartum haemorrhage (Mkumba, 2005).

**Process Indicator** – is a measure of the changes in steps leading to the desired outcome (Gage and Suzuki, 2005).

**Skilled Birth Attendant**– A nurse, doctor, clinical officer or midwife with emergency and midwifery skills that attend a birth and skilled attendance refers to birth in a well-resourced environment, backed by political will (Sellers' Midwifery, 2013).

**Infant Mortality Rate**– infant deaths per 1,000 live births. The current Infant Mortality Rate is at 95 per 1,000 live births (WHO, 2007).

**Non-pneumatic Antishock Garment** – a garment that can be placed around the legs, pelvis and abdomen of a woman who has an obstetric haemorrhage and is in hypovolaemic shock, creating pressure to her lower extremities and directly to the uterus that will stabilize her -shunt blood to her vital organs until she can be treated at an appropriate higher level facility (Mkumba, 2005).

**Table 1: VARIABLES CUT OFF POINTS AND INDICATORS**

<b>Variable</b>	<b>Cut off Points</b>	<b>Indicators</b>	<b>Question No.</b>
<b>INDEPENDENT VARIABLES</b>			
Knowledge on PPH and Active Management of 3 <sup>rd</sup> Stage of Labour	High	If one scores <b>7 to11</b> on questions on PPH and Active Management of 3 <sup>rd</sup> Stage of Labour	6 to 19
	Medium	If one scores <b>4 to 6</b> on questions on PPH & active management of 3 <sup>rd</sup> Stage of Labour	6 to 19
	Low	If one scores <b>0 to 3</b> on questions on PPH & Active Management of 3 <sup>rd</sup> Stage of Labour	6 to 19
Practice on active management of 3 <sup>rd</sup> stage of labour and treatment of PPH	Good practice	If one scores <b>15to24</b> on questions on active management of 3 <sup>rd</sup> stage of labour	20 to 23
	Poor practice	If one scores <b>0 to14</b> on questions on practice of active management of 3 <sup>rd</sup> stage labour	20 to 23

**DEPENDENT VARIABLE**

<b>Variable</b>	<b>Cut off Points</b>	<b>Indicators</b>	<b>Question No.</b>
Outcome of management of Postpartum haemorrhage	Good	Mother in good health with no complications	24 to 26
	Poor	Mother with complications or dies	24 to 26

## **CHAPTER TWO**

### **2.0 LITERATURE REVIEW**

#### **2.1 Introduction**

Literature Review helps the researcher to critically examine and summarise the works of other authorities on the subject being studied. This enables the researcher to develop an all-round view of the problem being studied and learns what has been done so far about that problem. The researcher was able to identify the gaps in the body of knowledge and be able to fill in that gap appropriately in the research being undertaken. A study conducted by one of the renowned academicians has shown that maternal morbidity and mortality due to postpartum haemorrhage can be prevented if women received skilled care at critical moments during pregnancy and childbirth (Miller, 2007).

In order to gain a deeper insight into the problem of provision of care to women with postpartum haemorrhage, the literature review has been considered under the variables of knowledge and practices of health care personnel at the global, regional and national perspectives. The focus is on the knowledge and capability of the health care personnel to use the available resources to care for women experiencing postpartum haemorrhage.

##### **2.1.1 Knowledge**

Postpartum haemorrhage, which is an obstetric complication, does occur in the developed countries despite their advanced technology due to complications arising from pregnancy and childbirth. It is the third major cause of maternal deaths globally. It may occur in 1-5% of deliveries in developed countries and is still the most significant cause of maternal morbidity and mortality (Weisbrod et al, 2009). Postpartum haemorrhage is a significant contributor to severe maternal morbidity and long-term disability as well as to a number of other severe maternal conditions generally

associated with more substantial blood loss, including shock and organ dysfunction (WHO, 2012).

Knowledge of the fact that the risk of postpartum haemorrhage should not be underestimated for any delivery is vital. Skilled birth attendants should know when to classify postpartum haemorrhage. Postpartum haemorrhage is an “excessive bleeding from the genital tract at any time following the baby’s birth up to 6 weeks after delivery” (Myles, 2006).

Annually, over 500,000 women die from complications of pregnancy and childbirth, the majority die from haemorrhage and shock (Miller, et al., 2007). Postpartum haemorrhage is the most common form of obstetric haemorrhage and is a leading cause of maternal morbidity and mortality. In 2010, 5.9% of birthing women in Queensland suffered a postpartum haemorrhage. Obstetric haemorrhage of all etiologies, such as uterine atony, ruptured uterus, and ruptured ectopic, can cause massive blood loss resulting in severe shock. Unless women can access fluid replacement, blood transfusions and often surgery, the shock leads to organ failure and death. The majority of maternal haemorrhage deaths occur in developing countries (Miller, et al., 2007). Postpartum haemorrhage occurs in both developed and undeveloped countries but in undeveloped countries most of the mothers die due to inadequate care.

Harrison, (2013), states that, postpartum haemorrhage remains an important complication of childbirth and it contributes greatly to maternal mortality. Recently, during the maternal audit in the United Kingdom, postpartum haemorrhage was found to be the direct cause of eight maternal deaths and also a major contributing factor to other five fatalities. Substandard care was assumed to be the cause.

Whilst major postpartum haemorrhage is no longer the leading cause of maternal deaths in Australia, substandard care is persistently identified as a major factor for those who die (Queensland Clinical Guidelines: PPH, 2012). Being prepared to competently participate in the management of severe postpartum hemorrhage necessitates a basic

knowledge of pelvic and gynecologic anatomy, the pathophysiology of such hemorrhage and a conceptual algorithm for its management to permit integrated participation with the obstetrical team for efficient and efficacious care of the new mother (Weisbrod et al., 2009).

There are so many available resources at the disposal of midwives and doctors who care for women experiencing postpartum haemorrhage. Therefore, it is very crucial that they are very knowledgeable in their use. Some of these resources include the non-pneumatic antishock garment and drugs such as antibiotics, misoprostol and Oxytocin drugs (Mkumba, 2005).

Sweden tried to reduce the high maternal mortality by ensuring that skilled midwives with adequate knowledge and acceptable standards of practice attend to all women in labour (Population Reports in the Community, 2012). In some countries, like Malaysia and Sri Lanka, the health authorities have reduced the occurrence of postpartum haemorrhage by shifting their emphasis from using untrained Traditional Birth Attendants to using professional midwives in underserved communities. This is because the skilled birth attendants are knowledgeable in the art of using the available resources to prevent and manage postpartum haemorrhage (Population Reports in the Community, 2012).

Sri Lanka, Comoros, Cape Verde, Mauritius and Seychelles, although in the third world, have much lower maternal deaths (Mkumba, 2005). Some of the major strategies undertaken by these countries included the training of skilled attendants with midwifery skills with the aim of delivering quality services to mothers experiencing postpartum haemorrhage in underserved communities based on their knowledge and skill in the use of available resources.

In addition they should know when and how to reduce blood loss by giving of injectable Oxytocin drug like Oxytocin if heavy postpartum bleeding persists after the placenta is delivered or the uterus is not well contracted. They should also know how to

give Ergometrine if there is heavy bleeding after delivery. Midwives should note that Ergometrine is not given to women suffering from pre-eclampsia, eclampsia or hypertension as it raises blood pressure.

According to World Health Organisation (2012), a skilled attendant, that is a person with midwifery skills, should be present at every birth. Midwifery skills include the capacity to initiate management of complications such as postpartum haemorrhage. This requires long-term human resource development. In addition to recommending that birth attendants have the knowledge, skills and judgment to carry out active management of the third stage of labour and access to needed supplies and equipment should be readily available when active management is offered to all women in labour (Versaevel and Darling, 2012).

Sub-regionally, in Cameroon, Malawi, Nigeria, Tanzania and Democratic Republic of Congo, the issue of performing certain procedures by nurses and midwives has been solved by training them to perform some obstetric procedures previously carried out only by doctors. Nurses and midwives in rural maternity centres in these countries now know how to treat postpartum hemorrhage and to perform vacuum extractions, cesarean sections and symphysiotomies through training (Population Reports in the Community, 2012). There is also the need to avail and train midwives on the use of the nonpneumatic anti-shock garment in haemorrhaging women after delivery. This reduces the number of women dying from postpartum haemorrhage because they can be attended to even when doctors are not there (Mkumba, 2005).

Zambia is a developing country with unacceptably high maternal mortality ratio of 591/100,000 (which is still high even after having been reduced from 729/100,000 live births (CSO, 2008). The health care providers who care for women during pregnancy, labour and delivery should give women all the necessary information about the preventive care for women who are predisposed to postpartum haemorrhage. In Zambia, the skilled birth attendants are required to be knowledgeable on how to prevent postpartum haemorrhage on women who are susceptible to postpartum haemorrhage by

advising them to use misoprostol at home after the delivery of the placenta (Prata et al, 2006).

However, in Zambia there is a significant shortage of health personnel. Of the approved establishment of 51,414, the health workforce in 2009 was 29,533, representing 57% of the approved establishment. In some rural health centres, a health facility is managed only by two or three health care workers with a workload of 70 clinical Health Care Workers per 100,000 population as compared to 159 per 100,000 in urban areas (National Reproductive Health Policy, 2008).

The National Health Reproductive Health Policy (2008), notes that midwives need to have the necessary knowledge to initiate the management of postpartum haemorrhage to women in need. In rural areas most women deliver in their homes and are only brought to a health facility when there is a complication. It is important, therefore, that the midwife found at the health facility is knowledgeable and skilful to attend to the woman in need. Hence it is important to employ skilled and knowledgeable midwifery practitioners to provide and evaluate the care given to women who experience postpartum haemorrhage.

Postpartum haemorrhage is one of the most alarming serious emergencies a midwife may face especially terrifying if it occurs immediately following a straight forward delivery. The midwife is often the first and may be the only professional person present when haemorrhage occurs and her knowledge and prompt and competent action is critical in controlling postpartum haemorrhage and reducing the risk of morbidity and mortality (Myles, 2006).

In summary, most literature reviewed under knowledge show that most countries have embarked on the use of skilled midwives to attend to women in labour in rural communities. Some African countries have trained midwives to care for women who experience postpartum haemorrhage after delivery. The use of in the care of mothers who experience postpartum haemorrhage need to be rolled out in most health institutions.

### **2.1.2 Practice**

Obstetric haemorrhage can be managed in developed countries with uterotonic medications, blood transfusions and surgery. It is often fatal in developing countries where a large percentage of births occur at home without skilled attendance and where transport is a problem. When a complication such as postpartum haemorrhage occurs, women are referred to the next health facility for further management.

One of the targets for the Government of Zambia's National Health Strategic Plan (NHSP: 2011 to 2015) is to reduce under-five mortality from 119 deaths per live births to 63 deaths per live births and to reduce the maternal mortality ratio from 729 per 100,000 live births in 2002 to 162. In order to reach these targets, the government would also work towards increasing the percentage of deliveries assisted by skilled health personnel from 45% to 65%.

Sri Lanka improved the practice of midwives by ensuring that only matured women get married and can have children. They also instituted Family Planning for adolescents and older women. Availability of family planning services makes women space their pregnancies adequately as well as preventing them from risks of obstetric complications such as postpartum haemorrhage due to uterine atony found in the multigravidae (Mkumba, 2005).

There have been disagreements over what procedures nurses and midwives should perform. Since nurses and midwives in rural health centres often work without direct supervision or contact with doctors, it has been argued that nurses and midwives be trained in prescribing antibiotics, starting intravenous infusions and blood transfusions, removing retained placentae, perform vacuum extractions and administer intravenous medications. Others argue that only doctors have the knowledge and understanding to perform such procedures. Doctors are overstretched with too much work and patients are not attended to on time because of shortage of doctors especially in developing countries. Governments of various countries need to come up with clear policies on training of midwives on the type of procedures they should be trained in if delivery of



care to patients with postpartum haemorrhage is to be effective (Population Reports in the Community, 2011).

Early marriage and childbearing are the norm in many African cultures. Early marriage, for example, between 15 and 19 years means having more children or high parity (six or seven children) which increases the woman's chances of experiencing postpartum haemorrhage due to uterine atony. One way of keeping girls in school is to raise the age at marriage. Studies in Ghana revealed that uneducated women married between 13 and 16 years, while women with at least primary education married after 18 years of age (Population Reports in the Community, 2011). Pregnancy and delivery have always been associated with complications. According to World Health Organisation (2007), every minute around the world, 380 women become pregnant, 190 women face unplanned pregnancies, 110 women experience pregnancy-related complications, 40 women have unsafe abortions and 1 woman dies. This scenario dictates that women should attend ante natal care during which they receive several interventions, including health education in order to help maintain their health and that of the unborn babies. In the Zambian tradition, every woman is expected to get pregnant and it is a must that she bears a child.

The international community addressed the issue of reproductive health which addresses the health of men, women and young people. It was achieved by the launching of Safe Motherhood - a component of reproductive health, in 1987 (WHO, 2007). Safe motherhood has nine pillars which include antenatal care, post natal care and obstetric care. These three pillars are associated with danger signs which include vaginal bleeding. Vaginal bleeding may occur before, during or after delivery. Vaginal bleeding occurring after a delivery may lead to complications such as postpartum haemorrhage and in the end the mother may die if not well managed.

Egypt has been successful in reducing maternal mortality ratio from 174/100000 live births in 1992/93 to 84/100 00 live births in 2000. Sixty percent (60%) of these deaths were attributed to obstetric haemorrhage. The nonpneumatic anti-shock garment

(NPASG) has been used as a first-aid device to reverse shock and decrease bleeding among women with severe haemorrhage and hypovolaemic shock (Miller, et al., 2006).

A pilot study carried out in Egypt by Miller, et al (2006) compared the effect of the nonpneumatic anti-shock garment (NPASG) on blood loss from obstetric haemorrhage with standard management of obstetric haemorrhage, showed a fifty percent (50%) reduction in the blood loss in those treated with the nonpneumatic antishock garment. The nonpneumatic antishock garment shows promise for management of obstetric hemorrhage, especially in lower-resource settings in the developing countries. The study was also carried out in Nigeria but results are not yet disseminated. The midwives were trained to use the nonpneumatic antishock garment in the prevention of maternal deaths. Therefore, there is need to supply this equipment in most health institutions and also to train midwives on how to use the nonpneumatic antishock garment to save mothers who experience postpartum haemorrhage. There is also need to consider training midwives in other life saving skills to save the lives of haemorrhaging women.

In Malawi, the government enacted law regulating the practice of midwifery so that midwives could legally perform vacuum extractions, blood transfusions and manual removal of retained placenta where there is no doctor in order to save lives. This training was set up with the help of World Health Organization (Population Reports in the Community, 2011). This training could be rolled out to other countries worldwide. The training would improve the practice of midwives and thus lower maternal and infant morbidity and mortality rates due to postpartum haemorrhage.

In Uganda, the maternal mortality stands at 1000 per 100,000 live births. This high maternal mortality rate is attributed to poor and non-availability of items required to provide care to women with obstetric emergencies such as postpartum haemorrhage. Another reason for the high mortality is the high number of home deliveries which are conducted unhygienically by unsupervised and untrained Traditional Birth Attendants. The Traditional Birth Attendants cannot provide any emergency obstetric care due to the fact that they cannot actively manage the third stage of labour and they have not

been trained to use equipment like nonpneumatic antishock garment in saving the lives of haemorrhaging women (Miller, S. (2007). Thus the Ministry of Health in Uganda has put more emphasis on improving all aspects of care, that is accessibility, availability of equipment, supplies and using skilled birth attendants who can use emergency equipment when need arises. The Ugandan Ministry of Health hopes that this will lead to the effective and efficient management of obstetric complications such as postpartum haemorrhage.

In South Africa, the maternal mortality in 1998 was 150 per 100,000 live births and a significant number of these were due to postpartum haemorrhage. In 2000, 99 women died in South Africa due to postpartum haemorrhage (Myles, 2006). Postpartum haemorrhage should not be underestimated in any delivery as there is potential for it to occur during the third stage of labour in any delivery.

Mkumba (2005) states that the government of Zambia continues to make strides to lower maternal mortality rate through research. Currently, the pilot study on the use of the non- pneumatic anti shock garment is also being carried out at the University Teaching Hospital (UTH) to find out the effectiveness of the garment on the care of women who experience postpartum haemorrhage after delivery and the prevention of shock. The study is being carried out by Miller and Mkumba. If the garment is found to be effective in treatment of obstetric haemorrhage and prevention of shock, recommendations will be made to the government to purchase the garments and include them in the essential equipment for EmOC. The garment has been successfully used in America and Egypt (Mkumba, 2005). Another study was also carried out in Nigeria; findings are yet to be disseminated. It is hoped that the practice of midwives will improve when they are trained on the use of the nonpneumatic antishock garment.

In the past, the practice in midwifery has been to identify pregnant women at risk of developing obstetric complications and refer them for prevention and management of complications. Evidence has shown that contrary to what was believed and practiced, the one at risk or not at risk of developing complications cannot reliably be predicted.

Obstetric complications can develop at any time. Therefore, pregnant women should be encouraged to deliver where there is a skilled attendant who is trained and equipped to manage such complications as postpartum haemorrhage that arise most frequently (WHO, 2010).

According to Mkumba's report (2005), Zambia is among the countries in the Sub-Saharan region with high maternal mortality. Access to quality care, when a woman develops pregnancy and childbirth related complications such as postpartum haemorrhage is critical to help in the reduction of maternal mortality. However, the poor quality of services offered to women with postpartum haemorrhage is explained by the inadequate supply of infrastructure, equipment, referral services, drugs and limited human skills.

### **2.1.3 Outcome of Management of Postpartum Haemorrhage**

Postpartum haemorrhage is un-predictable, sudden in onset, and more dangerous when the woman is anaemic. Blood loss can very rapidly lead to death in the absence of prompt and appropriate life-saving care which includes administration of drugs to control bleeding, massage of the uterus to stimulate contractions, and blood transfusion if necessary (WHO, 2013). Managers should ensure availability of resources, both skilled manpower and materials in order to offer quality care to women experiencing postpartum haemorrhage and as such have good outcome. During the second half of the 20th century, a package of interventions performed during the third stage of labour became the cornerstone for the prevention of postpartum haemorrhage. This approach became known as the "active management of the third stage of labour (WHO, 2013). Active management of the third stage of labour is associated with a substantial reduction in the occurrence of postpartum haemorrhage. It is generally assumed that by preventing and treating postpartum haemorrhage, most postpartum haemorrhage-associated deaths could be avoided. The prevention and treatment of postpartum haemorrhage are therefore vital steps towards improving the health care of women during childbirth and the achievement of the Millennium Development Goals (WHO, 2013).

Although there is risk of postpartum haemorrhage at every delivery, severe complications of postpartum haemorrhage including maternal mortality are most common in developing countries. Lack of skilled attendants, lack of access to medications to prevent and treat hemorrhage, great distances from medical centers and inability to provide blood transfusions plus surgery, increase risks of postpartum haemorrhage morbidity and mortality (WHO, 2013). Long term morbidity includes renal impairment, Sheehan's Syndrome and the risk of blood-borne infections from blood transfusions (Policy, Guidelines and Procedure Manual, 2012).

#### **2.1.4 Conclusion**

Postpartum hemorrhage is unpredictable and can occur in women with no risk factors. Active management of the third stage of labor (AMTSL) should be used routinely. Management of postpartum haemorrhage requires rapid diagnosis and treatment. Diagnosis and treatment occur simultaneously. Early recognition, systematic evaluation and treatment, and prompt fluid resuscitation minimize the morbidity and mortality associated with postpartum hemorrhage, regardless of cause (Evensen and Anderson, 2013).

The above literature clearly indicates that most countries worldwide do support the use of skilled midwives to care for women with postpartum haemorrhage as a way of reducing the high maternal mortality as stated by Mkumba (2005). This will be achieved by renovation of health facilities, provision of obstetric equipment to health facilities and capacity building for health providers in the management of women with postpartum haemorrhage. However, despite the efforts that these countries have put in place to ensure that there is a successful management of mothers who experience postpartum haemorrhage, the number of maternal deaths has continued to rise. This shows that, there are problems in how mothers with postpartum haemorrhage are managed.

Furthermore, it is also evident that no researches have been done on provision of services to women with postpartum haemorrhage, which is one of the main causes of high numbers of maternal deaths worldwide. Hence the need to carry out this comparative study on provision of emergency obstetric care to women with postpartum haemorrhage between Chipata General Hospital and St Francis Mission Hospital in Eastern Province.

## **CHAPTER THREE**

### **3.0 RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the research methodology comprising the study design, study setting, study population, sample selection, data collection instruments, data collection techniques, ethical consideration, pre-testing, dissemination and utilisation of results and limitation of the study.

The research methodology includes the description of the instruments and techniques that were used to collect data. The researcher also described the study participants and how the sample was selected including the setting where the study was undertaken and the ethical/cultural considerations that were considered. The purpose of this study was to compare the management of women with postpartum haemorrhage between Chipata General Hospital and St Francis Mission Hospital. Recommendations have been presented to relevant authorities for consideration.

#### **3.2 Research Design**

A research design is a plan, structure and strategy of investigations of answering the research question. It is the overall plan or blue print selected to carry out a study (Basavanthappa, 2007). This study adopted a comparative descriptive study design. It is descriptive in nature because it sets out to discover new meaning when little is known about a phenomenon of interest (Dempsey and Dempsey, 2014).

The first phase of the study was a retrospective record review of fifty (50) mothers who had experienced postpartum haemorrhage from each of the two (2) health facilities. A checklist was used to collect information from the records. The record review assisted in collecting information on how these women were cared for and the outcome of their care in both study locations. The differences in the care given to women and the gaps in the care were identified.

The second phase of the study was a prospective design which consisted of midwives, doctors and clinical officers filling in a self-administered questionnaire in order to assess their knowledge and practice levels in the management of third stage of labour.

The natural setting was not manipulated nor any experiments carried out. This design was important because data was collected and presented systematically in order to gain a clear picture of the management of women with postpartum haemorrhage offered in these two study locations. The design was used to identify and explore the variables that gave insight into management of women with postpartum haemorrhage at both Chipata General Hospital and St Francis Mission Hospitals.

### **3.3. Research Setting**

Research setting is the physical location and conditions in which data collection takes place (Polit and Hungler, 2007). The study locations were at Chipata General Hospital in Chipata District and St Francis Mission Hospital in Katete District.

Chipata General Hospital is the Provincial second level Health Care Hospital, but also serves as a District Hospital. The District has thirty eight (38) health centers (Chipata District Health Management Board, 2007), mainly spread out in the rural areas.

Chipata General Hospital receives emergency obstetric cases such as postpartum patients referred from five districts, Lundazi, Mambwe, Chama, Chadiza and Chipata district. In 2008 the hospital served a total population of 1, 445,811 which falls within its catchment area. The expected number of pregnancies is 78,000 (5.9% of the total population) and the expected number of deliveries is 75,000 (5.2%). The number of child bearing women is 57,832 (4%) of the total population. In addition, the hospital has only 6 delivery beds while the main ward has 33 beds and three incubators in the nursery. Maternity services are offered 24 hours a day (CGH, HIMS, 2009).

The hospital is the practical center for Registered Nurses and Direct Entry Midwives. It also provides practical training for trainee Clinical Officers and Pharmacy



Technologists from Chainama College of Health Sciences and Evelyn Hone College respectively. The hospital is linked to the capital city of Zambia, Lusaka, by the Great East Road and by air from Chipata and Mfuwe Airports. There are three (3) doctors who attend to women with complications after delivery. The Obstetrician from St Francis Mission Hospital also attends to women with obstetric and gynaecological problems at Chipata General Hospital on a monthly basis. The population of Chipata district is 473,683 (CSO, 2007) and women of child bearing age are 109,112 (22% of the total population). The catchment area population for the hospital is 930,466. It also attends to referrals from Chadiza, Lundazi, Mambwe and Chama district. It is the only second level hospital in the district.

St Francis Mission Hospital was founded as a Mission Hospital by the Anglican Church in 1948. It has developed into a Second Level Referral Hospital with the capacity of 340 beds. It acts as a Referral Hospital for Eastern Province particularly for Surgery, Obstetrics, Orthopaedics and Eye patients. There are two doctors and two licentiates who attend to women with complications after delivery. One of the doctors is an Obstetrician/Gynaecologist. The hospital houses training schools for Enrolled Nurses and Midwives. The Ministry of Health also uses it as a centre for Internship for newly qualified Medical Doctors, Medical Licentiates, Pharmacy Technologists, Physiotherapists and Radiographers.

The projected population for Katete District stands at 233, 582 (15%) of the total population of the province which is 1, 567, 925, (Katete DHMT Action Plan, 2007). The hospital receives clients from Chadiza, Chipata, Mambwe, Nyimba and Petauke Districts. All these districts converge for health care services at St Francis Mission Hospital. This situation causes overcrowding at the health institution so that it attends to more patients than Chipata General Hospital.

### **3.4 Study Population**

The target population is the total group of individual people or things meeting designated criteria of interest to the researcher (Basavanthapa, 2007). In this study, the study populations were health professionals who included the midwives, doctors, obstetricians, clinical officers and medical licentiates working in the maternity wards both at Chipata General Hospital and St Francis Mission Hospital in Chipata and Katete districts respectively. There were 19 midwives, 4 doctors, 4 medical licentiates and 100 records of women who had experienced postpartum haemorrhage.

### **3.5 Sample Selection**

Sample selection is a process of selecting a portion of the study population to represent the entire population (Polit, et al., 2006). In order to obtain a representative sample of the population selected for the study, the sample was obtained from the target population which included the midwives, clinical officers/medical licentiates and doctors who work at Chipata General Hospital and St Francis Mission Hospital.

Convenient sampling is a way of selecting respondents who are available for the study. It is a non-probability sampling method (Dempsey and Dempsey, 2014). This method was used to select the study sample at the study sites because of shortage of skilled staff at the two health institutions.

#### **3.5.1 Inclusion Criteria**

Midwives, nurses, doctors and clinical officers who have worked for more than six months at the referring health centres and maternity wards both at Chipata General Hospital and St Francis Mission Hospital.

#### **3.5.2 Exclusion Criteria**

Midwives, nurses, doctors and clinical officers who have worked for less than 6 months in the referring health centres and maternity wards both at Chipata General Hospital and St Francis Mission Hospital.

### 3.6 Sample Size

Basavanthappa (2007), refers to the sample size as the number of study participants who form a part of the study population. The sample size comprises of those who will be selected as the study respondents. The sample size comprised 19 midwives, 4 doctors and 4 medical licentiates. A total of 100 records of women with postpartum haemorrhage were also reviewed.

The sample size was calculated using the Pocock's formula (1982). According to the CGH, HMIS (2007) records, the number of obstetric complications from 2007 to 2008 was 116. This constitutes the population size calculated as follows:

- PPH cases for CGH from 2007-2008 = 116
- Maternal Deaths at CGH from 2007- 2008 = 39
- Prevalence =  $39/116 \times 100 = 33.6\%$
- PPH cases for St Francis Mission Hospital from 2007-2008 = 135
- Maternal Deaths at St Francis from 2007-2008 = 23
- Prevalence =  $23/135 \times 100 = 17.0\%$
- Prevalence 1 = 34 Chipata
- Prevalence 2 = 17 Katete
- Sample size was considered at significance level (probability) of 5%, with mortality rate in Chipata of 34% and 17% in Katete.

Using the statistical procedure known as Pococks' Formular:

$$n = \frac{P_1(100-P_1) + P_2(100-P_2)}{(P_1-P_2)^2} \times f(\alpha, \beta)$$
$$f(\alpha, \beta) = 7.85 \text{ (Dobson, 1984)}$$
$$= \frac{34 \times 66 + 17 \times 83}{(34-17)^2} \times (7.85)$$
$$= \frac{2244 + 1411}{17^2} \times 7.85$$

289

= 3655

\_\_\_\_\_ X 7.85

289

= 12.65 X 7.85

= 99

The sample size needed in each area, that is Chipata General Hospital and St Francis Mission Hospital was 99.

Further considering a response rate of 90%, the adjusted sample size is:

= 99

\_\_\_\_\_ = 110  
0.9

The sample size was 100 and the same figure was for St Francis Mission Hospital.

This included:

-10 Midwives

-110 Record Reviews for women who experienced postpartum haemorrhage.

The sample size was calculated with the help of the Statistician. However, only 100 records of women with postpartum haemorrhage were reviewed because of poor record keeping at the two health facilities.

### **3.7 Data Collection Tools**

Data was collected over a period of two months (July and August, 2011). The tools used to collect data in this study were self-administered questionnaires for midwives, nurses, doctors, clinical officers and medical licentiates and record review checklists for women who experienced postpartum haemorrhage.

#### **3.7.1 Self-Administered Questionnaire**

A self-administered questionnaire that was used to collect data contained both open and closed questions (Appendix V). It contained four sections; section 'A' contained demographic information, section 'B' knowledge and 'C' practice questions. The respondents were requested to answer the questions in the questionnaires in the same

order. Open ended questions were asked to allow participants to respond to questions in their own words.

The advantages of closed ended questions were that they were easier to administer and efficient as respondents could manage to complete more closed-ended questions than open-ended ones within a short period of time and easier to analyse.

Open-ended questions allow obtaining richer and fuller information if the respondents are co-operative and able to express themselves. The disadvantage of open-ended questions is that respondents may be unwilling to compose lengthy written responses and they are difficult to analyse.

The disadvantages of the instrument were overcome by ensuring that the questionnaire only has adequate and relevant questions. More closed than open-ended questions were asked to avoid making the questionnaire very lengthy and time consuming.

### **3.7.2 Checklist**

Review of records of mothers who experienced postpartum haemorrhage was done with the aid of a checklist (Appendix VI). A checklist was developed and used to collect data from patients' files and registers. Information collected included demographic data of the patient, type of care the patient with postpartum haemorrhage received at the health facility and the outcome of the care given. The disadvantage of using a checklist was the incomplete information found in the files.

### **3.7.3 Validity**

To ensure the quality of data, it is important to establish the data collection tool's validity. Validity is defined as determination of whether a measurement instrument actually measures what it is supposed to measure (Basavathappa, 2007). The validity of the instrument in this study was maintained by ensuring that all aspects of variables pertaining to management of women with postpartum haemorrhage were included in the questionnaire. An extensive literature review was conducted before designing the

tools. To measure the validity of the data collection tools, research supervisors checked the questions in the questionnaire and the checklist. Pre-testing of the instruments was done to determine whether they brought out the desired information. The use of open-ended questions allowed spontaneous responses, which are more valid than answers suggested in closed ended questions. The questions were clearly constructed to avoid ambiguity.

Internal validity refers to interpretation of findings within the study or data collected. Sources of internal validity such as selection biases were avoided by ensuring that proper sampling methods were used and avoid preferences in selecting research samples. Data was interpreted according to the findings of the research study and presented as aggregate results.

Respondents were placed in comfortable position so that they are ready to participate by obtaining a written consent from them to fill in the questions. Noise and interruptions were minimized by using a private room. Behavioral characteristics such as non-verbal cues, facial and verbal expressions which could influence the respondents' opinions and responses were avoided.

#### **3.7.4 Reliability**

Reliability is the stability of the measuring instrument over time (Dempsey and Dempsey, 2014). Reliability of the questionnaire and the checklist was measured by pre-testing them. During the pre-test, respondents were asked if there are any questions they did not understand. This was going to allow room for alteration of the questionnaire if necessary. There was extended use of closed questions. Open-ended questions in the questionnaire provided an opportunity to clients to add their own ideas thereby bringing out issues not thought of when designing the questionnaire.

#### **3.8 Data Collection Technique**

This is a procedure of collecting data needed to address a research problem. Self-administered questionnaire and a record review checklist for mothers who had experienced postpartum haemorrhage were used to collect data.

Before the questionnaire was administered to the respondents by the researcher, the purpose of the study was explained and permission was sought from them to participate in the study. The respondents working in maternity wards were requested to fill in self-administered questionnaires and were requested not to write their names on the questionnaires. Instead numbers were allocated to all the respondents.

Records of women who experienced postpartum haemorrhage were also reviewed by the researcher. The record review was carried out from October 2008 to October 2009 in order to obtain the prevalence of morbidity and mortality of mothers who experience postpartum haemorrhage after delivery.

### **3.9 Pilot Study**

A pilot study was conducted at Kabwe General Hospital before the main study to test the validity of the methodology and to refine the data collection tools. Kabwe General Hospital was chosen because it had similar characteristics to where the actual study was going to be conducted. Twelve respondents were selected for the pilot study, which is ten percent (10%) of the sample. The records of the women who had experienced postpartum haemorrhage were selected by convenient sampling method from the hospital. The pre-test was done in order to test the validity and reliability of the data collection instruments in order to detect and solve unforeseen problems. It was also aimed to detect any errors in the questionnaire for the main study and assess the appropriateness and clarity of questions. No major amendments were done to the questionnaire and the checklist except for a few typographic errors.

### **3.10 Ethical Consideration**

Permission to conduct the study in the districts was sought from the University of Zambia (UNZA) Ethics Committee, Provincial Medical Officer for Eastern Province, and Medical Superintendent for Chipata General Hospital, St Francis Mission Hospital and Kabwe General Hospital. Respondents gave their written consent to participate in the study.

The purpose and nature of the study were explained to the study respondents. Those who declined to participate were reassured that no privileges would be taken away from them. Those who agreed to take part in the study were requested to sign a consent form. They were not remunerated in any way. The respondents were in the natural setting and hence were not exposed to any physical and emotional danger or harm.

The respondent's confidentiality and anonymity were maintained by writing serial numbers on the questionnaires instead of writing their names. Respondents completed the questionnaires in a room where there were no other people in order to ensure privacy. After each session, the investigator put all questionnaires under lock and key.



## **CHAPTER FOUR**

### **4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS**

#### **4.1 Introduction**

Data analysis is defined as “the systematic organisation and synthesis of research data and testing of research hypothesis using those data” (Polit, et al, 2006). Data was collected from the health care professionals using self-administered questionnaires. In addition, 100 records of women who experienced postpartum haemorrhage from health facilities were reviewed.

#### **4.2 Data Processing and Analysis**

After data collection, self-structured questionnaires and checklists were sorted out and edited for internal consistency, completeness, legibility and accuracy. Close-ended questions were assigned numerical codes for easy entry and analysis on the computer.

Open-ended questions were analysed by reading through the data in its entirety to identify and group answers that belong to the same category. This process is known as categorisation (Polit, et al., 2006). Following categorisation, the investigator assigned numerical codes (1, 2, 3, and 4 and others). The codes were then entered and analysed using SPSS to calculate the odds of the outcome of variables which were significant. The quantitative variables were knowledge on postpartum haemorrhage and active management of third stage of labour, practice on active management of third stage of labour and treatment of postpartum haemorrhage. The other variable was the retrospective review of the care given to women who had experienced postpartum haemorrhage at the two hospitals comparatively. The cut off point for statistical significance was set at five percent (5%), P values of 0.05 or less were considered statistically significant thereby rejecting the null hypothesis.

### **4.3 Data Presentation**

The findings have been presented according to the layout of questions and sections of the questionnaires and the retrospective checklist. The findings have been presented in different forms such as tables, bar and pie charts and cross tabulations. The tables are suitable because they summarise the findings in meaningful ways thus giving easy understanding. The pie charts and bar charts provide a variety of ways in which to present data which helps to avoid the monotony of narrative presentations.

Table (2) in Section A represents the socio-demographic characteristics of Midwives, Doctors and Licentiates at the two hospitals that is their age, length of service and knowledge on postpartum haemorrhage. Figure 1 also represents knowledge levels of midwives on postpartum haemorrhage at both hospitals.

Table (3) in section B represents the services offered and the outcome of women who had experienced postpartum haemorrhage at the two health facilities. The pie chart also represents the practice on active management of third stage of labour by midwives at both hospitals.

Table (4) in section C represents characteristics of women who had experienced postpartum haemorrhage at the two hospitals and their outcome. Figure 3 (bar chart) also represents the outcome of management of women who had experienced postpartum haemorrhage at each hospital. The cross tabulations in section C represent the relationship between the variables.

SECTION A

**4.4 Socio-demographic Characteristics of Midwives and Doctors/Licentiatees**

**Table 2: Characteristics of Midwives and Doctors/Licentiatees for the Two Hospitals**

CHARACTERISTICS	HOSPITAL		P –Value
	CHIPATA GENERAL HOSPITAL	ST FRANCIS HOSPITAL	
<b>Length of service of midwives in years, mean (SD)</b>	16.6 (8.9)	18.9 (9.3)	<b>0.605</b>
<b>Score for midwives of PPH Knowledge out of 10, mean (SD)</b>	8.9 (5.3)	8 ( 4.2)	<b>0.041***</b>
<b>Score of practice for midwives out of 24, mean (SD)</b>	5.7 (2.4)	8.7 (4.7)	<b>0.096</b>
<b>Age of midwives , mean (SD)</b>	42.6 (7.8)	44.0 (8.3)	<b>0.270</b>
<b>Age of Doctors/ Medical Licentiatees , mean (SD)</b>	34.8 (2.1)	29.5 (17.9)	<b>0.582</b>
<b>Doctors/Medical Licentiatees years of experience, mean (SD)</b>	7.1 (2.9)	7.9 (3.1)	<b>0.179</b>
<b>Length of doctors/Medical Licentiate service , mean (SD)</b>	7.1 (2.9)	7.9 (3.1)	<b>0.846</b>
<b>Knowledge Score of doctors/Medical Licentiatees on PPH , mean (SD)</b>	10.2 (0.5)	10.0 (0.816)	<b>0.620</b>
<b>PPH cases handled by doctors/Medical Licentiatees per week, mean (SD)</b>	4.0 (2.6)	4.2 (3.3)	<b>0.634</b>
Knowledge levels of midwives in Postpartum haemorrhage			
<b>High</b>	9 (81.8%)	3 (37.5%)	<b>0.048***</b>
<b>Medium</b>	2 (18.2%)	5 (62.5%)	

\*\*\* means outcome is statistically significant in the two groups

At Chipata General Hospital, women who experienced postpartum haemorrhage were attended to by doctors while at St Francis were attended to by medical licentiatees.

Doctors and Medical Licentiates were grouped together for easy analysis of the data since Medical Licentiates also actively participated in management of women with obstetric complications such as postpartum haemorrhage.

The midwives at St Francis Mission Hospital were more likely to be older than those at Chipata General Hospital ( $44.0 \pm 8.3$  Vs  $42.6 \pm 7$ ).

The mean age and length of service for midwives at St Francis Mission Hospital was higher compared to Chipata General Hospital.

The doctors/licentiates at Chipata General Hospital had a higher mean age and years of experience compared to St Francis Mission Hospital.

## SECTION B

### **4.5 Respondents Knowledge Levels**

Figure 3: **Knowledge Levels of Midwives on PPH by Hospital**

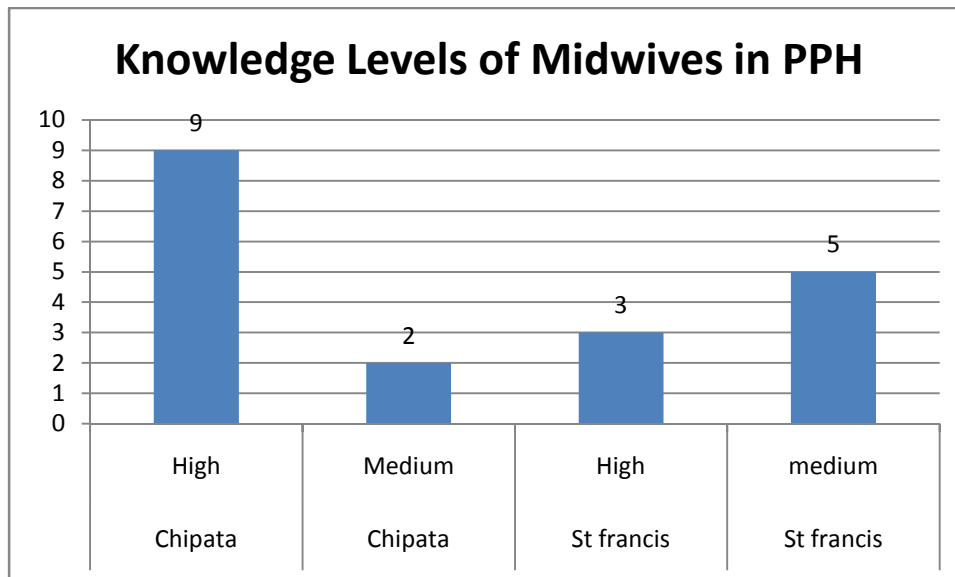


Figure 3 shows that there were more (9) midwives with high knowledge levels on postpartum haemorrhage at Chipata General Hospital compared to St Francis Mission Hospital which had few (three) midwives with high knowledge levels 9 (81.8% Vs3 (37.5%) midwives and the difference was statistically significant ( $P= 0.048$ ).

The mean knowledge score out of 11 was significantly higher in midwives at Chipata General Hospital compared to St Francis Mission Hospital ( $8.9 \pm 1.3$  Vs  $8.0 \pm 7.2$ ),  $P=0.041$ .

## SECTION C

### **4.6 Practice Levels among the Respondents**

**Figure 4: Practice on Active Management of 3rd Stage of Labour and Treatment Of PPH by Hospital**

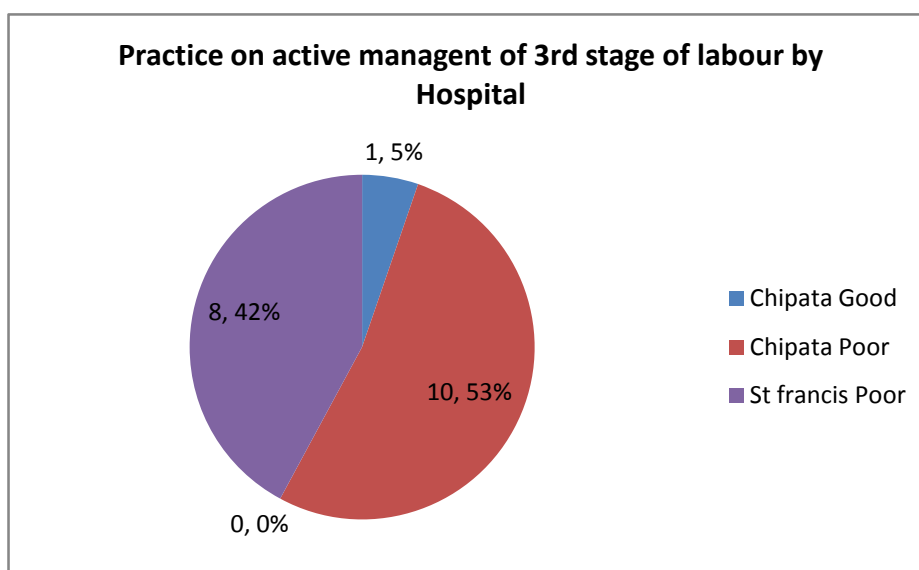


Figure 4 shows that the midwives' practice on active management of labour at St Francis Mission Hospital is good compared to Chipata General Hospital which is 8.42% Vs 1.5% despite having more midwives with high knowledge levels.

## SECTION D

## 4.7 Management of Women with Postpartum Haemorrhage and Outcome

Table 3: Services Offered To Women with Postpartum Haemorrhage by Health Facility

SERVICES OFFERED	HOSPITAL		P –Value
	CHIPATA	ST FRANCIS	
<b>Active management of labour carried out</b>			
NO	18(36.0%)	3 (6.0%)	<b>&lt;0.0001***</b>
YES	27 (54.0%)	45 (90.0%)	
<b>Uterus massaged and clots expelled after giving Oxytocin</b>			
NO	27 (54.0%)	3 (6.0%)	<b>&lt;0.0001***</b>
YES	17 (34.0%)	43 (90.0%)	
<b>Oxytocin 10 IU given Intravenously because bleeding persisted</b>			
NO	20 (44.0%)	34 (70.0%)	<b>0.023****</b>
YES	19 (38.0%)	12 (24.0%)	
<b>Manual removal of retained placenta</b>			
NO	33 (66.0%)	33 (66.0%)	<b>0.445</b>
YES	12 (24.0%)	15 (30.0%)	
<b>Applied bimanual uterine compression because of heavy postpartum bleeding persisting</b>			
NO	44 (88.0%)	46 (92.0%)	<b>0.435</b>
YES	1 (2.0%)	2 (4.0%)	
<b>Applied aortic compression above umbilicus to stop the bleeding</b>			
NO	43 (86.0%)	46 (92.0%)	<b>0.319</b>
YES	2 (4.0%)	1 (2.0%)	
<b>Applied the Non-Pneumatic Antishock Garment(NPASG)</b>			
NO	44 (88.0%)	45 (90.0%)	<b>0.257</b>
YES	0 (0%)	2 (4.0%)	
<b>Carried out observations during blood transfusion</b>			
NO	12 (24.0%)	10 (20.0%)	<b>0.911</b>
YES	30 (60.0%)	32 (64.0%)	
<b>Outcome of services provided</b>			
Mother in good condition	38 (84.4%)	44 (88.0%)	<b>0.223</b>
Mother with a complication	0 (0%)	2 (4.0%)	
Mother died	7 (15.6%)	4 (8.0%)	
<b>When the mother died</b>			
Before intervention	1 (2.0%)	2 (4.0%)	<b>0.004***</b>
During intervention	3 (6.0%)	2 (4.0%)	
After intervention	2 (4.0%)	4 (8.0%)	
<b>Cause of mothers death</b>			
Haemorrhage	4 (8.0%)	2 (4.0%)	<b>&lt; 0.0001***</b>
Infection	0 (0%)	4 (8.0%)	
Other	2 (4.0%)	0 (0%)	

\*\*\* means outcome is statistically significant in the two groups.

Table 3 shows the services offered to women with postpartum haemorrhage at the two health facilities, however, the following were more likely to be offered to women at St Francis Hospital than Chipata General Hospital: Active management of labour (90.0% Vs 54.0%),  $P= 0.002$ ; Uterine massage and expelling of the clots after giving Oxytocin (90.0% Vs 34.0%),  $P<0.0001$  (these were significant); Manual removal of placenta (30.0% Vs 24.0%),  $P=0.445$ ; Application of bimanual uterine compression because of heavy persistent postpartum bleeding (4.0% Vs 2.0%),  $P=0.435$ ; Application of the non-pneumatic antishock garment (4.0% Vs 0%),  $P = 0.257$ ; Carrying out observations during blood transfusion (64.0% Vs 60.0%),  $P = 0.911$  (these were not significant).

The high number of deaths were more likely to happen in women at Chipata General Hospital than those at St Francis Mission Hospital (15.6% Vs 8.0%),  $P = 0.223$  and the cause of mothers' deaths was more likely to be haemorrhage at Chipata General Hospital than St Francis Hospital thus (8.0% Vs 4.0%),  $P< 0.0001$ . The mothers who died were more likely to die during intervention at Chipata General Hospital than at St Francis Mission Hospital (6.0% Vs 4.0%),  $P=0.004$ .

Women from St Francis Mission Hospital were more likely to have higher mean parity ( $3.7 \pm 2.5$  Vs  $2.9 \pm 2.2$ ), higher mean gravida ( $4.2 \pm 2.4$  Vs  $3.3 \pm 2.3$ ), higher mean gestational period ( $38.4 \pm 4.6$  Vs  $37.9 \pm 2.4$ ) and higher mean Intermittent presumptive treatment received, ( $2.7 \pm 0.86$  Vs  $2.1 \pm 0.6$ ) than those at Chipata General Hospital. All these differences are not statistically significant ( $P>0.05$ ). St Francis Mission Hospital had a significantly higher mean number of women visits to the hospital than those of Chipata General Hospital ( $4.2 \pm 1.3$  Vs  $2.6 \pm 0.5$ ),  $P< 0.0001$ .

#### 4.8 Outcome of Postpartum Haemorrhage Management

Figure 5: Outcome of Management of Fifty Women with Postpartum Haemorrhage by Hospital

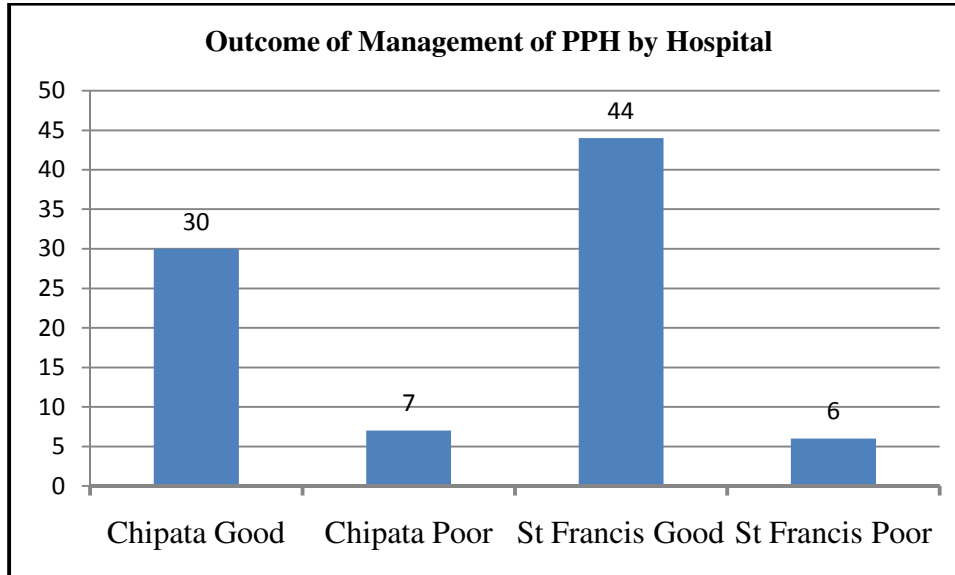


Figure 5 shows that 44 (88%) women out of 50 who had postpartum haemorrhage had a good outcome at St Francis Mission Hospital while at Chipata General Hospital, only 30 (66%) women out of 50 women who had experienced postpartum haemorrhage had a good outcome.



**Table 4: Associations between Knowledge and Practice at Chipata General Hospital and St Francis Mission Hospital**

PROFESSION	KNOWLEDGE	PRACTICE	CHIPATA GENERAL HOSPITAL	ST FRANCIS HOSPITAL	P-VALUE
MIDWIFE	CGH-9 HIGH ST FRANCIS HOSPITAL - 3HIGH	Active management of labour	No:18 Yes:27	No:3 Yes:43	<0.0001***
		Uterine massage and expel clots	No:27 Yes:17	No:3 Yes:43	<0.0001***
		Administer Intravenous Oxytocin if bleeding is excessive	No:20 Yes:19	No:34 Yes:12	0.023****
		Manual removal of retained placenta	No:33 Yes:12	No:33 Yes:15	0.445
		Bimanual compression of uterus	No:44 Yes:1	No:46 Yes:2	0.435
		Aortic compression	No:43 Yes:	No:44 Yes:1	0.319
		Application of the Non- pneumatic antishock Garment	No:44 Yes: 0	No:45 Yes:2	0.257
		Blood Transfusion Observation	No:12 Yes:30	No:10 Yes:32	0.911

Table 4 shows the association between knowledge and practice of the midwives on the women who had postpartum haemorrhage. Active management of labour, massage of the uterus and administration of Oxytocin were significant. Few midwives had high

knowledge levels at St Francis Mission Hospital but their practice was good compared to Chipata General Hospital.

**Table 5: Associations between Knowledge and Outcome of Women who had Postpartum Haemorrhage**

PROFESSION	KNOWLEDGE	OUTCOME	CHIPATA GENERAL HOSPITAL	ST FRANCIS	P VALUE
MIDWIFE	CGH: High-9 Medium-2 St. Francis:High-5 Medium-3	Good condition	33	44	<b>0.223</b>
		With complications	0	2	
DOCTORS/LICE	Knowledge score CGH:10.2 ST Francis: 10.2	Died	7	4	<b>0.004***</b>
		Before intervention	1	2	
		During intervention	3	1	
		After intervention	3	1	
		Cause of Death: -Hemorrhage -Infection -Other	4 0 3	2 2 0	<b>0.0001***</b>

Table 5 shows the association between knowledge of the Midwives/Doctors/Licentiates and outcome. The time the women died and the cause of death were statistically significant. Three women died during intervention and three after intervention of postpartum management at Chipata General Hospital where nurses had high knowledge levels on postpartum haemorrhage while at St Francis Mission Hospital, one woman

died during intervention and one woman died after intervention due to bleeding despite having few nurses with high knowledge.

**Table 6: Associations between Midwives' Practice and Outcome of Women with Postpartum Haemorrhage**

PRACTICE	HOSPITAL		P VALUE	OUTCOME	HOSPITAL		P VALUE
	CHIPATA	ST FRANCIS			CHIPATA	ST FRANCIS	
Active management of Labour	No:18	No:3	<b>&lt;0.0001***</b>	Good condition	33	44	<b>0.223</b>
	Yes:2	Yes:3		Complication	0	2	
Massage uterus	No:27	No:3	<b>&lt;0.0001***</b>	Died	7	4	<b>0.004***</b>
	Yes:1	Yes:40					
Administration of Oxytocin	No:20	No:34	<b>0.023***</b>	Before intervention	1	2	<b>0.0001***</b>
	Yes:1	Yes:12					
Manual removal of the placenta	No:33	No:33	<b>0.445</b>	During intervention	3	1	<b>0.0001***</b>
	Yes:1	Yes:15					
Bimanual compression of the uterus	No:10	No:40	<b>0.435</b>	After intervention	3	1	<b>0.0001***</b>
	Yes:1	Yes:2					
Aortic compression	No:10	No:41	<b>0.319</b>	Haemorrhage	4	2	<b>0.0001***</b>
	Yes:2	Yes:1					
Non-pneumatic Anti shock Garment application	No:40	No:40	<b>0.257</b>	Infection	0	2	<b>0.0001***</b>
	Yes:0	Yes:2					
Blood Transfusion	No: 12	No. 10	<b>0.911</b>	Other	3	0	<b>0.0001***</b>
	Yes :30	Yes: 32					
Observation							

Table 6 shows that St Francis Mission Hospital had good practice and good outcome of women with postpartum haemorrhage. More nurses carried out active management of

labour, massage of the uterus and administration of Oxytocin intravenously at St Francis Mission Hospital than at Chipata General Hospital. Chipata General Hospital had more maternal deaths (7) than St Francis Mission Hospital, most of which were due to haemorrhage (4).

## **CHAPTER FIVE**

### **5.0 DISCUSSION OF FINDINGS**

#### **5.1 Introduction**

The main objective of the study was to compare the provision of care to women with postpartum haemorrhage (PPH) between Chipata General Hospital and St Francis Mission Hospital in Eastern Province. Data was collected using self-administered questionnaires and checklists of the women who had experienced postpartum haemorrhage.

#### **5.2 Socio-demographic Characteristics of Midwives and Doctors/Licentiates**

The characteristics of the midwives, doctors and licentiates at the two hospitals as shown in Table 2 (page 59), reveal that the mean age for the midwives at St Francis Mission Hospital were higher compared to Chipata General Hospital, the midwives had also worked for a long time on average ( $18.9 \pm 9.3$  Vs  $16.6 \pm 8.9$ ) and age ( $44.0 \pm 8.3$  Vs  $42.6 \pm 7.8$ ). These differences were not statistically significant. However, the reason why the midwives at St Francis Mission Hospital were likely to be older than at Chipata General Hospital was that St Francis Mission Hospital being run by Catholic and Anglican Missionaries, must have cultured deep religious inclinations in their midwives and hence they serve the institution for longer periods. For the same reasons, St Francis Mission Hospital keeps the older midwives in service for longer periods compared to Chipata General Hospital. Because of religious inclinations and having worked for a long time, the midwives at St Francis Mission Hospital are more dedicated to the delivery of skilled care to the women with postpartum haemorrhage. Hence the lower maternal mortality rate at the hospital.

Zambia is a developing country with unacceptably high maternal mortality ratio of 591/100,000 (which is still high even after having been reduced from 729/100,000 live births (CSO, 2007). In order to reduce the unacceptably high maternal mortality rate the country is experiencing, it is important that health care facilities have midwives who are not only knowledgeable but also competent and dedicated to the provision of quality health care in a clean and safe environment.

The mean years of experience, mean age, mean knowledge score for doctors/clinical officers/medical licentiates were higher among Chipata General Hospital compared to St Francis hospital doctors/licentiates thus ( $7.1 \pm 2.9$  Vs  $3.9 \pm 3.1$ ), ( $34.8 \pm 2.1$  Vs  $29.5 \pm 17.9$ ), ( $10.2 \pm 0.5$  Vs  $10.0 \pm 0.82$ ) respectively.

The Mean length of service for doctors/licentiates service was higher at St Francis Mission Hospital than Chipata General Hospital ( $7.9 \pm 7.3$  Vs  $7.1 \pm 2.9$ ). The explanation could be the same as above in relation to midwives that since St Francis Mission Hospital was being run by Catholic and Anglican Missionaries, it must have cultured deep religious inclinations on the medical licentiates also and hence serve the institution for longer periods. For the same reasons, St Francis Mission Hospital keeps the older medical licentiates in service for longer periods compared to Chipata General Hospital. Because of religious inclinations and having worked for a long time, the medical licentiates at St Francis Mission Hospital are more dedicated to the delivery of skilled care to the women with postpartum haemorrhage. The Post Newspaper, reported on 4<sup>th</sup> November, 2013, that despite St Francis Mission Hospital in Katete facing a critical shortage of staff, it remains the most preferred health facility for surgical and paediatric services in Eastern province (Miti, C. & Kalaluka, M., 2013). Furthermore, Chief Kaduku of Mozambique in the Post Newspaper for November, 20, 2013, hailed Zambia for rendering good medical services to his people. He said his area would have lost many lives had it not been for Zambian health services. He further expressed happiness with the Ministry of Health through Nyanje and St Francis Mission Hospital for attending to his people (Luo, R., 2013).

### **5.3 Knowledge Levels among the Respondents**

Figure 3 (page 60) shows that there were more midwives with high knowledge levels on postpartum haemorrhage at Chipata General Hospital compared to St Francis Mission Hospital, (81.8% Vs 37.5%) and the difference was statistically significant ( $p=0.048$ ). However, there were more maternal deaths due to postpartum haemorrhage at Chipata General Hospital despite the midwives having more knowledge than at St Francis Mission Hospital.

Postpartum haemorrhage, an obstetric complication, does also occur in the developed countries despite their advanced technology due to complications arising from pregnancy and childbirth (WHO, 2013). Postpartum haemorrhage is the most common form of obstetric haemorrhage and is a leading cause of maternal morbidity and mortality globally. In 2010, 5.9% of the birthing women in Queensland suffered postpartum haemorrhage (Queensland Clinical Guidelines: PPH 2012). Knowledge of the fact that the risk of postpartum haemorrhage should not be underestimated for any delivery is vital (Myles, 2006) and the midwife plays a central role in prevention and treatment of postpartum hemorrhage.

The health care providers who care for women during pregnancy, labour and delivery should give women all the necessary information about the preventive care for women who are predisposed to postpartum haemorrhage. In order to carry out this role, they are required to be knowledgeable on how to prevent postpartum haemorrhage on women who are susceptible to postpartum haemorrhage. Improving Knowledge and adherence to guidelines can be increased by printed educational materials, outreach visits, Continuing Medical Education (CME) and workshops, influencing opinion leaders and audit and feedback. These training techniques all are associated with small but significant improvements in the knowledge and quality of care of patients, and thus should be used on a regular basis to reinforce the guidelines to all health care providers in maternity units (Moodley J. et al., 2010). Midwives at Chipata General Hospital and St Francis Mission Hospitals need to adopt these measures in order to improve on the delivery of services to women with postpartum haemorrhage.

In conclusion, it is important to employ skilled and knowledgeable midwifery practitioners to attend to women who experience postpartum haemorrhage. This knowledge is very important because postpartum haemorrhage is one of the most alarming emergencies a midwife can face. It is terrifying if it occurs immediately following a straight forward delivery. The midwife is often the first and may be the only professional person present when haemorrhage occurs and her knowledge and prompt and competent action is critical in controlling postpartum haemorrhage and reducing the risk of morbidity and mortality as supported by Myles (2006).

#### **5:4 Practice among the Respondents**

Figure 4 (page 61) shows that Chipata General Hospital was more likely to have poor practice on active management of third stage of labour compared to St Francis Mission Hospital despite having high knowledge levels, that is, 10.53% Vs 8.2%. Active management of third stage of labour involves the use of uterotonic drugs, controlled cord traction and carrying out uterine massage. The use of uterotonic involves giving Oxytocin 10 units intramuscularly or intravenously within one minute of delivery of the baby after ensuring that there is no undiagnosed twin. Severe bleeding after birth can kill a healthy woman within two hours if she is unattended. Injecting Oxytocin immediately after childbirth effectively reduces the risk of bleeding (WHO, 2013).

Delivery is a critical time because for women to have access to skilled delivery care, skilled birth attendants should be able to make decisions about unexpected serious complications such as postpartum haemorrhage. Skilled birth attendants who are health professionals such as doctors or midwives in order to give skilled delivery care, should be able to make decisions about the unexpected serious complications such as postpartum haemorrhage. They should be able to recognize it, treat or refer the women for more advanced care if need be (Maternal Mortality, 2005). The midwives at Chipata General Hospital and St Francis Mission Hospital, since they undergo the same training, should have the necessary knowledge and skill on active management of third stage of labour in order to effectively prevent postpartum haemorrhage in women at risk. Additionally, the midwives at St Francis Mission Hospital, being at a Mission



Hospital run by Catholic and Anglican Missionaries, could have cultured deep religious inclinations into their minds and hence have served the institution better and for a longer period of time.

The problem of training nurses and midwives on the performance of certain procedures, sub-regionally, that is, in Cameroon, Malawi, Nigeria, Tanzania and Democratic Republic of Congo, has been solved by training them on how to perform some obstetric procedures previously carried out only by doctors. Nurses and midwives in rural maternity centres in these countries now know how to treat postpartum haemorrhage and to perform vacuum extractions, caesarean sections and symphysiotomies through training (Population Reports in the Community, 2011).

Postpartum haemorrhage due to laxy uterine muscles as a result of prolonged labour can be prevented also by availing to the midwives the knowledge on how to use the non-pneumatic antishock garment in haemorrhaging women after delivery. Women with postpartum haemorrhage can be attended to even when doctors are not there and thus reduce on the number of women dying from postpartum haemorrhage (Mkumba, 2005).

Moodley et al (2010) reported that the majority of postpartum haemorrhage deaths were preventable and revealed major deficiencies in access to and the functioning of the health system at all levels. Patients with postpartum haemorrhage require immediate treatment and often do not survive referral to another level of care. It is vital that all levels of care can deal with the emergency management of postpartum haemorrhage and also are aware of the factors required to prevent it. This requires sufficient facilities, supplies and skilled staff. Major improvements in the functioning of the health system and appropriate training of doctors and midwives at all levels of care are essential if deaths from this preventable cause of maternal mortality (postpartum haemorrhage) are to be reduced. Improving health care for women during childbirth in order to prevent and treat postpartum haemorrhage is an essential step towards the achievement of the Millennium Development Goals (WHO 2012).

The health care providers who care for women during pregnancy, labour and delivery should give them all the necessary information on how to prevent postpartum haemorrhage. No matter where they live, women need to access information and care that keeps them healthy and safe during the birthing process. Women who need this service should be referred promptly to the nearest health facility with qualified midwives. Prompt action and referrals will help lower maternal and infant mortality rates which stand at 591 per 100, 000 live births and 70 per 1,000 live births respectively (CSO, 2007).

### **5.5 Outcome of Women with Postpartum Haemorrhage**

Figure 5 (page 64) shows that the outcome of management of postpartum haemorrhage is more likely to be good at St Francis compared to Chipata General Hospital 44 (88.0% Vs 30 (66.0%). This difference is not statistically significant ( $P=0.063$ ). However, many, midwives (9) at Chipata General Hospital had high levels of knowledge but had more maternal deaths (7) most of whom died due to haemorrhage during and after an intervention. While St Francis Mission Hospital had only 3 midwives with high knowledge levels but had less maternal deaths (4) and only 2 of them died due to haemorrhage.

Morbidity and mortality meetings at operational level are powerful tools to assist in highlighting the value of clinical protocols and to train staff in safe clinical practice through open and frank discussions. These meetings are held every month. Institutions should have a mechanism in place to report adverse outcomes, defined as any adverse outcome that is not intended and reflects harm or medico-legal liability. This is different from morbidity and mortality assessments as it only focus on adverse outcomes, thus reflecting events that occur as a consequence of the health system and not because of natural progress of disease. The aim of reporting these events is to do a thorough root cause analysis to determine the systems involved in the etiology of these events. The clinical manager should have a multi-professional and multi-disciplinary team to assist in evaluating these events and use this to adjust policies and guidelines

within the institution or in case of a systems failure outside the institutional level, to elevate the problem to provincial level (Moodley et al., 2010).

Table 6 (page 67) shows that more women with postpartum haemorrhage had a good outcome at St Francis Mission Hospital compared to Chipata General Hospital. St Francis Mission Hospital had four maternal deaths while Chipata General Hospital had seven maternal deaths and the difference was significant (0.004). Two women died before intervention and two during intervention at St Francis Mission Hospital. Three clients could not be transfused due to lack of blood group 0. One maternal death came from a Mozambican village. The woman came to the hospital after a twin delivery at home. One woman had an intrauterine death after being assaulted and she had tuberculosis as well. Intrauterine death precipitates disseminated intravascular coagulation (DIC) which leads to excessive bleeding after delivery. St Francis Mission Hospital needs to ensure that they have enough stocks of blood since it is a referral hospital. Two of the women came from Chadiza as referrals. It is important that Chadiza improves in its care for mothers with postpartum haemorrhage by having knowledgeable and skilled health care providers. Four women died due to haemorrhage at Chipata General Hospital. Three of them delivered at home and came from Kalongwezi area where the hospital is situated. One woman came from Kapata area. These maternal deaths could not have occurred if appropriate nursing care was given antenatally, during labour and after delivery since the areas they came from are within Chipata urban where the aspect of delay could not be accepted.

There is need for midwives to improve in their Information, Education and Communication to pregnant women during antenatal on the importance of hospital delivery where skilled midwives can adequately attend to complications during and after delivery. For example, retained placenta and retained products of conception can be prevented by active management of third stage of labour. Manual removal can also be done aseptically to prevent infection. Prim-gravid with complications such as cephalo-pelvic disproportion should be sent to the hospital in good time so that they are attended to appropriately to prevent prolonged labour which can lead to postpartum

haemorrhage. Three of the women who died at Chipata General Hospital had disseminated intravascular coagulation. It is important to find out the cause of the disseminated intravascular coagulation in these women at Chipata General Hospital in order to prevent it or manage it appropriately.

Staff attitude to mothers who go to facilities for delivery may affect utilization of services. Good attitudes encourage mothers to deliver at the health institution while bad attitudes make mothers to shun health centres and deliver at home under the care of their relatives or friends with no delivery skills. The same reason above could also apply. St Francis Mission Hospital has a mothers' shelter where pregnant women with complications from far places are accommodated till they deliver. Chipata General Hospital also has a mothers' shelter but some pregnant women die with complications even after being kept at the mothers' shelter. The midwives who attend to women in labour ward also attend to pregnant women in general maternity ward at Chipata General Hospital while at St Francis Mission Hospital the labour ward staff is different from the general maternity ward staff.

World Health Organisation states that postpartum haemorrhage accounts for twenty-four (24%) of all complications which occur after deliveries and it is one of the main causes of maternal deaths. Improving maternal health is one of the eight Millennium Development Goals (MDGs) adopted by the international community in 2000. Under MDG5, many countries have been committed to reducing maternal mortality by three quarters between 1990 and 2015. Since 1990, maternal deaths worldwide have dropped by 47%. In sub-Saharan Africa, a number of countries have halved their levels of maternal mortality since 1990. In other regions, including Asia and North Africa, even greater headway has been made. However, between 1990 and 2010, the global maternal mortality ratio (i.e. the number of maternal deaths per 100 000 live births) declined by only 3.1% per year. This is far from the annual decline of 5.5% required to achieve Millennium Development Goal number 5 (WHO, 2013). Shortage of skilled health care provider could be one of the factors since Zambia is also facing a critical shortage of qualified midwives.

It is important, that those who develop postpartum haemorrhage have the means to access and receive prompt treatment at a health facility with basic or comprehensive emergency obstetric care (EmOC) equipment. In low-income countries, these equipment are mostly not available especially the non-pneumatic anti-shock garment which prevents shock in haemorrhaging women.

Table 6 (page 67) also shows the association between practice and outcome of mothers who had postpartum haemorrhage. The practice of active management of labour, massage of the uterus in order to expel blood clots and administration of intravenous Oxytocin were statistically significant. The time the women died and the cause of deaths were also statistically significant. Most of the practices done during the care of women with postpartum haemorrhage were carried out on few patients at Chipata General Hospital compared to St Francis Mission Hospital as shown in table 6 (manual removal of the placenta, bimanual compression, nonpneumatic antishock application and blood transfusion observations). These are the practices skilled birth attendants should be able to carry out adequately in the prevention and treatment of postpartum haemorrhage but this is not the case. The staff at St Francis Mission Hospital carried out most of the procedures on the women with postpartum haemorrhage. This explains why the outcome of care of women with postpartum haemorrhage was good at St Francis Mission Hospital compared to Chipata General Hospital.

According to World Health Organisation (2013), most maternal deaths are avoidable since health-care solutions to prevent or manage complications are well known. All women need access to antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth. It is particularly important that all births are attended by skilled health professionals, as timely management and treatment can make the difference between life and death.

Improving maternal health is one of WHO's key priorities. World Health Organisation is working to reduce maternal mortality by providing evidence-based clinical and programmatic guidance, setting global standards, and providing technical support to

Member States. In addition, World Health Organisation advocates for more affordable and effective treatments, designs training materials and guidelines for health workers, and supports countries to implement policies and programmes and monitor progress.

In Uganda, the maternal mortality stands at 1000 per 100,000 live births. This high maternal mortality rate is attributed to poor and non-availability of items required to provide care to women with obstetric emergencies such as postpartum haemorrhage.

Another reason for the high mortality is the high number of home deliveries which are conducted unhygienically by unsupervised and untrained Traditional Birth Attendants. The Traditional Birth Attendants cannot provide any emergency obstetric care due to the fact that they cannot actively manage the third stage of labour and they have not been trained to use equipment like nonpneumatic antishock garment in saving the lives of haemorrhaging women (Uganda, MOH, 2007). Thus the Ministry of Health in Uganda has put more emphasis on improving all aspects of care, that is accessibility, availability of equipment, supplies and using skilled birth attendants who can use emergency equipment when need arises. The Ugandan Ministry of Health hopes that this will lead to the effective and efficient management of obstetric complications such as postpartum haemorrhage.

Egypt has been successful in reducing maternal mortality ratio from 174/100 000 live births in 1992/93 to 84/100 00 live births in 2000. Sixty percent (60%) of these deaths were attributed to obstetric haemorrhage. The Non-Pneumatic Anti-Shock Garment (NPASG) has been used as a first-aid device to reverse shock and decrease bleeding among women with severe haemorrhage and hypovolaemic shock (Miller et al., 2006).

## **5.6 Limitations of the Study**

The following are the limitations of this study:

- Poor documentation of patients' files affected data collection on the women with postpartum haemorrhage because the retrospective checklists did not have all the information

- Some files could not be found from the Records Department of the two hospitals, this led to having a sample size of 50 of the women who had postpartum haemorrhage from each hospital.
- Generalization of findings to other health facilities would not be appropriate because the knowledge and practices discussed related to doctors, clinical officers and midwives at Chipata General Hospital and St Francis Mission Hospital only.

## **5.7 Implications to Nursing**

The findings of this study have the following implications:

### **5.7.1 Nursing Practice**

The study findings showed that all the midwives and doctors/licentiates looking after women with postpartum hemorrhage were knowledgeable about the complication and its management which is a positive aspect in nursing education. However, it is observed that the discrepancy between knowledge and practice among the midwives is a source of concern. The Knowledge levels of midwives on postpartum haemorrhage was higher at Chipata General Hospital compared to St Francis Mission Hospital (81.8% Vs 37.5%) and the difference was statistically significant ( $P=0.048$ ). The mean knowledge score out of 11 was significantly higher in midwives at Chipata General Hospital compared to St Francis ( $8.9 \pm 1.3$  Vs  $8.0 \pm 7.2$ ),  $P= 0.041$ . Postpartum haemorrhage services were more likely to be offered to women at St Francis hospital than Chipata General Hospital. Nursing managers should ensure that postpartum haemorrhage protocols are well developed and made available to the midwives on the wards.

Organizational management is responsible to ensure that systems are in place to ensure that practitioners can manage patients with acute haemorrhage appropriately. Such functions are usually delegated down to the management structures of the maternity section with support from the institutional supply chain management. Key role players are the lead nurse in the maternity section, the lead clinician in the maternity section,

the institutional clinical/ nursing manager and the executive officer of the institution (Moodley et al., 2010).

Active management of labour was offered at 90.0% at St Francis Mission Hospital while at Chipata General Hospital was offered at 54.0% giving a P value of 0.002. Uterus massaged and clots expelled after giving Oxytocin (90.0% Vs 34.0%),  $P < 0.0001$ . The two practices were statistically significant. The higher numbers of deaths were more likely to happen from women at Chipata General Hospital than those of St Francis Mission Hospital (15.6% Vs 8.0%).

### **5.7.2 Nursing education**

There is need therefore, for the Midwifery training curricular to put more emphasis on practical skills such as active management of third stage of labour, manual removal of retained placenta, bimanual compression and application of the non-pneumatic antishock garment during training. Major improvements in the functioning of the health system and appropriate training of doctors and midwives at all levels of care are also a factor and essential if deaths from this preventable cause of maternal mortality due to postpartum haemorrhage are to be reduced (Moodley J., et al 2010).

### **5.7.3 Nursing Administration**

The study revealed that the knowledge levels of the midwives did not relate to their practice. At Chipata General Hospital 9 midwives had high knowledge levels while 2 midwives had medium knowledge levels but most procedures on mothers with postpartum haemorrhage were not adequately carried out. At St Francis Mission Hospital, only three midwives had high knowledge levels and five midwives had medium knowledge levels. Chipata General Hospital had more maternal deaths compared to St Francis Mission Hospital. The practice of carrying out procedures to control postpartum haemorrhage was very good. It is the responsibility of Nursing Administration through constant monitoring to ensure that the midwives and other health care providers carry out their postpartum haemorrhage protocols on patients



experiencing postpartum haemorrhage according to lessons learnt during their training. Gaps need to be identified and necessary measures taken, such as monitoring, provision of materials, ensuring staffing levels are adequate, capacity building of the staff with the necessary knowledge and skills to treat postpartum haemorrhage.

#### **5.7.4 Nursing Research**

The review of literature in this study showed that a number of researches on knowledge and practice of care of women with postpartum haemorrhage have been done. However, limited research has been conducted on attitudes of the health care providers. Nurse researchers can also look at whether knowledge of the health care providers can be related to their practice.

### **5.8 Conclusion and Recommendations**

#### **5.8.1 Conclusion According to Stated Research Objectives**

The study was carried out to compare the provision of care to women with postpartum haemorrhage between Chipata General Hospital and St Francis Mission Hospital in Eastern Province. The study revealed that the midwives at Chipata General Hospital had high knowledge levels compared to the midwives at St Francis Mission Hospital. The knowledge levels of the doctors at Chipata General Hospital and the knowledge levels of the licentiates at St Francis Mission Hospital were almost the same. However, the practice on the care of women with postpartum haemorrhage was good at St Francis Mission Hospital compared to Chipata General Hospital and Chipata General Hospital had more maternal deaths compared to St Francis Mission Hospital. The midwives at Chipata General Hospital were younger compared to the midwives at St Francis Mission Hospital. The women with postpartum haemorrhage received good care at St Francis Mission Hospital compared to the women at Chipata General Hospital. Chipata General Hospital had more maternal deaths compared to St Francis Mission Hospital. The study also revealed that one of the maternal deaths at St Francis Mission Hospital

due to severe postpartum haemorrhage came from one of the nearby villages in Mozambique with no antenatal record.

The study has also brought out new knowledge in this study area which has not been done before. The researcher hoped to provide evidence-based baseline data which can be used to usher in changes at Chipata General Hospital. Factors identified contributing to postpartum haemorrhage at the two health facilities included late referral of clients to hospital, delivering at home and going late to hospital when there is a complication, non-availability of blood for transfusing the haemorrhaging women. One maternal death was due to assault by the husband but had tuberculosis as well. The community should be educated on the importance of taking good care of pregnant women in order to prevent injury to both the baby and the mother.

### **5.8.2 Conclusion**

Women in developing countries such as Zambia have on average many more pregnancies than women in developed countries, and their lifetime risk of death due to pregnancy is higher. A woman's lifetime risk of maternal death – the probability that a 15 year old woman will eventually die from a maternal cause – is 1 in 3800 in developed countries, versus 1 in 150 in developing countries. It is important that, the government sees to it that skilled birth attendants, provide care to women during pregnancy, labour and after delivery in order to identify complications and treat them promptly.

### **5.8.3 Conclusion According to the Conceptual Framework for Monitoring**

#### **And Evaluating Provision of Care**

**Inputs** - Organisational resources (skilled manpower, government grant, materials and equipment ) were available at both hospitals, although at Chipata General Hospital, the midwives who attend to women in labour ward, are the same midwives who attend to mothers in the maternity ward ( postnatal and antenatal mothers). Protocols for care of women with postpartum haemorrhage were also available at both hospitals. Donor funding was available.

**Process** - Planning, capacity building and donor coordination was also carried out. Formulation of policies, guidelines and protocols necessary in the provision of care was also done. Health care providers are sent for training in various topics of concern such as care of patients with postpartum haemorrhage.

**Outputs** - Knowledgeable and skilled health care providers give services in training schools and the hospital. Protocols on care of mothers with postpartum haemorrhage except the Non-pneumatic antishock garment were available at both hospitals.

**Outcome** - Services were utilised by women with postpartum haemorrhage at both hospitals.

**Impact**- Mothers with postpartum haemorrhage received the care at both hospitals, although services were not adequately carried out at Chipata General Hospital where more women died due to postpartum haemorrhage compared to St Francis Mission Hospital.

## **5.9 Recommendations for improving care of women with Postpartum**

### **Haemorrhage**

There is need to ensure that student doctors and midwives are taught all procedures on how to control postpartum haemorrhage both in theory and practice during training. Full detailed reports on each checklist were made in relation to the main areas of the checklist. Discussions related to the findings and comparisons were made between the districts.

Findings will be disseminated after writing the final report. The presentation of findings will first be done to the faculty of Department of Nursing Sciences. Following this presentation, the results of the study will be disseminated to major stakeholders involved in implementation of emergency obstetric care strategies: Ministry of Health, UNICEF, Chipata Provincial Health Office, Chipata General Hospital and St Francis

Mission Hospital. The Researcher will source for funds and organise a dissemination workshop where representatives from the identified stakeholders will be invited to discuss the findings and recommendations from the study. The dissemination workshop is intended to persuade the stakeholders to implement the study findings.

#### **5.10 Dissemination of Findings**

The researcher will organize a meeting for research findings to supervisors at both hospitals.

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## **APPENDICES**

### **APPENDIX 1**

#### **INFORMED CONSENT**

#### **A COMPARATIVE STUDY ON PROVISION OF CARE TO WOMEN WITH POSTPARTUM HAEMORRHAGE AT CHIPATA GENERAL HOSPITAL AND ST FRANCIS MISSION HOSPITAL IN EASTERN PROVINCE**

#### **INTRODUCTION**

I, Elina Zimba; a student of Masters of Science in Nursing at the University of Zambia is kindly requesting for your participation in the research study mentioned, because it is important to assess the provision of care to women with postpartum haemorrhage. Before you decide whether or not to participate in this study, I would like to explain to you the purpose of the study, any risks or benefits and what is expected of you. Your participation in this study is entirely voluntary. You are under no obligation to participate; you may choose to participate or not to participate. If you decline to participate, no privileges will be taken away from you. If you agree to participate, you will be asked to sign this consent in front of someone. Agreement to participate will not result in any immediate benefits.

#### **PURPOSE OF THE STUDY**

The study will determine the provision of care to women with postpartum haemorrhage. This is important as the information obtained will help the Provincial Health Office in Chipata, St Francis Mission Hospital, Chipata General Hospital and the Ministry of Health to ensure that women with postpartum haemorrhage receive appropriate care and prevent them from dying.

## **PROCEDURE**

The study involves a self-structured questionnaire which the midwives, doctors and licentiates will be expected to fill in after signing the consent form. A retrospective review of records of women who had experienced postpartum haemorrhage at both hospitals will also be done using a checklist.

## **RISKS AND DISCOMFORTS**

There is no risk involved in research, though part of your time will be utilized to answer some questions. Questions may seem as if the researcher just wants to betray you to members of staff because of the information you have given. You must be assured that confidentiality will strictly be observed.

## **BENEFITS**

There is no direct benefit to you by participating in this study, but the information which will be obtained will help the policy makers to take measures to improve the emergency obstetric care services offered to women with postpartum haemorrhage in the country as a whole. No monetary favours will be given in exchange for information obtained, but education will be given on the benefits of care offered to women with postpartum haemorrhage.

## **CONFIDENTIALITY**

Your research records and any information you will give will be confidential to the extent permitted by law. You will be identified by a number, and personal information will not be released without your written permission except when required by law. The Ministry of Health, the University of Zambia Research Ethics Committee or the School of Medicine may review your records again but this will be done with confidentiality.

## **INFORMED CONSENT FORM**

The purpose of this study has been explained to me and I understand the purpose, the benefits, risks, discomforts and the confidentiality of the study. I further understand that:

If I agree to take part in this study, I can withdraw at any time without having to give an explanation and that taking part in this study is purely voluntary.

I----- (Names)

Agree to take part in answering the questionnaire.

Signed: -----Date :----- ( Participant)

Signed: -----Date :----- ( Witness)

Signed: ----- Date :----- ( Researcher)

## **PERSONS TO CONTACT FOR PROBLEMS OR QUESTIONS**

1. Dr. L. Mwape University of Zambia, Department of Nursing Sciences, P.O. Box 50110, Lusaka. Phone Number 0211252453.
2. The Chairman, Research Ethics Committee, University of Zambia, P.O. Box 50110, Lusaka.

APPENDIX 11

**BUDGET FOR THE RESEARCH STUDY**

	<b>ITEM</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT COST (K)</b>	<b>TOTAL COST (K)</b>
1	<b>Stationery</b>				
	-Paper	5	Ream	25,000.00	125,000.00
	-Pens	10	Each	1,000.00	10,000.00
	-Flip chart	1 roll	Each	35,000.00	35,000.00
	-Markers	2 packs	Each	25,000.00	50,000.00
	-Reams of paper	10	Each	20,000.00	200,000.00
			<b>Subtotal</b>		<b>420,000.00</b>
2	<b>Personal emoluments</b>				
	- Transport				600,000.00
	- Communication				300,000.00
	- Researcher	1			1,000,000.00
	- Research Assistants	2			2,000,000.00
			<b>Subtotal</b>		<b>3,900,000.00</b>
3	<b>Services</b>				
	- Formatting proposal and research report	2	Each	50,000.00	100,000.00
	- Ethics committee				
	- Supervisors	5x 80 pages		250,000.00	250,000.00
	- Photocopying				
	(a) Research proposal	5x120 pages		2,500,000.00	5,000,000.00
	(b) Research report	50x 10 pages		300	120,000.00
	(c) Questionnaires				
	- Binding	5	Each	300	150,000.00
	(a) Research proposal	5		300	180,000.00
	(b) Research reports	1	Each		
	- Data entry	1	Each	15,000.00	75,000.00
	- Data analysis		Each	250,000.00	1,250,000.00
				500,000.00	500,000.00
				2,000,000.00	2,000,000.00
			<b>Subtotal</b>		<b>9,625,000.00</b>
	<b>Total Cost</b>				<b>13,945,000.00</b>
	<b>Contingencies 10% of total budget cost</b>				<b>139,450.00</b>
	<b>Grand Total</b>				<b>14,084,450.00</b>

## **JUSTIFICATION FOR THE BUDGET**

### **1. Stationery**

The five (5) reams of paper will be used for the research proposal development and the final report. Paper will also be required to make extra copies of the proposal for submission to the Research Ethics Committee and the board of graduate studies. In addition questionnaires and checklists will need to be photocopied. Other accessories such as pens, pencils, markers and flip charts are required for the routine collection of research data.

### **2. Personal Emoluments**

Data collection will be conducted throughout the day, as such the Researcher will need transport and lunch allowance.

### **3. Services**

Funds for typing and photocopying services and binding of the proposal and the report will be needed. The charge for photocopying implies that one copy will be printed and the rest photocopied to cut down on the cost. The researcher will need five copies of the proposal to submit to Post Graduate Research Committee for dissertation and dissemination. This also includes research handling fee for Research Ethics Committee which approves the study.

### **4. Contingency**

Contingency fund, which is ten percent (10%) of the budget, is required for any extra costs due to inflation and for any eventualities.

APPENDIX 111

**GANNT CHART SHOWING VARIOUS TASKS TO BE UNDERTAKEN AND THE TIMEFRAME  
(FROM APRIL, 2013 TO MAY, 2014)**

		APR 2013	MAY 2013	JUN 2013	JUL 2013	AUG 2013	SEPT 2013	OCT 2013	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014
Task to be performed	Responsible Person														
Literature Review	Researcher														
Finalize Proposal	Researcher														
Clearance from School of Medicine and Ethics Committee	Researcher														
Training Research Assistants/Pilot	Researcher														
Data Collection	Researcher/Res Assistant														
Data Analysis	Researcher														
Report Writing	Researcher														
Submission of Draft Report	Researcher														
Finalization of Report	Researcher														
Dissemination of Results	Researcher														
Monitoring and Evaluation	Researcher														

APPENDIX IV

**INTERVIEW SCHEDULE**

**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF MEDICINE  
DEPARTMENT OF POST BASIC NURSING**

**TITLE: QUESTIONNAIRE FOR MIDWIVES ON THE PROVISION OF  
CARE OFFERED TO WOMEN WITH PPH AT CHIPATA  
GENERAL HOSPITAL AND ST FRANCIS MISSION HOSPITAL  
IN EASTERN PROVINCE**

**PLACE:** \_\_\_\_\_

**SERIAL NUMBER:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**INSTRUCTIONS TO RESPONDENTS**

1. Encircle the appropriate number corresponding to the questions.
2. Complete the open ended questions.
3. Information will be treated with confidentiality.
4. Do not write your name on the questionnaire.
5. Do not write in the spaces indicated 'For Official Use Only'.

**SECTION A: BACKGROUND INFORMATION**

**OFFICIAL USE ONLY**

- 1. Age.....
  
- 2. Sex..... (Male/Female)
  
- 3. Level of education 
  - 1. Secondary
  - 2. College
  - 3. University
  
- 4. Professional qualification 
  - 1. Enrolled Midwife
  - 2. Registered Midwife
  - 3. Other (Specify):.....
  
- 5. Length of service:.....

**SECTION B: MIDWIFE’S KNOWLEDGE ON POSTPARTUM HAEMORRHAGE AND ACTIVE MANAGEMENT OF 3<sup>RD</sup> STAGE OF LABOUR**

- 6. Postpartum Haemorrhage is defined as: 
  - 1. Bleeding from the vaginal tract of more than 500mls
  - 2. Bleeding from the vaginal tract of less than 100mls
  - 3. Bleeding from the vaginal tract of less than 200mls
  - 4. Bleeding from the vaginal tract of more than 700mls
  
- 7. Primary PPH occurs..... 
  - 1. 4 hours of delivery up to 24 hours
  - 2. 24 hours after delivery
  - 3. 36 hours after delivery
  - 4. 48 hours after delivery



8. Secondary Postpartum Haemorrhage occurs: 1
1. After 24 hours
  2. Before 24 hours
  3. After 6 weeks
  4. Before 3 months
9. Signs of Postpartum Haemorrhage include the following EXCEPT: 1
1. Rising blood pressure
  2. Rising pulse rate
  3. Pallor
  4. Maternal collapse
10. The delays framework identifying the causes of women dying from Postpartum haemorrhage in developing countries includes the Following EXCEPT: 4
1. Delay in recognising true haemorrhage
  2. Delay in seeking medical attention
  3. Delay in being attended to at the health facility
  4. Delay in delivering the baby after second stage
11. Predisposing factors to postpartum haemorrhage include the following EXCEPT: 3
1. Placenta praevia
  2. HIV and AIDS
  3. Cord prolapse
  4. Malaria and anaemia
12. Postpartum haemorrhage can be prevented by the following measures EXCEPT: 4
1. Early detection and treatment of diseases
  2. Active management of third stage of labour
  3. Emptying the bladder before and after delivery of the baby
  4. Delivering the woman by caesarean section

13. Active management of 3rd stage of labour involves the following steps EXCEPT
1. Use of uterotonic agents
  2. Performing controlled cord traction
  3. Carrying out uterine massage
  4. Use of the non-pneumatic antishock garment (NPASG)
14. Before applying controlled cord traction, ensure the following steps are carried out EXCEPT:
1. That Oxytocin has been given
  2. That the bladder is full
  3. That the uterus is well contracted
  4. That counter traction is applied
15. Basic principles in management of primary postpartum Haemorrhage include the following steps EXCEPT
1. Call the doctor
  2. Resuscitate the mother
  3. Give injection Syntomentrine if hypertensive
  4. Rub up a contraction
16. A partially adherent placenta is treated by:
1. Caesarean section
  2. Bimanual compression
  3. Manual removal of the placenta
  4. Hysterectomy
17. Do you have the non-pneumatic antishock garment at your health facility?
1. Yes
  2. No
18. If yes to question 17, have you been trained in its application?
1. Yes
  2. No

19. If yes to question 18, its description includes the following EXCEPT:

2

1. It has three segments
2. It has five segments
3. Its aim is to push blood from the legs to the heart
4. It is applied by two people from the ankles to the abdomen

**SECTION C: MIDWIFE'S PRACTICE ON ACTIVE MANAGEMENT OF 3<sup>RD</sup> STAGE OF LABOUR AND TREATMENT OF PPH**

20. As a practicing midwife, in her/his own right, state how you would actively manage 3<sup>rd</sup> stage of labour?

3

1. Administer 15 Units of Oxytocin Intramuscularly before delivering the placenta.
2. Administer 25 Units of Oxytocin Intramuscularly before delivering the placenta
3. Administer 10 Units of Oxytocin Intramuscularly before delivering the placenta
4. Administer 20 Units of Oxytocin Intramuscularly before delivering the placenta

21. Describe how you would massage the uterus

1. Palpate the uterus to exclude undiagnosed twin (i)
2. Empty the bladder (iii)
3. Administer 10 units Oxytocin or 0.2 mg Ergometrin (ii)
4. Examine the expelled products for completeness (iv)

22. Enumerate sequentially how you would perform controlled cord traction

1. Clamp the cord(i)
2. Apply counter pressure to stabilize the uterus using the left hand (ii)
3. After a strong uterine contraction, encourage the woman to push and pull the cord downward (iii)
4. Hold placenta in two hands and rope the membranes (iv)
5. The placenta is disposed off by the woman or relative (viii)
6. Examine the upper vagina and cervix using a gloved hand (vi)
7. Remove pieces of membranes with a sponge forcep (v)

8. Examine the placenta for completeness **(vii)**
9. Refer the woman for retained placenta **(ix)** if need be).

23. Explain sequentially how you would manage primary

Postpartum Haemorrhage.

1. Commence an intravenous infusion using Ringer's Lactate **(ii)**

2. Raise the foot end of bed **(vii)**

3. Rub up a contraction **(vi)**

4. Call for help **(i)**

5. Empty the bladder **(v)**

6. Administer Oxytocin 20 units/Ergometrine 0.25-0.5 mg **(iv)**

7. Bimanual compression is carried out if above measures fail **(vi)**

8. Carry out blood transfusion **(ix)**

9. Apply the non-pneumatic antishock garment if available **(viii)**

10. Identify the cause **(iii)**

**APPENDIX V:**

**QUESTIONNAIRE FOR DOCTORS/LICENTIATES ON THE PROVISION OF CARE TO WOMEN WITH PPH AT CGH IN CHIPATA AND ST FRANCIS MISSION HOSPITAL**

**INSTRUCTIONS TO RESPONDENTS**

1. Encircle the appropriate number corresponding to the question /fill in the blank
2. Information will be treated with confidentiality
3. Do not write your name
4. Do not write in the space indicated 'For Official Use Only'

**SECTION A: BACKGROUND INFORMATION**

1. Age: .....
2. Sex: .....
3. Female: .....
4. Male: .....

5. Professional Education.

1. Obstetrician
2. Clinical Officer
3. Surgeon
4. Licentiate
5. Other; .....

4. Years of experience: 1.

1. Less than 2 years
2. More than 2years
3. More than 5 years
4. More than 10 years

5. Length of service;.....

**SECTION B: DOCTORS'S/LICENTIATES' KNOWLEDGE ON  
POSTPARTUM HAEMORRHAGE AND ACTIVE MANAGEMENT  
OF 3<sup>RD</sup> STAGE OF LABOUR**

6. Postpartum Haemorrhage is defined as: 1
1. Bleeding from the vaginal tract of more than 500mls
  2. Bleeding from the vaginal tract of less than 100mls
  3. Bleeding from the vaginal tract of less than 200mls
  4. Bleeding from the vaginal tract of more than 700mls
7. Primary PPH occurs..... 1
1. 4 hours of delivery up to 24 hours
  2. 24 hours after delivery
  3. 36 hours after delivery
  4. 48 hours after delivery
8. Secondary Postpartum Haemorrhage occurs: 1
1. After 24 hours
  2. Before 24 hours
  3. After 6 weeks
  4. Before 3 months
9. Signs of Postpartum Haemorrhage include the following  
EXCEPT: 1
5. Rising blood pressure
  6. Rising pulse rate
  7. Pallor
  8. Maternal collapse
10. The delays framework identifying the causes of women dying  
from postpartum haemorrhage in developing countries includes  
the following EXCEPT: 4
1. Delay in recognising true haemorrhage
  2. Delay in seeking medical attention

3. Delay in being attended to at the health facility
4. Delay in delivering the baby after second stage

11. Predisposing factors to postpartum haemorrhage include the following EXCEPT:

3

1. Placenta praevia
2. HIV and AIDS
3. Cord prolapse
4. Malaria and anaemia

12. Postpartum haemorrhage can be prevented by the following measures EXCEPT:

4

1. Early detection and treatment of diseases
2. Active management of third stage of labour
3. Emptying the bladder before and after delivery of the baby
4. Delivering the woman by caesarean section

13. Active management of 3rd stage of labour involves the following steps EXCEPT

4

1. Use of uterotonic agents
2. Performing controlled cord traction
3. Carrying out uterine massage
4. Use of the non-pneumatic antishock arment (NPASG)

14. Before applying controlled cord traction, ensure the following steps are carried out EXCEPT:

2

1. That Oxytocin has been given.
2. That the bladder is full.
3. That the uterus is well contracted.
4. That counter traction is applied.

15. Basic principles in management of primary postpartum haemorrhage include the following steps EXCEPT:

3

1. Call the doctor
2. Resuscitate the mother

- 3. Give injection Syntomentrine if hypertensive
- 4. Rub up a contraction

16. A partially adherent placenta is treated by 3

- 1. Caesarean section
- 2. Bimanual compression
- 3. Manual removal of the placenta
- 4. Hysterectomy

17. Do you have the non-pneumatic antishock garment at your health facility?

- 1. Yes
- 2. No

18. If yes to question 17, have you been trained in its application?

- 1. Yes
- 2. No

19. If yes to question 18, its description includes the following EXCEPT: 2

- 1. It has three segments
- 2. It has five segments
- 3. Its aim is to push blood from the legs to the heart
- 4. It is applied by two people from the ankles to the abdomen

**SECTION C: DOCTORS/LICENTIATE’S PRACTICE**

20. How many hours do you work per day?  
 .....

21. How many hours do you work in a week?  
 .....

22. How many hours do you work in a month?  
 .....

23. Approximately how many deliveries do you conduct per day?  
 .....



24. How many cases of PPH do you attend to per day?  
.....
25. How many cases of PPH do you attend to per week?  
.....
26. How many cases of PPH do you attend to per month?  
.....
27. Do you have the correct equipment to handle women with primary PPH?
1. Yes
  2. No
28. What would you do in a case of severe PPH exceeding 500mls?
- Commence Intravenous Fluids (resuscitate the mother)
  - Identify the cause of PPH
  - Treat the cause of PPH e.g manual removal of placenta or retained products, repair of tears & lacerations, bimanual compression of the uterus, aortic compression, hysterectomy (for placenta accrete).
  - Apply the non-pneumatic antishock garment if available
  - Administer Oxytocin intravenously to help in uterine contraction
  - Empty the bladder
  - Administer blood transfusion

**Thank you, for your participation in answering questions in the questionnaire!**

APPENDIX VI

**RETROSPECTIVE RECORD REVIEW FOR WOMEN WHO EXPERIENCED  
POST PARTUM HAEMORRHAGE**

**SECTION A: DEMOGRAPHIC DATA**

- 1.Name of health facility.....
- 2.Admission number.....
- 3.Date of admission .....
- 4.Date of delivery .....
- 5.Year of birth.....
6. Parity -Number of live children .....
- 7.Gravida - Number of pregnancies that reached 38 weeks (term)
- 8.Gestation by weeks- N.....
- 9.Relevant past medical history .....
10. Past obstetric history .....
- 11.Address of patient: District .....
- Village.....
- Chief.....
12. Health centre area .....
- 13.Place of care:  
1= At home   
2= this health facility  
3= another facility
- 14.Major Obstetric Intervention and indication.....
15. Date of intervention-----/-----/-----/

**SECTION B: SERVICES OFFERED TO WOMEN WHO EXPERIENCED  
POSTPARTUM HAEMORRHAGE**

Were the following services offered?

16. Active management of labour was carried out by the midwife which included giving Oxytocin after delivery of the baby and delivery of placenta by controlled cord traction.
1. Yes
2. No
17. The uterus massaged and clots expelled after giving Oxytocin 10 IU or Ergometrine 5 mg Intramuscularly as an initial dose because of heavy bleeding.
1. Yes
2. No
18. Oxytocin 10 IU given intravenously because bleeding persisted.
1. Yes
2. No
19. Manual removal of placenta.
1. Yes
2. No
20. Applied bimanual uterine compression because of heavy postpartum bleeding persisting despite uterine massage after giving Oxytocin/ergometrine and removal of retained products of conception.
1. Yes
2. No
21. Applied aortic compression above the umbilicus to stop the bleeding.
1. Yes
2. No

22. Applied the Non Pneumatic Antishock Garment
1. Yes
  2. No
23. Carried out observations during blood transfusion.
1. Yes
  2. No
24. Outcome of services provided
1. Mother in good condition
  2. Mother with a complication
  3. Mother died
25. When the mother died:
1. Before intervention
  2. During intervention
  3. After intervention
  4. Not recorded
26. Cause of mother's death
1. Haemorrhage
  2. Infection
  3. Other (specify)
  4. Unknown
27. Date of mother's discharge/death-----/-----/-----
28. Antenatal Care attendance;
1. Yes
  2. No
29. Number of visits------(at least 3)
30. TT received-----
- TT1
  - TT2
  - TT3
  - TT4
  - TT5

31. Intermittent Presumptive Treatment (IPT) (Fansidar) for malaria received.

IPT1

IPT2

IPT3

32. Did the woman receive African Syntocinon? (African medicine to deliver the baby very fast)

1. Yes

2. No

**THANK YOU**

**THE END**