

**INFLUENCE OF LIFE SAVING SKILLS (LSS) BY TRAINED NURSES AND  
MIDWIVES ON MATERNAL MORTALITY IN BAUCHI STATE**

**BY**

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**NIGERIA**

**JANUARY, 2009**

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**JANUARY, 2009**

## **DECLARATION**

I declare that the work in the thesis entitled Influence of Life Saving Skills (LSS) by trained nurses and midwives on maternal mortality in Bauchi state has been performed by me in the Department of Physical and Health Education (PHE), Faculty of Education under the supervision of Professor K. Venkateswarlu and Dr F. R. Haruna.

The information derived from the literature has been duly acknowledged in the text and a list of references provided. no part of this thesis was previously presented for another degree or diploma at any university.

Tukur, Babayo Muhammad

Sign:

January 9, 2009

## CERTIFICATION

This thesis entitled: INFLUENCE OF LIFE SAVING SKILLS BY TRAINED NURSES/MIDWIVES ON MATERNAL MORTALITY IN BAUCHI STATE by Tukur Babayo Muhammad, meets the regulations governing the award of the degree of Master of Education (M.Ed) in Health Education of Ahmadu Bello University, Zaria, Nigeria and is approved for its contribution to knowledge and literary presentation.

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**Date-----**

## **DEDICATION**

To Nigerian nurses and midwives for their kindness, and care to their patients.

## **ACKNOWLEDGEMENT**

The researcher wishes to give thanks to God almighty for giving him the opportunity to fulfill his plan in life. He sincerely acknowledges his indebtedness for the assistance, valuable discussion, useful criticism and suggestions, and encouragement of his able supervisors, Professor Kankanala Venkateswarlu and Dr F.R. Haruna throughout the research work.

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## **ABSTRACT**

Skilled care during pregnancy, child delivery, and immediately after the delivery is important because it saves lives of millions of women and newborns and prevent serious and hard to predict complications during pregnancy, delivery or immediately after delivery. Life Saving Skills (LSS) has been in practice by nurses, since 1992, to address maternal mortality and morbidity. However, it is not clear as to what extent the training of nurses and midwives in LSS has contributed to the reduction of maternal mortality in Bauchi state. This study was conducted to find out the influence of nurses and midwives trained in LSS on Maternal Mortality in Bauchi state. To achieve the purpose of the study a questionnaire on a contribution of midwives and nurses trained in LSS was prepared and standardized. The questionnaire contained five sections- section one on demography's of the respondents and two to four on contribution of LSS trained midwives and nurses to reduction of maternal mortality and morbidity in Bauchi state. The questionnaire was administered on 522 randomly selected respondents, who consisted of clients and LSS trained midwives and nurses, 470 respondents duely filled in the questionnaire. The information thus received was statistically analysed the result which revealed the following:

The respondents perceived that:

1. The LSS trained nurse and midwives contributed to provision of quality ante natal care.
2. The LSS trained nurses and midwives contributed significantly to provision of skilled attendance at birth which results into safe delivery and pueperium whose reduce maternal death.

Based on the research findings the following recommendations were made:

-The state and local governments should ensure health education and public enlightenment of the communities about the contribution of LSS trained nurses and midwives to maternity services.

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## **ABBREVIATIONS**

<b>ABC</b>	Airways, Breathing, and Cardiac function
<b>AIDS</b>	Acquired Immuno Deficiency Syndrome
<b>ANC</b>	Ante Natal Care
<b>APH</b>	Ante Partum Haemorrhage
<b>ARAF</b>	Antenatal Risk Assessment Form
<b>BMI</b>	Body Mass Index
<b>DIC</b>	Disseminated Intravascular Coagulopathy
<b>ELISA</b>	Enzyme Link Immuno- Serum- Assay
<b>FH</b>	Family Health
<b>FMOH</b>	Federal Ministry of Health
<b>GATHER</b>	Greet, Ask, Tell, Help, Explain, Return
<b>HIV</b>	Human Immuno deficiency Virus
<b>HSR</b>	Health Sector Reform
<b>IAG</b>	Inter Agency Group
<b>IPPF</b>	International Planned Parenthood Federation
<b>IPT</b>	Intermittent Preventive Treatment
<b>ITN</b>	Insecticide Treated Net
<b>IVF</b>	Intravenous Fluids
<b>LSS</b>	Life Saving Skills
<b>MCH</b>	Maternal and Child Health
<b>MDG</b>	Millennium Development Goal

<b>MM</b>	Maternal Mortality
<b>MOH</b>	Ministry Of Health
<b>NAA</b>	Nucleic Acid Amplication
<b>NDHS</b>	National Demographic Health Survey
<b>NMCN</b>	Nursing and Midwifery Council of Nigeria
<b>ORS</b>	Oral Rehydration Solution
<b>PAC</b>	Post Abortion Care
<b>PID</b>	Pelvic Inflammatory Disease
<b>PPH</b>	Post Partum Haemorrhage
<b>RVF</b>	Recto Vaginal Fistula
<b>SMI</b>	Safe Motherhood Initiative
<b>STD</b>	Sexual Transmitted Diseases
<b>STI</b>	Sexual Transmitted Infections
<b>UNDP</b>	United Nation Development Programme
<b>UNFPA</b>	United Nation Population Fund
<b>UNICEF</b>	United Nation Children Fund
<b>USAID</b>	United State Agency for International Development
<b>VDRL</b>	Venereal Disease Research Laboratory
<b>VVF</b>	Vesico Vaginal Fistula
<b>WHO</b>	World Health Organization

## **OPERATIONAL DEFINATION OF TERMS**

Technical terms used in this study are defined below in the sense they were used:

**MATERNAL MORTALITY** – Is woman death due to pregnancy related issues.

**LIFE SAVING SKILLS**- These are procedures that are used to prevent pregnancy related diseases and death

**PRENATAL**-The period a woman is pregnant.

**SKILLED ATTENDANCE**-The technical procedures giving by a midwife/nurse to women with pregnancy related needs.

**OBSTETRIC EMERGENGY**-Those pregnancy related conditions that are life threatening.

**INFLUENCE**- Ability to perform desired out come.

**MIDWIFE/NURSE**- A person that has undergone a prescribed programme of study in care of pregnancy related conditions and is certificated and licensed.

**INFLUENCEIVE**- Producing a desired outcome.

**MORBIDITY**- pregnancy related illness

**PUEPERIUM**- Time period that last 42 days after a woman had delivered a baby.

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## CHAPTER ONE

### 1.0 INTRODUCTION

Globally, maternal mortality has been at the same levels since 1990, whereas safe motherhood initiative plans of action has the objective to reduce it by 50% and 75% by the year 2000 and 2015 respectively (World Health Organisation (WHO), 2007). Geographic differences remain considerable. In Nigeria, it is estimated at 948/100,000 births (Nigeria National Demographic Health Survey (NDHS), 2003), Burkina-Faso has 1400, Chad 1500, Sudan 1500, Somalia 1600, Sierraleone 2100, Cuba 24, United kingdom 10, Greece 2, Malta 0, so do Luxemburg, all per 100,000 births (Vernellia, 2004).

WHO (2000) estimated maternal mortality at 529,000, of which less than 1% occurred in the developed world. However, most of these deaths are medically preventable, because treatments to avoid such deaths have been well known since the 1950s. According to the world Health Organization (WHO, 2007), a maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. The maternal mortality rate is used as a measure of the quality of healthcare system (Wikipedia, 2007). It should be noted that, maternal mortality is difficult to measure due to the following reasons:

- Maternal deaths are frequently under reported
- Maternal deaths are often misclassified
- Maternal deaths are relatively rare events (Otolorin, 2001).

Life time risk of maternal death accounts for number of pregnancies and risks. In sub-Saharan Africa, the lifetime risk of maternal deaths is 1 in 16, and for developed nations only 1

in 2800" (Wikipedia, 2007). According to Nigerian Demographic Health Survey (NNDHS, 2003), Nigerian Maternal Mortality Rate (MMR) is about 948/100,000, which is one of the highest in the world. Nigeria contributes about 10% of the world MM, although its population size is only 2% of the world population (Federal Ministry of Health/WHO, 2005). The MM in North- East geopolitical zone has the highest figure, about 1,549/100,000 (Federal Ministry Of Health/WHO, 2005) and MMR in Bauchi state is about 650/100,000 (Bauchi State Ministry of Health, 2007).

Most of maternal deaths are the direct result of complications arising during pregnancy, birth and postpartum; postpartum haemorrhage, sepsis, complications of unsafe abortion, prolonged or obstructed labour and hypertensive disorders of pregnancy especially eclampsia. These complications occur at any time during pregnancy or childbirth without forewarning. Timely access to and use of quality obstetric services like Life Saving Skills (LSS) are essential (United Nations Population Fund (UNFPA), 2007).

### **1.1 IMPORTANCE OF LIFE SAVING SKILLS:**

Single most important intervention for safe motherhood is to make sure that a trained provider with midwifery skills (LSS trained) is present at every birth (United Nations International Children Emergency Fund (UNICEF, 2007). The LSS are actions that can save lives of women and infants. There may be no time to ask for help in emergency. The midwife must take immediate action (Adeyemi, e tal; 2005). The skills are appropriate because community midwives form the backbone of maternity services as the periphery and pregnancy and labour outcomes can be improved by making use of their services, especially if they are well trained in life saving skills. Lucas and Gilles (2003) stated that, "all staff who are involved in

delivery (nurses/midwives/doctors) must receive regular in-service training to ensure that they maintain a high level of performance.”

LSS ensure that family planning services are available; that every pregnant woman has skilled attendant during pregnancy and child birth; and that every woman has access to emergency obstetric care in the event that complications arise (WHO, 2000).

Skilled attendant at every birth, provision of emergency obstetric care, promotion of antenatal care, post-abortion care/family planning services are strategies adopted to achieve Safe Motherhood Initiative (SMI) and reproductive health as well as form part of a mission statement for Federal Ministry of Health, Health reform program. These are measures meant to minimize MM and maternal morbidity.

LSS are an intervention for reducing maternal as well as neonatal mortality and morbidity. The lives saving skills are those skills, which allow nurses/midwives recognize and respond to emergencies in pregnancy-related issues (Adeyemi, *et al*; 2003), Fatusi, *et al*; (2002) states that health workers selected from relevant facilities, based on volume of obstetrics case load, are provided training to upgrade their obstetrics’ skills. The nurses and midwives benefited from LSS, pioneered under the United States Agency for International Development (USAID) in 1992, supported mother care project of the early 1990s. Topics covered in the training include early identification of high risk pregnancy, active monitoring of labour using partograph, management of retained product of conception and placenta, management of sepsis with the use of intravenous antibiotics, use of oxytocin in the management of haemorrhage, and vacuum delivery of babies. The training was started in the two national training centers based in specialist hospital, Bauchi and maternity hospital, Adeoyo, Ibadan. The aim of LSS is to reduce maternal mortality in Nigeria.

The LSS falls in line with Federal Government of Nigeria Health Sector Reform (HSR), which serves as a vehicle for achieving Millennium Development Goals (Ben, 2006). The missions of the HSR are as follows:

1. To develop and implement appropriate policies and programmes.
2. To undertake necessary action that will strengthen the national health system to deliver effective, quality and affordable health services to all Nigerians (LSS inclusive).

The main goal of LSS is to help nurse/midwives prevent maternal and neonatal mortality and morbidity by identifying and taking necessary actions when problems occur in pregnancy, labour, delivery and the early postpartum period (Adeyemi, et al; 2003). The LSS emphasizes clinical practice and provides the nurse/midwife confidence and competency to practice advanced midwifery skills and save the lives of women and babies. It is borne out of safe motherhood initiative goals, especially those aspects that include provision of skilled attention at birth and improving emergency obstetric care.

LSS was built upon the years of experience of nurses/midwives practicing in rural and urban communities. Important issues of family and community support and education are included in it. It also encourages an expanded role of the nurse-midwife to improve her ability in knowledge, interpretation of information and skills to save the lives of women and infants. It covers the most basic provision available for management of client, medication, equipment and procedures; it does not mean to replace the care of a good hospital or a good doctor.

UNICEF (2007) reported that the estimated women receiving skilled attendant at delivery (1997-2005) stands at 35%. This is a serious issue that needs redress. One of the strategies for increasing the percentage receiving skilled attendants during delivery is to increase the number

of nurses with life-saving skills. To reduce maternal mortality rate, millennium development goals were developed with emphasis on LSS.

In September 2001, 47 heads of states collectively endorsed millennium development goals (MDGs) 4 and 5, to reduce child mortality rate by 2/3 and maternal mortality ratio by ¾ between 1990 and 2015. Strongly linked to these is Goal 6: to halt or begin to reverse the spread of HIV/AIDS, malaria and other diseases (UNICEF; 2007). Access to skilled care during pregnancy, childbirth and the first month after delivery is a key to saving women's lives and those of their children (UNICEF; 2007). Although nurses with LSS are provided throughout Nigeria, their adequacy and influence on MM have not been clear. This investigation was therefore conducted to find out the influence of nurses and midwives trained in LSS on MM in Bauchi State.

## **1.2 STATEMENT OF THE PROBLEM**

Skilled care during child birth is important because it saves lives of millions of women and newborns and prevent serious and hard to predict complications during or immediately after delivery. Skilled attendance by health professionals with midwifery skills is very important because it recognizes pregnancy-related emergencies and possible complications, and either treat them or refer the women to health centers or hospitals immediately when there is need for advanced medical care. As LSS have national outlook, most communities and various arms of government of the country regarded their acquisition as worthwhile (Adeyemi, *et al*; 2005). Hence, the skills have potential for drastically reducing the maternal mortality at various levels of the government and the communities in Bauchi State. LSS has been in practice by nurses since 1992, to address maternal mortality and morbidity. However, it is not clear as to what extent the training of nurses and midwives in LSS has contributed to the reduction of MM in

Bauchi state. This study was therefore conducted to find out the influence of nurses and midwives trained in LSS on MM in Bauchi State.

### **1.3 RESEARCH QUESTIONS**

This research was conducted to answer the following specific questions:

- Do LSS trained nurses and midwives in Bauchi State provide effective ante natal care?
- Do LSS trained nurses and midwives in Bauchi State improve care for women in labour satisfactorily (skilled attendance at birth)?
- Do LSS trained nurses and midwives in Bauchi State treat obstetrics emergency satisfactorily?
- Do LSS trained nurses and midwives in Bauchi State provide care for women at pueperium satisfactorily?

### **1.4 BASIC ASSUMPTIONS**

- LSS trained nurses and midwives are provided for maternal care in Bauchi state.
- LSS trained nurses and midwives utilize their skills to provide maternity care in Bauchi State.
- The influence of LSS trained nurses and midwives on Maternal Mortality (MM) in Bauchi State can be objectively determined.

### **1.5 HYPOTHESIS**

On the basis of the research questions and assumptions of this study, the following major hypothesis was formulated for the purpose of this study:

## **Major Hypothesis**

There is no significant influence of LSS trained nurses and midwives on maternal mortality as perceived by maternity clients and LSS trained nurses and midwives in Bauchi state.

## **Sub hypotheses**

1. There is no significant influence of LSS trained nurses and midwives on the provision of effective ante natal care in Bauchi state.
2. There is no significant influence of LSS trained nurses and midwives on the care for women in labour (skilled attendance at birth) in Bauchi state.
3. There is no significant influence of LSS trained nurses and midwives on the treatment of obstetric emergencies in Bauchi state.
4. There is no significant influence of LSS trained nurses and midwives on the care for women at puerperium in Bauchi state.

## **1.6 SIGNIFICANCE OF THE STUDY**

This study is justified on the following basis:

The findings of this study brought to limelight the influence of LSS trained nurses and midwives on maternal mortality in Bauchi State. The result of this study showed that LSS trained nurses and midwives are adequate to provide effective ante natal care, satisfactory obstetrics emergency care, skilled attendance at birth, care for women at puerperium and prevent maternal death and whether the commitment of the LSS trained nurses and midwives toward the LSS program is satisfactory and thus the study serves as a base line data for the followings:

- Governments of decision making in matters relating to maternal health.

-Health planners at governmental and non governmental levels in planning programs on maternal health.

-The study will serve as a means of assessing LSS implementation in Bauchi state in particular and Nigeria in general to international organizations like WHO, UNICEF, UNDP etc because, LSS is an international program under safe motherhood initiative.

-The maternity clients would understand the benefit of LSS better when this study is made public e.g. through publishing in a reputable national and international journals.

-Stimulate further research in maternal care services.

-Serve as source of future reference in studies related to maternal mortality.

## **1.7 DELIMITATIONS**

The study was delimited to the following:

1. This study was delimited to the influence of LSS trained nurses and midwives on maternal mortality in Bauchi state.
2. All nurses and midwives employed at the local government health centers, maternity homes, general hospitals, and specialist hospitals in Bauchi as well as women receiving maternity care in those health facilities would serve as respondents for this research.

## **1.8 LIMITATIONS**

The study had the following limitations which would be considered in the interpretation of the results:

1. There are many factors that affect the utilization of the acquired LSS, which in turn might affect its influence on MM. It was not possible to control these factors. However, it was assumed that such influence would be minimal as the respondents were trained in the same institutions, lived and practiced under similar conditions.
2. Some of the terms used in the study were translated to some respondents due to their low literacy status and this may affect the actual meaning of these terms and may affect their responses to the questionnaire.

## CHAPTER TWO

### 2.1 INTRODUCTION

Adeyemi, et al; (2003), define life saving skills (LSS) as intervention for reducing maternal and neonatal mortality and morbidity through acquiring skills which allow nurses/midwives to recognize and respond to emergencies (related to pregnancy, child bearing and rearing). LSS also refers to the ability to prevent, identify and treat problems such as shock, haemorrhage, infection, (sepsis) and eclampsia (convulsion from high blood pressure), and to manage abortion complications ([www.safemotherhood.org](http://www.safemotherhood.org), 1998). WHO, (2007) define maternal death as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. According to Lucas and Gilles (2003), maternal mortality ratio is the number of maternal deaths in a given year per 100,000 live births during the same period. Although the measure has traditionally been reported to as rate, it is actually a ratio and is now usually called such by health practitioners.

According to Lucas and Gilles (2003), the following are causes of maternal mortality: severe bleeding 25%, indirect causes 2%, infection 15%, unsafe abortion 12%, eclampsia 12%, obstructed labour 8%, other direct causes 8%. Maternal mortality ratio, (MM) is used as a measure of the quality of health care system (of a given geographical location) (Wikipedia, 2007). Nigerian MM is about 948/100,000 which is one of the highest in the world (Nigeria National Demographic health Survey, 2003). Also, Nigeria with this rate contributes about 10% of the world MM, although its population size is only 2% of the world population (Federal Ministry of Health/WHO 2005). The MM in Northeast geopolitical zone has the highest figure

of about 1549/100,000 (Federal Ministry of Health (FMH)/WHO, 2005). In Bauchi state, the MM is about 650/100,000 (Bauchi State Ministry of Health (MOH), 2007). The single most important way to reduce maternal death is to ensure that a skilled health professional (like LSS trained nurse/midwife) is present at every birth (WHO, 1996). Skilled care during child birth is important because million of women and new born develop serious and hard to predict complications during or immediately after delivery. Skilled attendants – health professionals such as doctors or nurses/midwives who have midwifery skills can recognize these complications (pregnancy related), and either treat them or refer women to health centers or hospitals immediately if more care is needed (WHO, 2005). LSS in Nigeria is synonymous to better life initiatives in South Africa (WHO, 2006) and it's borne out of international version of safe motherhood initiative launched in Nairobi, Kenya by WHO, UNFPA and World Bank in 1987; with the following goals:

To reduce MM by 50% within 10 years of its inception; by the year 2000 and by 75% by the year 2015 with following strategies in mind:

- Provision of family planning
- Provision of post-abortion care (PAC)
- Promotion of antenatal care (ANC)
- Ensuring skilled attendance at birth
- Improving emergency obstetric care
- Addressing the reproductive health needs of adolescent (WHO, 1996).

The origin of safe motherhood initiative as an entity, date back to the traditional maternal and child health care services and family planning( MCH/FH) provided by the health professionals (Federal Ministry of Health(FMOH), 2001).

## **2.2 EVENTS THAT LEAD TO DEVELOPMENT OF LIFE SAVING SKILLS**

LSS started When safe motherhood initiative was launched in 1987, which commenced when Alan and Maine in 1985 conference on maternal and child health (MCH) in United States of America, asked where is M (maternal) in MCH (Sabitu, 2005) and Heffernan (1987) statement which is as follows, death from the complications of pregnancy and child birth was little known, seriously neglected problem, neglected because those who suffer it are neglected people with the least power and influence over how national resources shall be spent; they are the poor, the rural peasant and above all women. Based on the Nairobi conference of 1987, an Inter-Agency Group (IAG) for safe motherhood initiative was formed to actualize the goal for Safe Motherhood Initiative (SMI). The IAG was later joined by UNICEF, UNDP, IPPF and Population Council. SMI comprises the provision of services and information which enable a woman to be pregnant when desirable, ensuring she receives qualitative ante natal care, has access to skilled intrapartum care including emergency obstetric care if the need arises, and postnatal services so that she can avoid death or disability from complications of pregnancy and child birth ([www.safemotherhood.org](http://www.safemotherhood.org), 1998).

In 1992 in Washington, meeting of partners for safe motherhood took place, In Cairo, 1994, International Conference on Population And Development took place and in 1995, in Beijing Joint World Conference on women took place and in 1997, in Colombo safe motherhood technical consultation took place. What was then achieved in the intervening years (from 1987-1997) were deliberated (Otolurin, 2001).

The followings are the achievements of SMI (from 1987-1997):

1. Global recognition of the problem of poor maternal health.
2. Global commitment to take action.

3. Inclusion of SM as one of the key components of reproductive health (including antenatal, delivery, postnatal, post-abortion and emergency obstetric care and referral).

Sabitu (2005) opined that Colombo meeting of 1997 on SMI was necessary because of the followings:

1. Maternal mortality ratio was not declining in most of the developing countries in spite of the global recognition of the problem.
2. Priorities were not always clearly defined and interventions included in SM programs were not always the most focused and effective.
3. Political commitment and resources were inadequate.

Based on these problems associated with SMI, Sabitu (2005), states that IAG organized a safe motherhood technical consultation in the same meeting in Colombo from 18<sup>th</sup> – 23<sup>rd</sup> October 1997, with 250 participants from 65 countries in attendance.

The objective of the consultation according to Otolorin (2001) was to review the key lessons learnt in the first 10 years of SMI and the consultation came up with 10 action messages which formed the basis of the technical consultation. Otolorin (2001) listed the following as the ten action messages from Colombo:

1. Advance safe motherhood through human rights.
2. Empower women, ensure choices.
3. Regard safe motherhood as a vital social and economic investment.
4. Delay marriage and the first birth.
5. “Every pregnancy faces risks”
6. Ensure skilled attendance at delivery

7. Improve access to quality maternal health services.
8. Prevent unwanted pregnancy and address unsafe abortion.
9. Measure progress
10. Recognize “power of partnerships.

The safe motherhood technical consultation committee in Colombo (1997)

- Helped to articulate and present programmatic lessons learnt from the first decade of SMI.
- Helped to identify clear priorities and strategies for the future (Sabitu, 2005).

It was based on the above reasons that American Nurses Association under the USAID came into Nigeria in 1992 and selected Health workers from two national training centers in specialist hospital Bauchi and maternity hospital, Adeoyo, Ibadan. The reason was simply to provide training in order to upgrade the Nigerian nurses’ obstetrics skills. The name giving to this training is Live Saving Skills (LSS). Topics covered in the LSS training include early identification of high risk pregnancy, active identification of high risk pregnancy, active monitoring of labour using Partograph, management of retained product placenta and conception products, management of sepsis with use of antibiotics, use of oxytocin in haemorrhage management and vacuum delivery of babies.

## **2.3. CAUSES OF MATERNAL MORTALITY**

### **2.3.0 INTRODUCTION**

According to the WHO (2000), "A maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes." Generally there is a distinction

between a **direct maternal death** that is the result of a complication of the pregnancy, delivery, or their management, and an **indirect maternal death** that is a pregnancy-related death in a patient with a pre-existing or newly developed health problem. Other fatalities during but unrelated to a pregnancy are termed *accidental, incidental, or non obstetrical* maternal deaths (Wikipedia,2006).

Maternal mortality is an important index to assess the quality of a health care system. However, a number of issues need to be recognized. First of all, the WHO definition is one of many; other definitions may also include accidental and incidental causes. Cases with "incidental causes" include deaths secondary to [violence against women](#) that may be related to the pregnancy and be affected by the socioeconomic and cultural environment. Also, it has been reported that about 10% of maternal deaths may occur late, that is after 42 days after a termination or delivery (Lisae tal.; 1988), thus, some definitions extend the time period of observation to one year after the end of the gestation. Further, it is well recognized that maternal mortality numbers are often significantly underreported (Denneux e tal; 2005).

According to WHO (2005), the following are causes of MM with their percentage the world over:

Haemorrhage	-	25%
Infection/sepsis	-	13%
Eclampsia	-	12%
Obstructed labor	-	8%
Complication of abortion	-	13%
<b>Other causes</b>	-	8%

Indirect causes e.g. malaria, anaemia, HIV.AIDS and cardio vascular diseases, 20%.

Adeyemi, et al; (2005), states that MM causes in Nigeria are as follows: haemorrhage 23%, pregnancy-induced hypertension 11%, infections 17%, unsafe abortion 1%, and malaria 11%, prolonged obstructed labour 11%.

These causes are going to be discussed as follows:

### **2.3.1 Haemorrhage**

Watson (2003), defines haemorrhage as escape of blood from its container (blood vessels). In relation to maternity haemorrhage can be viewed as an escape of blood from female genitalia usually the internal genitalia especially the uterus (Wikipedia, 2007).

#### **Types of obstetric haemorrhage**

Attah (2000), states that there are two major types of obstetric haemorrhage which are as follows:

1. Ante partum haemorrhage (APH)
2. Postpartum haemorrhage (PPH)

##### **2.3.1.1. Ante partum haemorrhage:**

Attah (2000), defined APH as haemorrhage from the genital tract after the twenty-eighth weeks of gestation occurring before delivery. Haemorrhage occurring before delivery after the fetus has reached a viable age is APH while Myles (2003), define APH as bleeding from the genital tract in late pregnancy after the 24<sup>th</sup> week of gestation and before the onset of labour. This may place the life of the mother and unborn child at risk.

#### **Causes of APH**

Konje and Taylor (1999), and Wikipedia (2007), stated the following as causes of bleeding in late pregnancy:

- Placenta praevia has the incidence of 31%. A condition where the placenta is partially or wholly implanted in the lower uterine segment on either the anterior or posterior walls. The anterior location is less serious than the posterior (Myles, 2003).
- Placenta abruptio has the incidence of 73%. Myles (2003), define this as premature separation of a normally situated placenta occurring after the 22<sup>nd</sup> week of pregnancy.
- Unclassified bleeding – has the incidence of 47% which could result due to:
  - o Marginal – has the incidence of 47%. It is a haemorrhage due to early separation of the placenta margin (Attah 2000).
  - o Show has the incidence of 20% - a black-mucous substance appearing from genital tract on the onset of labour which is occasionally preceded by placenta membrane rupture Myles (2003).
  - o Cervicitis account for 8% incidence – it is defined inflammation of the uterine cervical.
  - o Trauma account for 5% - which is a physical injury to the female genital
  - o Vulvo-vaginal varicosities account for 2% - inflammation of the torturous vulva/vaginal blood vessel usually a vein
  - o Genital tumours account for 0.5% - it is an abnormal genital growth without known function.
  - o Genital infection account for 0.5% - a successful invasion of the genital tract by a microorganism leading to establishment of disease
  - o Haematuria account for 0.5% - bleeding urine
  - o Vaso praevia account for 0.5% - situation if the placenta is low lying, the vessels may pass across the uterine OS (Myles, 2003).

- Others account for 0.5%

**Note:** Konje and Taylor did not explain the last 2.5% of unclassified bleeding.

### **Diagnosis of APH:**

History taken; Myles (2003), opined that the following information (from the women/relative) from her observations and talking to the woman and her partner then this will keep her to arrive at a provisional diagnosis.

**Pain** – did the pain precede bleeding and is it continuous or intermittent?

**Onset of bleeding** – was this associated with any event such as coitus?

**Amount of visible blood loss:** is there any reason to suspect that some blood has been retained in uterus?

**Colour of the blood:** Is it bright red or darker in colour?

**Degree of shock:** is this commensurate with the amount of blood visible or more severe?

**Consistency of the abdomen:** Does the mother resent abdominal palpation?

**Lie, presentation and engagement:** Are any of these abnormal when taking account of parity and gestation?

**Audibility of the foetal heart:** is the foetal heart heard?

**Ultrasound scan:** Does a scan suggest that the placenta is in the lower uterine segment?

### **Pathogenesis**

Attah (2000), states that ante partum haemorrhage occurs from partial separation of the placenta from its insertion prior to delivery in placenta praevia APH is inevitable in normally inserted placenta, haemorrhage may occur due to early separation of the placental margins, or in abnormal separation of the central portions of the placenta from its decidual insertion.

## **Treatment**

The treatment will be directed at the cause (Wikipedia, 2007). After emotional reassurance the first need is the restoration of physical condition if this is being compromised, Myles (2003). This will necessitate fluid replacement e.g. with plasma examples at the first instance and later with whole blood if necessary. Strong analgesics may be offered when there is severe pain. This help to counteract shock. The midwife if attending to the woman at home she must decide how best to arrange transfer to hospital. She may summon the services of emergency obstetrician where this exists. As a matter of urgency, the midwife should set intravenous infusion of normal saline (0.9% saline solution) before the arrival of patient to hospital for further management. Subsequent management depends on the definitive diagnosis.

## **Complications**

APH remains an important cause of severe morbidity and mortality for mother and child as a result of shock. In addition, renal cortical necrosis and coagulation disorders may complicate abruption. Abruption is in fact the commonest cause by failure of coagulation in pregnancy. Its mechanism is Consumption of coagulation factors in the haematoma formed behind the placenta (Attah, 2000).

### **2.3.1.2. Postpartum haemorrhage (PPH)**

Attah (2000), defines it as haemorrhage occurring after delivery of the baby, and Myles (2003), defines it as excessive bleeding from the genital tract at any time following the baby's birth up to 6 weeks after delivery.

**Classification** – Myles (2003), classify PPH into primary and secondary PPH.

**Primary PPH** – occurs through the third stage of labour or within 24 hours of delivery (Myles, 2003).

**Secondary PPH** – occurs subsequent to the 24 hours following birth up to until the 6<sup>th</sup> week postpartum.

### **Causes of PPH**

There are several reasons why a PPH may occur including atonic uterus, retained placenta, trauma and blood coagulation disorder (Myles, 2003).

**Atonic uterus:** This is a failure of the myometrium at the placental site to contract and retract and to compress torn blood vessels and control blood loss by a living ligature (Myles, 2003). When the placenta is attached, the volume of blood flow at the placenta is appropriately 500-800ml per minute upon separation of uterine muscle staunch the flow and prevent a haemorrhage which otherwise ensue with horrifying speed (Myles, 2003). Causes of atonic uterine action resulting in PPH are listed in the following box according to Myles (2003)

**Table 2.1 Causes of atonic uterine**

<b>Box</b>	<b>Causes of atonic uterine action</b>
•	Incomplete separation of the placenta
•	Retained cotyledon, placental fragment or membrane
•	Precipitate labour
•	Prolonged labour resulting in uterine inertia
•	Polyhydramnios or multiple pregnancy causing over-distension of uterine muscle
•	Placenta praevia
•	Placental abruption
•	General anaesthesia especially halothane or cyclopropane
•	Mismanagement of the third stage of labour
•	A full bladder
•	Aetiology unknown

Also Myles (2003) list the following as predisposing factors which might increase the risks of postpartum haemorrhage:

- Previous history of postpartum haemorrhage or retained placenta
- High parity resulting in uterine scar tissue
- Presence of fibroids
- Maternal anaemia
- Ketoacidosis

### **Signs of PPH**

These may be obvious such as:

- Visible bleeding
- Maternal collapse

However, before subtle signs may present such as:

- Pallor
- Rising pulse rate
- Falling blood pressure
- Altered level of consciousness, the mother may become restless or drowsy
- An enlarged uterus as it fills with blood or blood clot; it feels boggy on palpation (i.e. self and distended and lacking tone), there may be little or no visible loss of blood (Myles, 2003).

### **Presentation**

Myles (2003), opined that by using the above list, it is possible for the midwife to apply some preventive screening in an attempt to identify women who may be at greater risk and to recognize causative factors. Among the antenatal period a thorough and accurate history of

previous obstetric exercises will identify risk factors such as previous PPH or precipitate labor. After careful explanation and in full consultation with the woman, arrangement can be made for delivery to take place in a unit where facilities for dealing with emergencies are available. The early detection and treatment of anaemia will help ensure that women enter labour with a haemoglobin level, ideally in excess of 10g/dl. women that are more prone to anaemia should be closely monitored, for example, those deliveries intervals of less two years or those with multiple pregnancies.

Good management practices during the first and second stages are important to prevent prolonged labour and ketoacidosis. A mother should not enter the second or third stage with a full bladder. Prophylactic administration of an uterotonic agent is recommended for the third stage, by either intramuscular injection or intravenous infusion. Two units of cross-matched blood should be kept available for any woman known to have placenta praevia.

### **Treatment of PPH**

Whatever the stage of labour or crisis that may occur the midwife should adhere to the underlying principle of always reassuring the woman and her support persons by continually relaying appropriate information and involving them in decision making (Myles, 2003).

The following three basic principles of care should be of use when applied immediately upon observation of excessive bleeding:

- call for medical aid
- stop the bleeding
- rub up a contraction
- give a uterotonic
- empty the uterus

- Resuscitate the mother (Myles, 2003).

## **Complications**

Haematoma collection: PPH may also be concealed as the result of progressive haematoma formation. Secondary infection is a strong possibility (Myles, 2003).

### **2.3.2 Infection/sepsis**

Infection is a clinical illness manifesting in a susceptible host (human or animal) following the entry and anticipation of infectious agent (pathogenic organism) into the host. The pathogenic organism may be of viral, bacterial, parasitic or fungal origin (Attah, 2000).

The usual sources of organisms (pathogens) are:

- clinical cases
- sub clinical infections
- human carriers
- infected vertebrate animals

Another important source of infection is the inanimate environment (Attah, 2000).

The transmission routes of infection are:

- Contact, which may be direct or indirect
- Vectors such as arthropods e.g. female anopheles mosquitoes.
- Inanimate vehicles e.g. contaminated goods or water, needles, syringes and soil.
- Airborne e.g. tuberculosis; and
- Transplacental from pregnant mother to fetus, as in syphilis (Attah, 2000).

Sexually transmitted diseases are an important cause of morbidity and mortality throughout the world (Myles, 2003). There is generally inadequate statistical data on the

prevalence rates of infectious diseases in Africa. However, there is no doubt that infectious diseases account for the greater proportion of morbidity and mortality (Attah, 2000).

Although infectious diseases are worldwide, certain factors, viz, poor personal and environmental sanitation, malnutrition, poverty, ignorance and inadequate basic health facilities encourage firm establishment of infections in Africa (Attah, 2000).

The degree to which infection results in ill-health relates to their virulence and dosage (number). Vulnerability is increased where conditions that enable the organism to thrive and reproduce and where there is access to and from entry points in the body (Myles, 2003).

The major infection that are of concern in maternity are sexually transmitted infections/diseases (STIs/STDs) in Nigeria and puerperal infection.

#### **STIS:**

These are human infections transmitted through sexual intercourse which may be vaginal, oral or anal. There are different types of STI but the commonest in Nigeria are:

- Gonorrhoea – gonococcal arthritis
- Non-gonococcal arthritis
- Candidiasis
- Syphilis
- Genital herpes
- Cancroids
- Chlamydia
- Lymphogonuloma venereum
- Trichomoniasis

- Human immune-deficiency virus (HIV)

These have different presentation but similar signs and symptoms and complications except for HIV/AIDS (Adeyemi, e tal;, 2005).

Common signs and symptoms include:

- male urethral or female vaginal discharge
- genital ulcers
- lower abdominal pains in female
- scrotal swelling
- Eye discharge in the new-born (Adeyemi,e tal; 2005).

Myles (2003), states the following as diagnostic procedures for STIs:

- Sign and symptoms of the disease through history taking and physical examination.
- Vaginal culture and sensitivity test.
- A Gram-stained vaginal smear is another diagnostic technique.
- Nucleic acid amplification (NAA) techniques has revolutionized the diagnosis of STIs e.g. Chlamydia trachomatis.
- Venereal diseases research laboratory (VDRL)
- Viral cultures from open lesions
- Enzyme link immuno serum-assay (ELISA)

### **Management/treatment**

Humans have been involved in overcoming problems of infectious diseases over several centuries. It is unfortunate that as one problem is being solved newer health problems emerge. For example, with massive campaigns coordinated by the World Health Organization, smallpox

was eradicated from the world with the last smallpox case reported in 1977 from the Horn of Africa (Attah, 2000).

Humans overcome infectious disease by the use of specific antibiotics against the pathogens, e.g. penicillin is used to treat bacterial infections, metronidazole for trachoma and fluconazole for candidiasis etc. In addition, the client is counseled on risk of re-infection including the use of condom, compliance with prescribed drugs, need and cooperation for contact tracing (Adeyemi, et al; 2005).

Adeyemi, et al; (2005), list the followings as complication for STIs:

- pelvic inflammatory disease (PID)
- ectopic pregnancy
- urethral stricture
- cervical cancers
- sexual dysfunction; and
- Foetal death.

### **2.3.3 Eclampsia (pregnancy-induced hypertension)**

Guyton (2006), states that about 5 percent of all pregnant women experience a rapid rise in arterial blood pressure to hypertensive levels during the last few months of pregnancy. This is also associated with leakage of large amount of protein into the urine. This condition is called pre-eclampsia or toxemia of pregnancy, while Myles (2003), defines pre-eclampsia as hypertension with proteinuria and Eclampsia – is defined as the new onset of convulsions during pregnancy or postpartum unrelated to other cerebral pathological conditions in a woman with pre-eclampsia.

## Causes

Robert and Redman (1993) state that abnormal placentation may be one of the initial events in the disease process. Abnormal placentation is caused by a genetically pre-determined maternal immune response to foetal antigens derived from the father and exposed in normal placental tissue (Redman et al, 1999).

Myles (2003), states that abnormal placentation and reduced placental perfusion can also be seen in condition with associated micro vascular disease such as diabetes, hypertension or thrombophilia. It may in addition occur where there is a large placental mass such as in multiple pregnancy or gestational trophoblastic disease (hydatidiform mole). Women with these conditions are at an increased risk of developing pre-eclampsia (Roberts and Redman, 1993). But Attah (2000) opined that:

The cause of pre-eclampsia is not known even though there are many theories. However, its occurrence is related to maternal age and parity. It occurs predominantly in the first pregnancy in relation to subsequent pregnancies. After the age of forty-five years, the incidence rises again both for primigravida and multigravida. Considering hypertension alone without proteinuria, an increase in incidence with increasing parity correlates with increasing age, which is to be expected. He also opined that there is increased incidence with multiple pregnancies, large hydatidiform moles (not small moles) and obesity.

## **Pathology**

Attah (2000), states that:

In the placenta there is an increase in the number and extent of infarcts. Various changes also occur in the utero-placenta vessels.

Abnormalities in maternal sickness are more extensive, the more severe the hypertension and proteinuria are, if accompanied by eclampsia. The best known lesions in pre-eclampsia are in renal glomeruli. They are enlarged and appear vacuolated with ballooned loops. These are regarded as the main lesions of pre-eclampsia. Cerebral haemorrhage is responsible for the majority of death and cerebral oedema is a usual accompaniment. In the liver two types of lesions are commonly found, namely, peri-portal haemorrhage and infarction. The lobules which may be small and focal or large, less common are haemorrhage in pulmonary alveoli and adrenals. Anterior pituitary necrosis occurs rarely.

## **Clinical manifestation**

Myles (2003) listed the followings as clinical manifestation of pregnancy-induced hypertensive:

- Blood vessels changes
  - Changes in coagulation system
  - Changes in the kidneys
  - Changes in the liver
  - Changes in the brain; and
  - Changes in the foeto-placental unit.
- Blood vessels changes – hypertension together with endothelial cell damage affects capillary permeability. Plasma proteins leak from the damage blood vessel causing a

decrease in the plasma colloid pressure and increase in oedema within the intracellular space.

- **Coagulation system:** Increased platelet consumption produces thrombocytopenia and may be responsible for the development of disseminated intravascular coagulation (DIC). As the process progresses fibrin and platelets are deposited, which will occlude blood flow to many organs particularly, the kidney, liver, brain and placenta.
- **Kidneys:** In kidney hypertension leads to vasospasm of the afferent arteriolar resulting in a decreased renal blood flow, which produces hypoxia and oedema of the endothelial cells by glomerular capillaries. This allows plasma proteins, mainly in form of albumen to filter into the urine, producing proteinuria.
- **Liver:** Vasoconstriction of the hepatic vascular bed will result in hypoxia and oedema of the liver cells. Altered liver function is reflected by falling albumin levels and rise in liver enzyme levels (Knapen et al, 1999).
- **Brain:** Hypertension combined with cerebro-vascular endothelial dysfunction increase the permeability of the blood-brain barrier resulting in cerebral oedema and microhaemorrhaging. Clinically, this is characterized by headache, visual disturbances and convulsions.
- **Foetoplacental unit:** In the uterus, vasoconstriction caused by hypertension reduces the uterine blood flow and vascular lesions occur in the placental bed, which can result in placental abruption. Reduction in blood flow to the choriodecidual spaces diminishes the amount of oxygen. The result is that the placental tissue becomes ischaemic leading to foetal growth restriction (Odegard et al, 2000).

## Diagnosis

As the hypertensive disorders are unlikely to be prevented, early detection and appropriate management can minimize the severity of the condition (Dekker and Sibai, 2001). Myles (2003), suggest that a high standard of antenatal care will contribute to the maintenance of optimum health. The midwife is in unique position to identify those women with predisposition to pre-eclampsia.

Based on the above discussion, Myles (2003), states the following as diagnostic procedures in pregnancy-induced hypertension – comprehensive history taking at their first meeting will identify:

- the mother's age and parity
  - primipaternity and partner related factors
  - a family history of hypertensive disorders
  - a past history of pre-eclampsia
  - The presence of underlying medical disorders for example, renal disease, diabetes and thromboembolic disorders.
- Blood pressure measurement: In order to detect incipient increases in blood pressure, the midwife should take the mother's blood pressure early in pregnancy and compare this with all subsequent recordings, taking into account the normal pattern in pregnancy.
- Urinalysis: proteinuria in absence of urinary tract infection is indicative of glomerular endotheliosis. The amount of protein in the urine is frequently taken as an index of the severity of pre-eclampsia.

- Oedema and excessive weight gain – these are used to be included in the diagnostic criteria for pre-eclampsia and nowadays are usually considered only when a diagnosis of pre-eclampsia has been made based on other criteria.
- Laboratory tests: these now make a significant contribution to the assessment and diagnosis of pre-eclampsia particularly when the presentation is a typical and hypertension or proteinuria, or both, are absent. The following alterations in the haematological and biochemical parameters are indicative of pre-eclampsia:
  - increased haemoglobin and haematocrit levels
  - thrombocytopenia
  - prolonged clotting times
  - raised serum creatinine and urea levels
  - raised serum uric acid level
  - Abnormal liver function tests, particularly raised transaminases.
- Symptoms may contribute to the diagnosis as described earlier, but these are rarely experienced by the woman until the disease has progressed to an advanced stage.

## **Treatment**

The aim of care is to monitor the condition of the woman and her foetus and if possible to prevent the hypertensive disorder worsening by appropriate interventions and treatment. The ultimate aim is to prolong the pregnancy until foetus is sufficiently mature to survive while safeguarding the mother's life (Myles, 2030).

Myles (2003), further breakdown the treatment modalities as follows:

- **Antenatal care:**

If the midwife diagnoses hypertensive or pre-eclampsia during pregnancy, the woman should be referred to a doctor or directly to maternity unit for assessment.

The following are advices to be given by the midwife for women with pregnancy-induced hypertension (Lewis and Drife, 2001):

**Rest** – women are advised to rest as much as possible and may be admitted to hospital to facilitate this, however, this has not been found to be cost-effective.

**Diet** – there is little evidence to support dietary intervention for preventing or restricting the advance of pregnancy induced hypertension. As for any pregnant woman, a diet rich in protein fibre and vitamins may be recommended.

**Weight gain** – weight gain may be useful for monitoring the progression of pregnancy induced hypertension in conjunction with other parameters (Surrat, 1993). The initial body mass index (BMI) is considered a more useful predictor of hypertension in pregnancy (Masse et al, 1993).

**Blood pressure and urinalysis:** The blood pressure is monitored daily at home or every 4 hours when in hospital. Urine should be tested for protein daily.

Abdominal examination is carried out daily. Any discomfort or tenderness should be recorded and reported immediately to the doctor as this may be sign of placental assumption. Upper abdominal pain is highly significant and indicative associated with fulminating (rapid onset) pregnancy-induced hypertension (Lewis and Drife, 2001).

Anti-hypertensive therapy: Its use is advocated as short term therapy in order to prevent an increase in blood pressure and the development of severe hypertension, thereby reducing the risk of the mother of cerebral haemorrhage.

## **Intrapartum care**

The midwife should remain with the woman throughout the course of labour as pre-eclampsia can suddenly worsen at any time. It is essential to monitor the maternal and fetal condition carefully. Marked deviation should be noted and medical assistance sought (Myles, 2003).

Vital signs, blood pressure are measured half-hourly, potentially rapid haemodynamic changes in pregnancy induced hypertension. Temperature should be recorded hourly. In severe pregnancy induced hypertension, examination of the optic fundi can give an indication of cerebral oedema, and cerebral irritability can be assessed by the degree of hyper-reflexia or the presence of clonus (less than three beats) (Myles, 2003).

Fluid volume expansion in severe pregnancy-induced hypertension expansion of the blood volume may be required to improve the maternal systemic and utero-placental circulation, thereby preventing hypoxia and reducing the effect of haemorrhage. Clear fluids will leak out and aggravate pre-existing oedema, therefore, gelatin solutions such as haemaccel and gelofusin may be used. These solutions increase the colloid osmotic pressure and pull fluid back into circulation, thereby reducing the oedema and increasing the blood volume. Where there is hypobuminaemia, oliguria, the use of human albumin solution is recommended (Lewis and Drife, 2001).

Pain relief – Epidural analgesia may procure the best pain relief, reduce the blood pressure and facilitate rapid caesarian section should the need arise. It is important to ensure a normal clotting screen and a platelet count  $>100 \times 10^9/L$  prior to insertion of the epidural (Myles, 2003).

Foetal condition – the foetal heart rate should be monitored closely and deviations from the normal reported and acted on.

Birth plan – A short second stage may be prescribed depending on the maternal and foetal conditions; in this instance, a ventouse extraction or forceps delivery will be performed by the obstetrician. If the maternal or foetal condition is significantly deterioration during the first stage of labour, a caesarean section will be undertaken (Myles, 2003).

Postpartum care – The maternal condition should continue to be monitored at least every 4 hours for the next 24 hours following childbirth as those is still the potential danger of the mother developing eclampsia.

### **Complications**

Myles (2003), states that sub capsular haemotoma or rupture of the liver or both together, is a rare but potentially fatal complication but Attah (2000), argue that cerebral haemorrhages and haemorrhages in other organs occur. Other maternal complication includes left ventricular failure, renal failure, disseminated intravascular coagulation and microangiopathic haemolytic anaemia complications in the placenta and foetus are abruption placentae, intrauterine growth retardation, foetal asphyxia and intrauterine death.

#### **2.3.4 Obstructed labour**

Myles (2003), and Neilson et al (2003), define obstructed labour as when there is no advance of the presenting part despite strong uterine contraction. The obstruction usually is at the pelvic brim but may occur at the outlet. For example, deep transverse arrest in an android-pelvis.

## **Causes**

Attah (2000), states that particularly in teenage when the pelvis is too small and narrow for the passage of the mature foetus, results in obstructed labour while Neilson, et al; (2003), added the following as causes of obstructed labour:

- Cephalo-pelvic disproportion or disparity between the size of the mother's pelvis and the foetus this precludes vaginal birth. The foetus may be large in relation to the pelvis or the pelvis may be contracted.
- Deep transverse arrest – this is an outcome of an occipito-posterior position
- Malpresentation – vaginal birth is impossible in cases of shoulder or brow presentation or in persistent mento-posterior position.
- Pelvic mass – fibroids located in the lower segment or on the cervix can prevent descent of the foetal head, ovarian tumours are rare tumour, may also prevent the head from entering the pelvis.
- Foetal abnormalities – abnormalities such as hydrocephalus resulting in disparity between the size of the foetus and the pelvis may cause obstruction, conjoined twins or locked twins are rare cases.

## **Signs of obstructed labour**

Myles (2003), states the following as signs of obstructed labour:

- Failure of descent, that is, the presenting part does not enter the pelvic brim despite good contractions.
- As the presenting part is unable to descend, cervical dilatation is affected and dilatation is slow. The cervix is described as hanging loosely like an empty sleeve as the presenting part is not applied to it.

- The uterine contractions exert pressures on the membranes that are over the cervix, which may result in early rupture or the formation of a large elongated sac of fore waters.
- The mother will later become dehydrated, ketotic and in constant pain.
- Pyrexia and tachycardia may be present
- The abdominal wall becomes tender to touch
- Excessive moulding and caput succedenum of the foetal head on vaginal examination to assess the level of descent.
- Poor urinary output and haematuria may be present
- Evidence of foetal distress may be observed.
- The uterus become moulded round the foetus and fails to relax properly between contractions.
- Physiological retraction ring may be seen as oblique ridge above the symphysis pubis and mark the junction between upper and lower uterine segment (Bandl's ring which is similar to full bladder).
- On examination the vagina feels hot and dry.

### **Management of obstructed labour**

Management includes prevention of obstructed labour in the first instance. Assessment of the risk within the antenatal period begins with noting any history of prolonged labours or difficult births (Myles, 2003). Antenatal assessment includes abdominal examination which should alert the midwife to any malpresentation or signs of cephalo-pelvic disproportion. Appropriate referral can be made prior to the onset of labour and management of the case adjusted to ensure safe delivery. An elective caesarean section may be advocated (Myles, 2003).

Other management schedules according to Myles (2003), includes the following:

- Careful assessment of the progress throughout labour will help detect lack of descent before labour becomes obstructed. If a midwife suspects that labour is obstructed she must seek appropriate medical aid.
- An intravenous infusion must be commenced if not already in progress to correct dehydration. Blood is taken for cross-matching in case a transfusion is needed. The mother will require treatment with antibiotics to overcome any infection that may be present.

Signs for obstructed labour should be observed through the antenatal and intra-natal period so that appropriate measures should be instituted such as transferring the patient to health facility, helped delivery e.g. vacuum extraction and in severe cases caesarean section.

The baby is likely to be delivered in a shocked and asphyxiated condition and facilities for resuscitation and expert care should be avoidable.

WHO has developed and introduced a partograph for use in developing countries the aim is to increase the detection of women with prolonged or obstructed labour. The partograph alerts curers to detect those women with abnormal progress and enables action to be taken, maternal and foetal mortality is thus reduced (WHO, 1996).

### **Complication of obstructed labour**

Myles (2003), categorized the complication into the followings:

- Maternal – trauma to the bladder may occur as a result of pressure from the fetal head during labour or as a result of trauma during delivery, e.g. vesico vaginal fistula (VVF), recto-vaginal fistula (RVF), etc.

Neglected obstruction will result in rupture of the uterus.

- Foetal – intrauterine asphyxia may result in a fresh stillbirth or if the baby is born alive, permanent brain damage. Ascending infection can cause neonatal pneumonia, which may also develop as a consequence of meconium aspiration.
- Post traumatic stress – untreated distress following a traumatic birth can result in long-term psychological problems. Post traumatic stress disorder results in the client experiencing flashbacks, avoidance to present memories and an increased level of anxiety when in similar situation.
- Mortality – obstructed labour is a major contributor to maternal mortality figures worldwide, being responsible for the death of approximately 40,000 women each year. It is a major problem in those countries where women may go into labour without the help of trained attendant.

### **2.3.5 Complication of abortion/unsafe abortion**

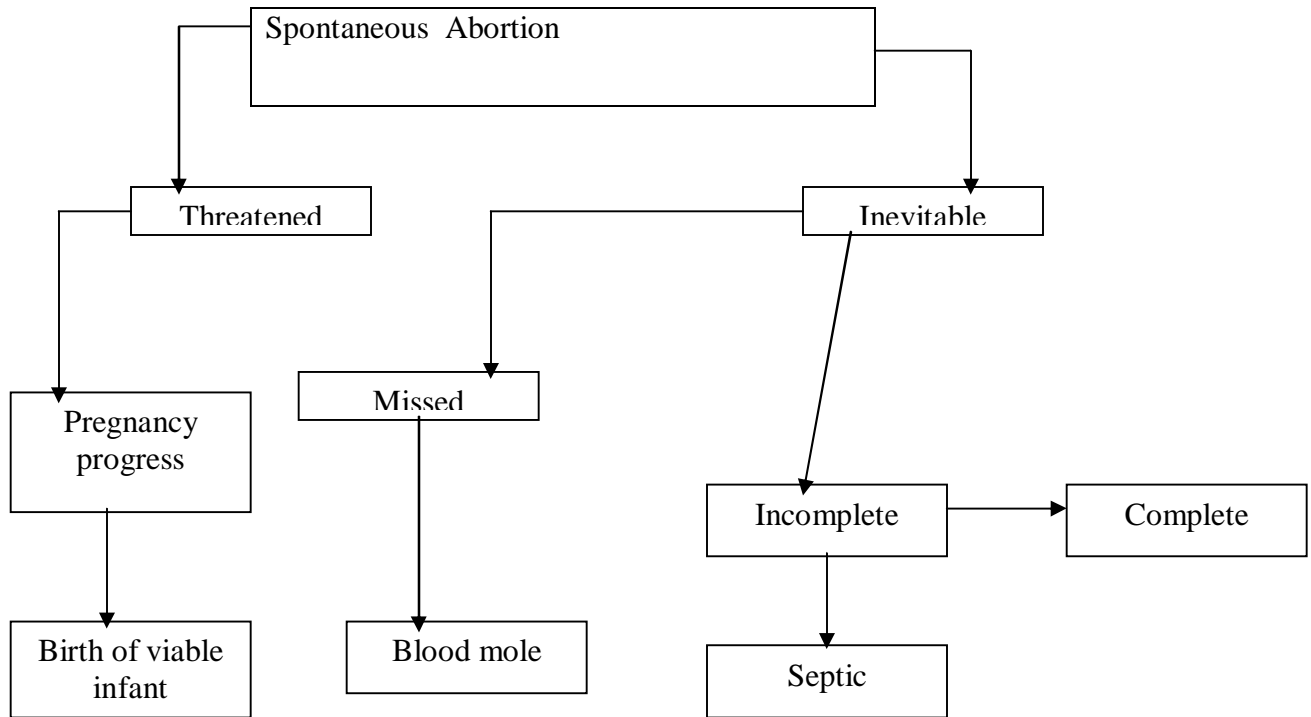
Myles (2003), defined abortion as a loss of the products of conception prior to 24 weeks gestation, Attah (2000), states that abortion and miscarriage are synonymous terms used for the premature termination of a pregnancy prior to inability of the foetus or a separate existence, irrespective of the stage at which this happens.

Regan (1997), states that 15% of all confirmed pregnancies are said to result in a miscarriage, the majority of which happen in the first trimester; 1-2% spontaneous miscarriage occur after the 13<sup>th</sup> week.

#### **Types of abortion**

Watson (2003), and Attah (2000), Concorde that abortion are of two types namely spontaneous and induced. Spontaneous abortion, Myles (2003), classify this as follows:

**Figure 2.1 Types of abortion**



### **Threatened miscarriage**

Myles (2003), states as any vaginal bleeding in pregnancy is abnormal, so any vaginal blood loss in early pregnancy should be thought of as a threatened miscarriage until shown otherwise. Myles (2003) further states that in threatened miscarriage, blood loss may be scanty, with or without low backache and cramp like pains. The pains may resemble dysmenorrhoea or period pain (Moulder 2001). The cervix remains closed and the uterus soft, with no tenderness when palpated.

### **Inevitable miscarriage**

Myles (2003), states that in this type of abortion, vaginal bleeding may be heavy with clots or gestational sac containing the embryo or foetus. The uterus, if palpable, may be smaller than expected. The membrane can rupture at this time, and amniotic fluid will be seen. The cervix dilates and tissue or clots may be seen in the vagina or protruding through the OS.

### **Incomplete miscarriage**

In incomplete miscarriage, remnants of placenta remain within the uterine cavity contributing to bleeding that may be heavy and profuse (Myles, 2003). Incomplete miscarriage contributes to the mortality and morbidity of women worldwide and vacuum aspiration may not be available to some women in developing countries, but it is seen by the WHO as an essential tool in the prevention of trauma and infection in childbearing women (Myles, 2003).

### **Complete miscarriage**

Here, the conceptus, placenta and membranes are expelled completely from the uterus, the pain stops, and signs, pregnancy regress. The uterus is firmly contracted on palpation, and an empty cavity is seen on ultrasound examination (Myles, 2003).

### **Septic abortion**

This condition is a most common complication of induced abortion or incomplete miscarriage and is due to ascending infection. In addition to the signs of miscarriage, mother complained of feeling unwell and may have headache, nausea and pyrexia (Myles, 2003). In practice septic abortions commonly lack any evidence of interference and are suspected only because of development of infection (Attah, 2000).

## **Induced abortion**

Termination of pregnancy before 24 weeks' gestation is legal in the UK within the terms of current legislation. Amendments to abortion act 1967 came into force in 1991, these made the termination of pregnancy legal in certain circumstances after 24 weeks (Myles, 2003).

Myles (2003), defined induced abortion as termination of pregnancy in an option considering the result of antenatal screening or diagnostic test offered. The aim of these investigations is to detect specific foetal abnormalities (and sometime maternal disorders).

## **Criminal abortion**

Most criminal abortions take place at about the second or third month when a woman has become certain of the cessation of her periods and morning sickness has confirmed pregnancy. Where pills or repeated douching have failed, she may reach the third or fourth month. Rarely does any deliberate interference take place later than the 5<sup>th</sup> month (Attah, 2000).

Myles (2003) defined criminal abortion as an illegal (with the terms of legislation) termination of pregnancy before 24 week's gestation. Attah (2000), defined it as an illegal interference with pregnancy.

## **Causes of abortion**

The consumption of gin, repeated hot baths, vaginal douching, or enthusiasm for skipping cycling or horse riding – not previously practiced might all be designed for procuring abortion (Attah, 2000).

After all these failed, the woman may then take more drastic steps and indulge in more deliberate acts, often with the assistance of other persons. The more common means adopted according to Attah (2003), are:

1. Local or more general violence. For example, blows to the breast, loins, lower abdominal or even perineum.
2. Abortifacient drugs: There are four groups of abortifacient drugs:
  - a. Emetics (vomiting inducing drugs), e.g. tartar emetic
  - b. Purgatives such as castor oil, aloe, jalap, colocynth (pilcochia) and croton oil.
  - c. Emmenagogues such as the essential oils pennyroyal, rue, juniper and turpentine are drugs capable of promoting or increasing menstrual flow Oestrogenic hormones have now emerged as emmenagogues, but their abortifacient efficiency is uncertain. Prostaglandins are far more effective.
  - d. Ecbolics have direct effects on the walls of the uterus and in dosages within therapeutic limits, are more likely to cause abortion, e.g. lead available as machine speed diachylon lead plaster, ergot and pituitary extract (puitrin). Quinine, the most common ecbolic drugs.
3. Instruments: This is the method (most commonly resorted to by habitual criminal abortionists and it is the most successful. Vacuum extraction is of course standard medical practice.

Myles (2003) states that the causes of miscarriage in most instances remain unknown, but may include the following:

**Maternal causes:**

- (i) Maternal age – The risk increase with advancing maternal age.
- (ii) Structural abnormalities of the genital tract e.g. retroversion of the uterus and fibroids
- (iii) Infections – e.g. rubella, hystera, Chlamydia (and malaria)

- (iv) Maternal diseases, e.g. diabetes, mellitus, renal diseases, Thyroid dysfunction where these conditions are not well controlled.
- (v) Environmental factors, e.g. excessive consumption of alcohol and coffee along with cigarette smoking including passive exposure to cigarette smoke so also exposure to organic solvents.

### **Foetal causes**

Where a cause is determined, 50% of miscarriages are due to chromosomal abnormalities of the conceptus. Genetic and structural abnormalities are also said to cause pregnancy loss.

### **Complications of abortion**

- Shock! Vasovagal or haemorrhagic
- Air embolism
- Instrumental injury e.g. uterine rupture
- Sepsis (Attah, 2000).

### **2.3.6 Malaria in pregnancy**

Attah (2000), defined malaria as a disease caused by the protozoa parasite, plasmodium and is transmitted through the bite of the female anopheles mosquito.

Malaria was a worldwide disease, but for biological and geo-environmental reasons, has in the last several centuries, remained endemic predominantly in the warm moist belt of the world where the climate is most suitable for mosquito habitation. It was largely responsible for the West African coast being called the “white man’s grave” by the Europeans (Attah, 2000).

Severe anaemia of pregnancy is common in malarial regions. In pregnancy, there is depression of immunity against malaria. The mechanism for this is not understood. When iron

intake is adequate, either dietary or administered, the anaemia is predominantly megaloblastic and macrocytic as a result of folic acid deficiency arising principally from persistent haemolysis (Attah, 2000).

Other adverse effects of malaria during pregnancy are abortion and premature labour placental infection is more common and heavier than generally appreciated, and marked fetal growth retardation is a common consequence. Late fetal and neonatal deaths are frequent complications in endemic areas (Attah, 2000).

### **Clinical manifestation (signs and symptoms)**

Lucas and Gilles (2003), state that clinically, malaria is characterized by fever, hepatomegaly splenomegaly, varying degrees of anaemia, and various syndromes resulting from the involvement of individual organs. Multi-organ failure is common.

### **Diagnosis**

Attah (2000), states that demonstration of plasmodium in red blood cells diagnoses malarial infection. The clinical significance of this depends upon the intensity of parasitaemia, clinical features and epidemiological considerations.

### **Treatment**

It centered on early diagnosis and chemotherapy, use of impregnated nets and curtains, vector control and personal protection (Lucas, and Gilles 2003).

### **Complication**

Attah (2000), list the followings as complication for malaria in pregnancy: choleric malaria, algid malaria, anaemia and black water fever. To this list may be added acute renal failure.

**Choleric malaria** – in this, there is a tremendous outpouring of fluid by the gastrointestinal mucosa into the lumen, giving a clinical picture comparable to cholera.

**In algid malaria**, there is heavy parasitaemia and a state of shock.

**Black water fever** refers to black collection of urine due to haemoglobinuria.

**Acute renal failure** results from micro-vascular changes in the kidneys – the pathogenesis of which is not known.

**Anaemia** – when the iron intake is adequate either dietary or administered, the anaemia is predominantly megaloblastic and macrocytic as a result of folic acid deficiency arising principally from persistent haemolysis. If iron intake is not sufficient to meet the increased requirement in pregnancy, the anaemia is of mixed type with both folic acid and iron deficiency.

## **2.4. THE ROLE OF A NURSE/MIDWIFE IN PREVENTING MATERNAL MORTALITY THE LSS MODEL OF APPROACH**

### **2.4.0 INTRODUCTION**

The modern trend is for an increasing proportion of births to take place in maternity centres, hospitals and similar institutions. Home delivery may be appropriate for a normal delivery, provided that the person attending the delivery is suitably trained and equipped and that referral to a higher level of care is available in case of complications (Lucas and Gilles, 2003).

Since the situation can alter dramatically in the course of delivery, emergency services providing skilled intervention should be duly available regardless of the initial estimate of the risk or place of delivery (Lucas and Gilles, 2003).

A skilled attendant is a doctor, midwife or nurse who has learnt the skills necessary to manage normal deliveries and diagnose or refer obstetric complications. The skilled attendants must be able to manage normal labour and delivery, recognize the onset of complications,

perform essential interventions, start treatment and supervise the referral of mother and baby for interventions that are beyond their competence or not possible in the particular setting (Lucas and Gilles, 2003).

Lucas and Gilles (2003), state that health care providers, such as auxiliary nurse/midwives, community midwives ... may require appropriate skills if they have been specially trained. That is, what American nurses associations has so far want to achieve in Nigeria starting from 1992 and termed this training as Life Saving Skills acquisition for Nigerian nurses/midwives because most of the nurses produced according to Nursing and Midwifery.

The life-saving skills are actions that can save lives of women and infants. There may be no time to ask for help in emergency. The midwife must take immediate action (Adeyemi, et al; 2005). The skills are appropriate because community midwives form the backbone of maternity services as the periphery and pregnancy and labour outcomes can be improved by making use of their services especially if they are well trained with life saving skills. Lucas and Gilles (2003), state that “all staff who is involved in delivery (nurses/midwives/doctors) must receive regular in-service training to ensure that they maintain a high level of performance.

Skilled attendant at every birth, provision of emergency obstetric care, promotion of antenatal care, post-abortion care/family planning services are strategies adopted to achieve SMI and reproductive health as well as form part of a mission statement for Federal Ministry of Health's Health reform program and by these that LSS is of much relevance.

### **Component of LSS**

Adeyemi, et al; (2005), states that the following are components of LSS:

- Quality antenatal care

- Monitoring labour progress – partographs
- Episiotomies and repair of lacerations
- Prevention and treatment of haemorrhage
- Resuscitation of mother and her baby during labour and beyond.
- Prevention and management of sepsis
- Hydration and rehydration
- Eclampsia management and prevention
- Vacuum extraction
- Other emergencies care
- Abortion and post-abortion care and
- HIV/AIDS management

It should be noted that at each skills operations of the component, there is a skill check list which has two purposes, as follows:

- \* The midwife uses it as a guide for checking her own skills
- \* The supervisor uses it when evaluating how well the midwife performs (Adeyemi, et al; 2005).

#### **2.4.01 Quality antenatal care (ANC)**

Nigerian demographic health survey (NDHS) (2003), states that ANC from a trained provider is important in monitoring pregnancy and helping to reduce the risks for the mother and child during this period. The survey showed that 61% of the mothers received ANC from a trained medical professionals. The most common ANC providers are nurses or midwives (57%).

ANC care can be more effective in preventing adverse pregnancy outcomes when it's sought early in the pregnancy and continues through delivery. At least four ANC visits are

recommended during pregnancy to ensure proper care. Less than half of mothers made four or more ANC visits (47%), 11% made 2-3 ANC visits, 3% made 1 ANC visit, 37% made no ANC visits (NDHS, 2003). Good ANC is very important for a good outcome of pregnancy. The midwife gives quality ANC to pregnant women thereby promoting maternal and foetal and new born health and survival.

To ensure quality ANC, LSS provides the following as guidelines (Adeyemi et al 2005):

1. Early detection and treatment of problems and complications
2. Prevention of complication and diseases
3. Birth preparedness and complications readiness
4. Health promotion/education.

These are going to be discussed as follows:

#### 1. Early detection and treatment of problems and complications:

This can be arrived at through the followings:

. History taking under the following subheadings:

- Medical
- Obstetrics
- Family/Social
- General Physical Examination

#### 2. Risk conditions in pregnancy that may result into pregnancy complications:

The current thinking is that it is very difficult to predict which women will need emergency obstetric care. Therefore, it is important to consider ALL WOMEN ARE AT RISK AT ALL TIMES (Adeyemi, et al; 2005).

The following are some of the pregnancy risk and intervention and prevention modalities:

**Anaemia:** If the haemoglobin count is less than 11g/l in a pregnant mother and less than 12 g/dl in a non-pregnant mother (WHO, 2006).

**Management:** Depends on type i.e. mild, moderate or severe and also gestational age. Referral to doctor/hospital is done when Haemoglobin count is less than 10g/dl.

**Prevention of anaemia:**

- Identification and appropriate management of risk factors for haemorrhage
- Nutritional education
- Identification and treatment of malaria and worm infestation
- Malaria prophylaxis using intermittent preventive treatment (IPT) and use of insecticide treated net (ITN)
- Daily iron supplementation with at least 600mg elemental iron and 450µgm (microgram) folic acid vitamin C can also be given in addition as it helps with absorption of iron.
- Child spacing

• **Diagnosis of hypertensive Disorders**

The hypertensive disorders of pregnancy include pregnancy induced hypertension and chronic hypertension, pre-eclampsia and eclampsia.

- Diastolic blood pressure is a good indicator for the management of hypertensive disorders in pregnancy. If the diastolic blood pressure is 90mmHg or more on two consecutive readings taken 4 hours or more apart, diagnose hypertension. If hypertension occurs after 20 weeks of gestation, during labour and/or within 48 hours of delivery, it is classified as pregnancy induced hypertension. If hypertension occurs before 20 weeks of gestation it is classified as chronic hypertension.

- Proteinuria – presence of proteinuria changes the diagnosis from pregnancy-induced hypertension to pre-eclampsia.

Management: As soon as proteinuria is present, this becomes pre-eclampsia. All women must be referred to see if delivery is needed. Any treatment – depends on condition and health institutions, however, a variety of options are available.

- Magnesium sulphate
- Methyldopa
- Hydralazine
- Nifedifine are drugs of choice.

The aim of the treatment is to keep the diastolic between 90 and 100mmHg (Adeyemi, et al; 2005).

### **Use of Antenatal Risk Assessment Form (ARAF)**

**Definition of ARAF** It is a graphic form or tool used antenatally for early detection and diagnosis with treatment of all identified problems.

### 3. Birth preparedness

- Early booking
- Informing patient about signs and symptoms of pregnancy complications
- Saving towards birth/delivery by the pregnant women and the husband
- Procurement of materials needed during pregnancy and birth.
- Identification of members of the family that will stay at home with the other children and with pregnant woman in the hospital.
- Identification of members of the community that will provide transportation when labour starts.

- Identifying viable communication means with the hospital and vice-versa.
- Healths talk on nutrition and hygiene during pregnancy.
- Preparation towards exclusive feeding/artificial milk.
- Educate patient on the importance of ante partum and postpartum exercises.
- Antenatal tour of delivery room by the pregnant women.

#### 4. Health education

- Nutrition education
- Personal/environmental hygiene to prevent malaria and other diseases
- Partner/family involvement
- Prevention of tetanus
- Early/exclusive breastfeeding
- Birth preparedness
- Family planning
- Danger signs during pregnancy, e.g.
  - Vaginal bleeding
  - Difficulty in breathing
  - Fever
  - Severe abdominal pain
  - Convulsions
  - Offensive vaginal discharge
  - Postpartum care

**2.4.02 Monitoring labour progress** – the partograph every normal pregnancy is expected to end to normal labour and delivery; it is recommended that progress of labour is monitored using

a partograph health care providers caring for women in labour are responsible for making observations and recording information on the partograph (Adeyemi, et al; 2005).

The ultimate goal for use of partograph is to reduce the incidence of prolonged, obstructed labour by early and timely recognition and thus reduce complications (Adeyemi, et al; 2005).

#### **Equipment for labour monitoring:**

- Pen
  - Foetoscope
  - Pulsometer
  - Thermometer
  - Sphygmomanometer
  - Urine distix
- a. Observation made should be plotted on the partograph starting from active phase of labour i.e. from 4cm cervical dilatation.
- b. Pelvic assessment

Most women have enough room in their pelvis for an average sized baby to pass. The midwife must be constantly on the alert to identify a woman who might be too small. When disproportion is identified the midwife refers the woman to the hospital.

#### **C.Prolonged ruptures of membranes at 8-12 hours:**

- Metronidazole and ampicillin are both given after 13 hours of premature membrane rupture for infection prevention.
- oxytocin regime

Aim to achieve 4 contractions in 10 minutes lasting 50-60 seconds.

Caution: Use oxytocin with great caution in grand multiparous women and only under supervision of an experienced medical officer who has excluded (cephalo-pelvic disproportion).

### **2.4.03 Episiotomies and repair of lacerations**

An episiotomy is done to prevent tears (lacerations) or to permit a faster delivery of the baby when the mother or baby is in distress. Lacerations and unrepaired episiotomies can lead to heavy loss, infection, scarring, unsatisfactory sexual intercourse, and even death. If it is not repaired, even a small laceration of the cervix can cost a woman her life. It is important that midwives know how to suture, to reduce both sickness (morbidity) and death (mortality). An episiotomy is not done as a routine procedure or simply as a convenience for the health care provider (Adeyemi, et al; 2005).

Reasons for cutting an episiotomy and deciding when an episiotomy is needed, comes with experience. Signs that an episiotomy may be necessary are (1) bright red blood from the vagina before the head is delivered (caused by tearing of the vagina) and (2) the perineal skin becomes pale (blanched) and shiny in appearance (caused by overstretching just prior to tearing) (Adeyemi, et al; 2005).

There are several reasons to cut an episiotomy. These include:

- to prevent a perineal tear or overstretching of perineal tissue as in the case of a very large infant;
- to protect the baby from brain damage as in the case of a premature infant whose head is being repeatedly pressed against the thick perineum;
- to speed the birth in the case of foetal distress

- to prevent damage to both mother and baby in the case of an abnormal presentation (breast, face, occipital posterior position) by providing more space for a safe delivery);
- to decrease the length of second stage for women who are ill with heart disease, sickle cell disease, eclampsia and so forth;
- in every case of instrumental (ventouse) delivery
- In women with a previous third degree tear.

### **Prevention of laceration:**

Adeyemi, et al; (2005), states that the midwife can do a lot to prevent laceration from occurring through the following:

**Birth position:** studies have shown that laceration in primigravida can be decreased by one-third by delivering the mother in a self-maternal position and applying warm cloths to the perineum in the second stage of labour.

**Warm cloths** – warm cloths around the vaginal opening help increase circulation to the skin, making the skin soft and more able to stretch. Use cooled boiled or very clean water. Put a very clean cloth in the water and wring it and press the cloth to the inside of your wrist to ensure that it is not too hot. Hold the cloth on the mother's genitals. Make sure you do not burn her. You can support the perineum with a warm cloth when the baby's head is crowning (Adeyemi, et al; 2005).

**Slow the birth of the head.** As the baby's head crowns, the midwife must try to prevent the mother from tearing. If the head is born slowly, the mother's skin has more time to stretch and is less likely to tear (Adeyemi, et al; 2005).

**Cut an episiotomy** – At times the best way to prevent a laceration is to cut an episiotomy (Adeyemi, et al; 2005).

## **2.4.04 Prevention and treatment of Haemorrhage**

### **Introduction**

Haemorrhage in pregnancy, labour and postpartum period (especially immediately after birth) is a major cause of maternal mortality in Nigeria. The major causes of haemorrhage in the first hours after birth are uterine atony, retained products of conception and genital laceration. This is the area where improved maternal care can save many lives (Adeyemi, et al; 2005).

The goal is the midwife will achieve to learn how to treat haemorrhage in pregnancy and labour.

The objective: the midwife caring for women during labour and delivery will be able to:

- Ask question regarding the woman's medical history to determine her risk of haemorrhage (ask and listen);
- Do abdominal and vaginal examinations to check for findings which alert her to the possibility of haemorrhage (look and feel);
- Identify problem/needs so that she is able to take appropriate action (Adeyemi, et al; 2050).

The objectives can be achieved through the following procedures:

- Manual removal of the placenta
- Manual compression of the uterus; and
- Manual removal of clots and products of conception (Adeyemi, et al; 2005).

### **Manual removal of the placenta**

Manual removal of placenta –this is taking the placenta out of the uterus using your hand.

### **Procedure on retained placenta:**

- Poor uterine contractions (inertia or tired uterus). Active management of the third stage with an oxytocin will usually help the uterus to contract. Sometimes the bladder although empty just before delivery, is now rinse again filled with urine. Voiding by the mother or catheterization often seems to “wake up” the uterus and contractions begin once again.
- Membranes stick to the uterine wall. Active management of the third stage using controlled cord fraction with controlled uterus and oxytocin will usually help the membranes to separate.
- The uterine muscle may spasm (constricting ring). This may happen from too much rising to the uterus during second stage.
- Placenta accreta (placenta stuck to the uterine muscle). This is usually identified when becomes possible to remove the placenta as it is not possible to remove the placenta. Placenta accreta begins to bleed when the removal of the placenta begins. A case of placenta accreta will need a caesarean hysterectomy and must be referred to a hospital with surgical facilities.
- Because a retained placenta may cause postpartum haemorrhage, set up an intravenous infusion and follow other actions in case of referral encourage relatives to follow (Adeyemi, et al; 2005).
- Bimanual compression of the uterus

Bimanual compression is a procedure to control postpartum haemorrhage where the midwife applies pressure to the uterus with her hands to stimulate to contract or to slow the bleeding until referral is possible (Adeyemi, et al; 2005).

Action to take in bimanual compression of the uterus:

- Prepare and explain to the woman that she is bleeding too much so you must rub her uterus to stop the bleeding. Explain that this hurts a little, but you will finish quickly with as little pain as possible.
- If bleeding stops; take vital signs and record. Estimate blood loss and record, check for bleeding and contracted uterus every 15 minutes for one hour, then check bleeding and contracted uterus every 30 minutes for 2 more hours; put baby to the breast again.
- Refer if necessary. If mother is not referred for any reason continues with the procedure.
- If bleeding has not stopped, continue to hold the contracted uterus and prepare for interval bimanual compression (Adeyemi, et al; 2005).

### **Manual Removal of Clots and Products of Conception**

Severe bleeding may happen when large clot or placenta membranes or foetal tissue gets stuck in the cervix, preventing total contraction of the uterus and cervix. This can happen after the placenta is delivered or during an incomplete abortion. The situation is serious and the cervix must be emptied as soon as possible (Adeyemi, et al; 2005).

It is characterized by a trickle of fresh, bright red blood, and the uterus feels soft and then hard. The woman may complain of abdominal cramping. The uterus may get bigger. The pulse increases. The woman may become pale or faint or go into shock (Myles, 2003).

### **Action to be taken**

As soon as you see blood coming from the vagina, feel the uterus to make sure it is firm. If the uterus is hard, look for lacerations as described if present repair. Examine the placenta and membranes to make sure they are complete. If there is one empty bladder, use a vaginal

speculum to see if there are clots in the cervix. Proceed to empty the vagina so that you can see well and in order to remove clots from the cervix and stop the bleeding (Adeyemi, et al; 2005).

#### **2.4.05 Resuscitation**

This has to do with care of important signs and symptoms of a baby who is having trouble living as well as for a woman with haemorrhage, sepsis, reaction to medication or a convulsion. Resuscitation is necessary when a person is unable to breathe and/or her heart is not beating. The skills can be used to help any adult with these life threatening problems (Adeyemi, et al; 2005).

#### **Objectives**

The midwife caring for the person will be able to:

- take action to help a person who is not breathing but does have a heart beat;
- list the signs and symptoms of a person who has no heart beat and is not breathing;
- Take appropriate actions to save the life of a person who has no heart beat and is not breathing (Adeyemi, et al; 2005).

#### **Action to be taken/ procedures:**

- ABC steps
- Heimlich Maneuver (Adeyemi, et al; 2005)

#### **ABC Steps**

- A - Airway, make sure the airway is open
- B - Breathing, make sure the person is breathing
- C - Cardiac function, make certain the heart is beating.

Heimlich maneuver (prevention of death by choking) It is an action used on a choking person to prevent death.

#### **2.4.06 Prevention and Management of Sepsis**

Sepsis is a major cause of death in mothers and foetus or newborn during late pregnancy, labour and the puerperium. Sepsis can be defined as the invasion of germs into the body system leading to serious ill-health. In Nigeria, sepsis account for 17% of maternal mortality. Sepsis can lead to shock, failure of the kidneys and death. And where the woman does not die, it can lead to chronic pelvic infection, ectopic pregnancy and infertility (Adeyemi, et al; 2005).

#### **Objectives**

The midwife will be able to:

- Recognize signs and symptoms of sepsis in mother
- Take appropriate actions in preventing, treating and referring mother and baby to the doctor when necessary.
- Use universal precautions for infection, prevention at all times.

#### **Actions to be taken are as follows:**

- Prevention of sepsis
- Management of sepsis in the mother
- Universal precautions (Adeyemi, et al; 2005).

#### **Prevention of sepsis**

- Give advice on diet during pregnancy to prevent anaemia
- Discourage introduction of foreign bodies e.g. herbs into the birth canal
- Conduct delivery under aseptic technique
- Encourage early breastfeeding

- Avoid female circumcision and scarification
- Use of very clean or sterile procedure when doing vaginal examination and wound care.
- Do vaginal examination ONLY when it is necessary.
- Proper hand-washing before and after caring for each mother.
- Maintain perineal hygiene
- Teach all pregnant mothers the importance of her coming back to the midwife as soon as the membranes rupture.
- Teach pregnant mothers the reasons why they should not have sexual intercourse after rupture or leaking of the membranes.
- Treat all STD and other infections in a timely manner during the antenatal period.
- Monitor the mother's temperature postnatally if the temperature is high.
- Monitor the mother's lochia postnatally if smelling or abnormal.
- Check fundal height to make sure this is below the umbilical and the uterus is firm.

### **Management of sepsis in the mother**

The midwife should take appropriate action based on identified problems. Actions to be taken include the following:

- Give copious fluids
- Give sponge baths
- Give analgesics e.g. paracetamol or disprin
- Give antibiotics e.g. septrin or flagyl or ampiclox
- Severe cases of infection may require parental antibiotics e.g. metronidazole (flagyl) then change to oral if the condition improves
- Refer immediately.

## **Universal Precautions**

- This is a guide for ensuring the prevention of transmission of blood borne disease to and from health workers, the patients and the environment.
- Through the guidelines, all equipment is disinfected before and after use and all wastes are disposed off by burning and burying.
- The guidelines entails:
  - The use of protective barriers (aprons, gloves, goggles, drapers);
  - Hand-washing using antiseptic solution or soap and water.
  - Using chlorine solution 0.5% to disinfect instruments.
  - In Nigeria “jik” is the chlorine solution commonly used but it contains 3.5% of chlorine, so to make 0.5% chlorine add one part of jik to 6 parts of water.
  - If parazone is the chlorine solution available add one part to 5 parts of water,
  - 4 steps of universal precaution
  - Step 1: decontamination
  - Step 2: cleaning
  - Step 3: high level disinfection (HLD)
  - Step 4: sterilization

### **2.4.07 Hydration and Rehydration**

Dehydration happens when output of water and salts is more than intake of water and salts. The mother in labour is working very hard and she loses water and salt quickly. The midwife must help the mother to drink and eat so that her body has the energy, salts and water it needs. The midwife should be sure the mother drinks at least 150ml of liquid every hour (Adeyemi, et al; 2005).

The aim for hydration and rehydration is for the midwife will learn to monitor the mother's fluid intake and judge when she needs more fluids, especially when she is at risk for shock. The midwife will learn how to give appropriate fluids orally, intravenous or rectally as needed.

– **Steps to prevent shock**, body's circulation do not work normally and organs such as heart and lungs do not work well because they lack oxygen. For example, when a woman is bleeding too much, there is no enough blood to carry the oxygen to the important organs of the body. Therefore, the organs stop or do less of their normal activities such as when the heart cannot pump as much so the blood pressure is very low (Guyton, 2006).

The most common causes of shock are severe bleeding (haemorrhage), fluid loss (dehydration) oxygen loss, infection (septicemia), heart attack, and allergic reaction (Myles, 2003).

Shock is a life threatening emergency and requires the following life-saving steps (Adeyemi, et al; 2005):

- Airway – make sure the mouth and nose are clear and open. Lay the woman on and side with head fitted back to keep the airway open.
- Breathing – do mouth-to-mouth breath if the woman is not breathing.
- Heart – if the heart is beating and the woman is haemorrhaging, stop the bleeding.
- Shock – cover the woman and keep her warm. Raise the feet and legs about 10cm (4 inches). Do not give anything to eat or drink. Keep calm. Reassure the woman and her family when you have time. Handle her gently as body movement can make shock signs stronger (faster pulse, lower blood pressure). Start intravenous fluids (IVF).

- Give fluids – do not wait for severe shock, which will end in death. Start IVF, if they are available. If you don't have the IVF or if you can start the IVF give fluids in the rectum. Do not give anything by mouth until the signs of shock are less. If the signs of shock are less give oral rehydration solution (ORS) when necessary.
- Take blood pressure and pulse – ask assistant to take and record the blood pressure and pulse every 10 minutes. This will help you follow the progress of shock or the woman's recovery shock.
- Transport – take the woman to the doctor as soon as you can. Keep her warm, but do not let her get too hot that she sweats and loses more fluid.
- Keep her feet and legs a little longer than her head. Continue the IVF if this is possible. Remember to take the woman's record so that the doctor will have as much and family understands what is happening so that they will not be afraid and nervous.

#### **2.4.08 Severe pre-eclampsia and eclampsia**

Eclampsia is one of the five main causes of maternal deaths. Globally, it accounts for up to 20% of maternal deaths and in Nigeria, some publications suggest it is the leading cause (Adeyemi, et al; 2005).

The aim of severe pre-eclampsia and eclampsia prevention and treatment is for the midwife to recognize the pre-eclampsia and eclampsia (Adeyem, et al; 2005). In order to prevent deaths from eclampsia, it is vital that pre-eclampsia is detected and action taken immediately in the antenatal period. This may mean the baby needs to be delivered as soon as possible. Magnesium sulphate is now the drug of first choice for the management of pre-eclampsia and eclampsia (Adeyemi, et al; 2005).

#### **2.4.09 Vacuum extraction**

The vacuum extractor assists the mother in her efforts to deliver her term, vertex baby vaginally (Myles, 2003). In 1953, Tage Malmstron M.D. introduced the metal vacuum extractor which has been used in Europe and other areas of the world as a safe method to assist the delivery. Later, the plastic cup extractor was introduced (Adeyemi, et al; 2005).

The aim of the vacuum extraction is to make midwife learn how to use a suction cup applied to the scalp of a baby to assist in the delivery of the baby. To accomplish the aim the midwife should be able to know the indication for vacuum extraction as follows:

- Foetal distress (baby is alive or nearly dead)
- In maternal conditions like diabetes, hypertension, cardiac disease, genes anaemia etc
- Delay in second stage of labour when the head has passed the ischial spines and head is distending the perineum in a persistent occipito- posterior position (Myles, 2003).

#### **2.4.10 other emergencies**

This emphasizes methods by which midwives in rural or urban settings can help save mother's lives by using the problem-solving method to identify the problem and to take appropriate action (Adeyemi, et al; 2005).

The management of persistent occipito-posterior position, umbilical cord prolapsed, uterine insertion, shoulder dystocia, breech presentation and other abnormal presentations. The management of these problems is included for the midwife who cannot possibly get the mother to a doctor so that in the hands of a skilled and competent midwife, these procedures can save both the mother and her baby. A procedure for the administration of oxytocin infusion (to aid contraction of the uterine and during labour and stop bleeding after labour) is also included (Adeyemi, et al; 2005).

The aim of other emergencies care is the midwife will be able to identify and manage several special problems during labour and delivery to save the lives of mothers and their babies (Adeyemi, et al; 2005).

#### **2.4.11 Abortion and post-abortion care**

Recent estimates are that at least 15% of all pregnancies end in a spontaneous abortion (Adeyemi, et al; 2005). WHO (2005) estimates that one in 8 pregnancy-related deaths are due to unsafe abortion.

Every midwife and health worker must give quality emergency care to every woman who has lost (complete abortion) or is losing (incomplete abortion) her pregnancy. Emergency care will vary depending on the situation. This critical emergency care is life saving for both spontaneous abortion and for unsafe abortion. As a midwife, it is important to give life-saving care and meet the woman's need in a respectful non-judgmental way (Adeyemi, et al; 2005).

Problem-solving method to determine the problem is going to be employed. Midwife will be able to perform a manual vacuum aspiration (MVA) and to care for the woman with an incomplete abortion (Adeyemi, et al; 2005).

Losing a pregnancy (planned or unplanned) is something a woman will never forget. Many of us could have an unwanted pregnancy or lose a much-wanted pregnancy at some time in our lives. Treat others as you would want yourself or your daughter to be treated.

The aim for abortion and post-abortion care is midwife will be able to care for a woman with an incomplete abortion diagnose vaginal bleeding caused by an abortion (post-abortion) and treat it accordingly.

#### **2.4.12 HIV/AIDS**

HIV stands for human immuno-deficiency virus. It is the virus which causes AIDS (Acquired Immune Deficiency Syndrome). When a person is infected with the virus, his body fluids such as blood, semen, and vaginal secretions will contain HIV antibodies against the virus upon infection. HIV stays in the body and gradually destroys the body's defense system (Watson, 2003).

HIV/AIDS is now a serious health and socio-economic problem in Nigeria. According to the latest available data, 3.5 million people in Nigeria are infected with HIV and several thousands have already died of AIDS-related illness (Adeyemi, et al; 2005).

The aim of HIV/AIDS management is for the midwife will be able to know facts about HIV/AIDS and how to conduct pre, post and ongoing counseling (Adeyemi, et al; 2005).

#### **Counseling on HIV/AIDS**

Every nurse/midwife and others caring for pregnant mothers should counsel all mothers/couples on HIV/AIDS because it is a life-threatening condition and discussing issues surrounding the infection may be frightening to patients and those caring for them in addition, this is a vital part of good maternal care and strategy of prevention of mother-to-child transmission of the virus. It is therefore an effective way of reducing maternal and infant mortality and morbidity (Adeyemi, et al; 2005).

#### **Process of counseling**

Always use the GATHER approach in counseling patients on HIV/AIDS:

- G - Greet the patient and establish a rapport
- A - Ask client why she has come or what help you can offer
- T - Tell client what needs to be known about HIV infection in

- Pregnancy including prevention of transmission to the unborn
- H - Help the woman to make an informed choice on getting tested.
- E - Explain the implication of the decision taken by the patient/couple
- R - Return visit and follow-up plan (Adeyemi, et al; 2005).

### **Prevention of mother-to-child transmission of HIV**

Mothers who are HIV infected can transmit the virus to their unborn or new born babies. The transmission can occur during pregnancy, delivery or through breastfeeding. If not treatment is given, 30-21% of babies born to HIV-infected mothers become infected (Myles, 2003).

Mother-to-child transmission can be prevented through the followings:

- Educate the woman on risks involved in transmitting HIV to the foetus.
- Encourage safer sexual practice (abstinence or condom use)
- Encourage regular antimalaria prophylaxis
- Educate the patient on adequate nutrition and vitamin supplementation
- Inform the client about delivery options
- Inform the client on infant feeding options.
- Use of infant formulae or locally prepared formulae
- Exclusive breastfeeding for a short duration of 3 months
- Lactation amenorrhea is not advisable for HIV infected mothers
- The availability of antiviral to prevent transmission (Adeyemi, et al; 2005).

### **2.5 SUMMARY:**

It is quite significant to note that Nigeria is among the countries that signed the millennium development goals, safe motherhood initiatives and reproductive health plans and

policies by WHO, maternal mortality has been at the same higher levels. Geographic differences in the country remain considerable.

Maternal mortality trends allow for certain amount of optimism in some areas of North Africa, Latin America, Asia and Middle East, but the situation in Nigeria in particular and sub-Saharan Africa in general is still alarming. Infact, out of the health indicators, maternal mortality is where the differences between industrialized and developing countries are the most evident, with levels twenty times higher in the latter than the former. In sub-Saharan Africa, one woman out of sixteen dies for reasons relating to maternity, compared with only one out of two thousand eight hundred in industrialized countries.

Births assisted by qualified staff are more frequent in Asia, the Middle East and North Africa but not in southern Asia and Sub-Saharan Africa. Improving obstetrics skills of nurses and midwives through LSS presumably will reduce maternal mortality ratio in Nigeria in general and Bauchi state in particular.

## **CHAPTER THREE**

### **3.1 METHODOLOGY**

The purpose of this study was to assess the effect of life-saving skills by trained nurses and midwives on maternal mortality in Bauchi state. To achieve this purpose, the research design, population, sample, instrumentation and statistical techniques used in this study are described in this chapter.

### **3.2 RESEARCH DESIGN**

As the purpose of this study was to assess the effect of nurses and midwives trained in life-saving skills on maternal mortality in Bauchi state. Ex-post facto research design was used because the information required to achieve the purpose was already available to collect the information required to test the hypothesis of the study.

Information on influence of LSS trained nurses and midwives on the provision of effective ante natal care during pregnancy, skilled care at birth, care of women at puerperium, and treatment of obstetric emergencies in Bauchi state were searched for and recorded.

### **3.3 POPULATION**

The population of this study consisted of LSS trained nurses-midwives employed in the local government health centers, maternities/state hospitals, and mothers attending these clinics for maternity care in Bauchi state. The state had 17 functional general hospitals (one of which is a specialist hospital), 75 primary health centers, 50 maternity clinics at the time this study was conducted.

### **3.4 SAMPLE AND SAMPLING TECHNIQUE**

Stratified and random sampling techniques were used in this study, Bauchi state was divided into three senatorial zones, which constitute stratum for the purpose of this study., two Local Government Areas {LGA}, were randomly selected from each stratum. The break down of the selected health facilities from the LGAs' used for the study is as follows:

**TABLE 3.1 SELECTED LOCAL GOVERNMENTS AREAS AND HEALTH FACILITY FOR THE STUDY.**

<b>SENATORIAL ZONE</b>	<b>LOCAL GOVT.</b>	<b>SELECTED HEALTH FACILITY</b>
BAUCHI NORTH	Katagum	General hospital Azare, urban maternity Azare, town maternity, Bulkachuwa, and primary health center, Bidawa, Kaki-mari, and Madangala.
	Jamaare	General hospital Jamaare, town: maternity Hanafari, and Jamaare and primary health center, Dogon daji Galdamari and Jamaare.
BAUCHI CENTRAL	Misau	General hospital Misau, town maternity: Akuyam, Hardawa, and primary health center Akuyam, Hardawa and Zadawa.
	Ningi	General hospital Ningi, town maternity: Gadan maiwa and Ningi; primary health center: Kafin zaki, Tiffi, and Tsangaya.
BAUCHI SOUTH	Bauchi	Specialist hospital Bauchi, urban maternity Bauchi, and town maternity Bauchi; primary health center Buzaye, Kangere, and Liman- katagum.
	Dass	General hospital Dass, town maternity Dass, Bazali; primary health center Baraza, Bagel and Polchi.

The respondents selected from each of the listed health institutions were based on the number of target population.

In each of the local government selected, there were 87 respondents of the study comprising 27 nurses/midwives and 60 clients (mothers with pregnancy related cases) attending the health facilities. A standardized questionnaire on the influence of LSS trained nurses and midwives on maternal mortality in Bauchi state was administered on all the Five hundred and twenty two respondents.

### **3.5 INSTRUMENTATION**

The instrument used in this study to collect the required information was standardized researcher-designed questionnaire. The questionnaire prepared consists of seven (5) sections on respondents' perceptions on the influence of LSS by trained nurses and midwives on MM in Bauchi state. The standardized questionnaire had the following sections: Section A with 6 items on demography of the respondents, Section B with 9 items on the provision effective ante natal care by LSS trained nurses and midwives; Section C with 8 items on the provision of skilled attendance at birth by LSS trained nurses and midwives, Section D with 8 items on provision of obstetric emergency treatment by LSS trained nurses and midwives, section E with 8 items on care for women at puerperium by LSS trained nurses and midwives in Bauchi state.

The standardized questionnaire prepared was vetted by 5 professional experts from the Departments of Community Medicine, Physical and Health Education, sociology and obstetric and gynaecology of Ahmadu Bello University, Zaria, to establish face validity of the questionnaire. On the basis of the suggestions made by these jurors items in the questionnaire were reconstructed where necessary and the draft questionnaire prepared.

### **3.7 PILOT STUDY**

In order to establish interval consistency, validity, item discrimination and difficulty of the questionnaire, a pilot study was conducted. The pilot study was conducted on 40 nurses/midwives and maternity clients randomly selected from five clinics in Bauchi township, which were not included in the main study. The draft questionnaire was personally administered by the researcher on the randomly selected respondents. Out of the 40 respondents, 31 completed the questionnaire and returned to the researcher. The data thus collected was statistically

analyzed to determine the reliability coefficient, item difficulty and discrimination of the questionnaire

The statistical analysis of the data showed that the item in the questionnaire had Reliability coefficient of **0.93** (using Cronbach alpha coefficient formula), which is acceptable for social sciences and educational researches (SPSS FAQ, 2007). The item analysis showed that the item discrimination index ranges from 0.053-0.84, any item that has a discrimination index above 0.40 was accepted, any item with index of 0.29-0.30 required modification of the statement and any statement that has discriminating index of below 0.2 was rejected (Sambo, 2003). On the basis of this result 5 statements were rejected and 11 statements were modified. The final questionnaire prepared after the pilot study contained total number of 32 statements under 4 different sub titles in addition to subtitle of demographic subtitle. The details are given in the appendix.

### **3.8 ADMINISTRATION OF QUESTIONNAIRE**

In order to administer the questionnaire, the researcher visited each of the selected health facilities and recruited suitable assistants to help in administering the questionnaires. The researcher made request at each health facility in order to distribute the stipulated copies of the questionnaire due for the health facility to the LSS trained nurses/midwives and mothers with pregnancy related cases. The researcher then collected the filled copies of the questionnaire from the selected health facilities. Out of the total of 522 copies of the questionnaire administered, 470(90%) were returned duly filled.

### **3.9 STATISTICAL TECHNIQUES**

Means and standard deviations were computed for influence of LSS trained nurses and midwives on MM in Bauchi state so also t-values were computed for the association of contribution of the LSS trained nurses and midwives to provision of effective ante natal care, skilled attendance at birth, care for obstetrics emergency and care for women at puerperium.

The used of t-test of independent variables was arrived at based on the following statements:

Stat soft (2008) "the t-test is the most commonly used method to evaluate the differences in means between two groups and the method can be used as long as the variables are normally distributed within each group and variation of scores in the two is not reliably different. The normality assumption can be evaluated by looking at the distribution of the data via histogram"; and Giampaoli and Singer (2004) "assuming normality and homogeneity (of data) t-test is an appropriate statistical tool".

Based on the adaptation of likert scale the responses to the statements on the questionnaire were scored as follows:

- Strongly agreed 5 points
- Agreed 4 points
- Un-decided 3 points
- Disagree 2 points
- Strongly disagree 1 point

The mean for the questionnaire was arrived at by adding the score obtained by each variable and divided by 5. Hence the mean of the scale used was 3.0; however the researcher selected as a means of deciding between positive and negative response as 3.5.

## **CHAPTER FOUR**

## **RESULTS AND DISCUSSION**

### **4.1 Introduction**

The purpose of the study was to assess the influence of Life Saving Skills (LSS) trained nurses/midwives on maternal mortality in Bauchi state. To achieve the purpose, Five hundreds and twenty two (522) questionnaires were administered to maternity clients who are the recipient of the care provided LSS trained nurses and midwives and LSS trained nurses and midwives who provides the care; the two groups were the subjects of the study. The questionnaires were administered with the help of research assistants; Four hundred and seventy were returned. The data collected were statistically analysed according to the hypotheses of the study, the results of which are presented and discussed in this chapter.

### **4.2 Results**

Before the results of the study are presented according to research hypotheses, descriptive information regarding:

- Demographic characteristics of the respondents.
- Responses to statements related to provision of effective ante natal care by LSS trained nurses and midwives.
- Responses to statements related to skilled attendance at birth by LSS trained nurses and midwives.
- Responses to statements related to provision of obstetrics emergency treatments by LSS trained nurses and midwives.
- Responses to statements related to care of women at puerperium by LSS trained nurses and midwives.

General discussions on the basis of the hypotheses are presented in the subsequent sections of the chapter.

**Table 4.1 (a): Demographic Characteristics of the Respondents: (i) client**

S/No.	CHARACTERISTIC	FREQUENCY	PERCENT	CUMULATIVE PERCENT
1.	<b><u>Sex</u></b> Female Total	303 303	100.00 100.00	100.0
2.	<b><u>Age</u></b> a. Below 20 b. 20-29 c. 30-39 d. 40-49 e. 50 above Total	23 130 97 43 10 303	7.60 42.90 32.01 14.19 3.30 100.00	7.60 50.50 82.51 96.70
3.	<b><u>Marital Status</u></b> a. Missing b. Single c. Married Total	8 64 231 303	2.64 21.12 76.23 100.00	2.64 23.76 100.00
4.	<b><u>QUALIFICATION</u></b> a. Primary b. Secondary c. Other tertiary institutions E.g. polytechnic diploma e. University f. others Total	156 81 41 25 - 303	51.49 26.73 13.53 8.25 - 100.00	51.49 78.22 91.75 100.00
5.	<b><u>TYPE OF HEALTH FACILITY</u></b> a. Primary health centre b. Maternity home c. Gen/Specialist hospital d. Unspecified Total	52 84 164 3 303	17.16 27.72 54.12 0.99 100.00	17.16 44.88 99.00 100.00

Table 4.1 (a) shows that out of the 303 maternity clients respondents, more than 42% were between the ages 20 -29 years of age, 32% were between the ages of 30-39 years of age, and 14% were between the ages of 40-49 years of. About 76% were married, 51% attended primary school, 26% attended secondary school.52% of the respondents were clients from General / specialist hospitals and 27% from maternity homes.

**Table 4.1 (b): Demographic Characteristics of the Respondents (ii) nurses/midwives**

S/No.	CHARACTERISTIC	FREQUENCY	PERCENT	CUMULATIVE PERCENT
1.	<b>Sex</b>			
	a. male	1	0.60	0.60
	b. Female	166	99.40	100.0
	Total	167	100.00	
2.	<b>Age</b>			
	a. Below 20	3	1.80	1.80
	b. 20-29	40	23.95	25.75
	c. 30-39	55	32.93	58.68
	d. 40-49	59	35.32	94.01
	e. 50 above	10	5.99	100.00
Total	167	100.00		
3.	<b>Marital Status</b>			
	c. Missing	2	1.20	1.20
	d. Single	30	17.96	19.16
	c. Married	135	80.84	100.00
Total	167	100.00		
4.	<b>QUALIFICATION</b>			
	A.Nursing/Midwifery cert.	156	93.41	93.41
	b. Other tertiary institutions E.g. polytechnic diploma	9	5.39	98.80
	e. University	2	1.20	100.00
	f. others	-	-	
	Total	167	167	
5.	<b>TYPE OF HEALTH FACILITY</b>			
	a. Primary health centre	22	13.17	13.17
	b. Maternity home	40	23.93	37.12
	c. Gen/Specialist hospital	105	62.87	100.00
	d. Unspecified	-	-	
Total	167	100.00		

Table 4.1 (b) shows that out of the 470 respondents, 166(99%) were women. More than 35% were between the ages 40 -49 years of age, 33% were between the ages of 30-39 years of age, and 23% were between the ages of 20-29 years of age. About 81% were married, 93%

attended school of nursing/midwifery, 5% had additional qualification apart from nursing and 1% is university graduate nurses .62% of the respondents were from General / specialist hospitals and 24% from maternity homes.

### 4.3 Answering research questions:

**Table 4.2: means and standard deviations (sd) of responses to statement related to the provision of effective ante natal care by LSS trained nurses and midwives.**

<b>Statement</b>	<b>Means</b>	<b>S,d.</b>
Provision of effective ante-natal care to pregnant women.	4.4766	0.78260
Recognition and management of anemia in pregnancy	4.4043	0.76322
Recognition of life threatening conditions and refers the patients as appropriate.	4.3936	0.79736
Recognition and management of malaria in pregnancy	4.3851	0.78810
Enlighten the community on effect and prevention of ante natal death	4.3000	0.85481
Recognition and refer cases of sexually trans. diseases e.g., syphilis HIV.etc.	4.2489	0.81022
Work in partnership with other agencies on provision of effective ante natal care.	4.1915	0.80081
Involve the community on plans to provide effective ante natal care.	4.0660	0.88213

Table 4.2, shows that, all the statements on the provision of effective ante natal care by LSS trained nurses and midwives, obtained a mean score of more than 3.5. As all statements were rated on a five point Likert-scale, any statement that obtained a mean value of 3.5 and above is considered as in agreement with the statement. Thus, the respondents agreed with all the statements on the provision of effective ante natal care by LSS trained nurses and midwives. The Table 4.2 shows that the mean values for all the statements were statistically significant,

suggesting that the respondents agree with the statements on the provision of quality ante care by LSS trained nurses and midwives.

**Table 4.3 Means and standard deviations on responses to statements related to the provision of skilled attendance at birth by LSS trained nurses and midwives.**

<b>Statement</b>	<b>Mean</b>	<b>S.d.</b>
Recognises the onset of true labour	4.44	0.74
Conduct normal delivery successfully	4.42	0.80
Recognise the process of labour satisfactorily	4.36	0.80
Recognised abnormal delivery when it occurs	4.25	0.84
Conduct some simple abnormal deliveries like breech, presentation successfully	4.23	0.88
Recognise abnormal labours that they can't handle.	4.19	0.83
Team spirit during the conduct of deliveries	3.82	1.11
Allow the client to choose among alternatives the type of delivery.	3.66	1.28

Table 4.3 shows that all statements on provision of skilled attendance at birth by LSS trained nurses and midwives obtained a mean score of more than 3.5, indicating that the respondents agreed with the statements, suggesting that the respondents agreed that LSS trained nurses and midwives provided satisfactory skilled attendance at birth to women on labour and that they referred cases of abnormal labour that they could not manage to appropriate health facility for further management.

**Table 4.4: Means and standard deviations on responses to statements related to the provision of care to women with obstetric emergency by LSS trained nurses and midwives:**

<b>Statement</b>	<b>Mean</b>	<b>S.d.</b>
Refer cases beyond their capability to appropriate health facility in emergency.	4.33	0.93
Hydrate and rehydrate emergency obstetric shock or dehydration successfully	4.23	0.91
Manage eclampsia and pre-eclampsia skillfully	4.18	0.94
Manage obstetric haemorrhages promptly and skillfully.	4.17	0.89
Manage emergency obstetric shock promptly and skillfully	4.17	0.91
Manage emergency abortion and its complications promptly and skillfully	4.13	0.98
Manage uterine inertia (tired uterus) as an emergency.	3.97	1.048
Manage cord prolapsed skillfully	3.97	1.049

Table 4.4 shows that all the statements on the provision of care for women with obstetric emergency by LSS trained nurses and midwives obtained a mean score of more than 3.5, indicating that the respondents agreed with the statements, suggesting that the respondents agreed that LSS trained nurses and midwives provided satisfactory care for women with obstetric emergency and that they referred cases of obstetric emergency that they could not treat to appropriate health facility for further management.

**Table 4.5: Means and responses to statements related to the provision of care for women at puerperium by LSS trained nurses and midwives.**

<b>Statement</b>	<b>Mean</b>	<b>S.d.</b>
Repair delivery induced laceration e.g. simple vaginal tears during puerperium.	4.36	0.83
Educate women at puerperium on taking care of themselves health wise.	4.35	0.80
Educate women on puerperium, & various family planning methods.	4.31	0.79
Prevent and manage postpartum haemorrhages.	4.23	0.89
Detect puerperal abnormality and act promptly.	4.17	0.85
Resuscitate women when the need arise during puerperium.	4.16	0.97
Prevent and manage puerperal sepsis	4.15	0.90

Table 4.5 shows that all the statements on the provision of care for women at puerperium by LSS trained nurses and midwives obtained a mean score of more than 3.5, indicating that the respondents agree with the statement, suggesting that the respondents agreed that LSS trained nurses and midwives provided satisfactory care for women at puerperium and that they referred cases of puerperium that they could not manage to appropriate health facility for further management.

#### **4.4 Test of Hypotheses**

##### **Major Hypothesis**

Ho: There is no significant influence of LSS trained nurses and midwives on maternal mortality as perceived by clients and LSS trained nurses and midwives in Bauchi state.

To test this hypothesis t –values of the entire statements related to sub- hypotheses were computed and the result is shown in table 4.6 below:

**Table 4.6 t-values, means and standard deviations on responses to statements related to influence of LSS by trained nurses/midwives on maternal mortality.**

Variable	Constant mean 3.5		
	t-value	Mean	S.d.
Provision of effective ante natal care by LSS trained nurses/midwives.	18.94	4.24	0.62
Provision of skilled attendance at birth by LSS trained nurses/midwives	17.53	4.17	0.57
Provision of care for women at puerperium By LSS trained nurses/midwives	16.48	4.26	0.63
Provision of care to women with obstetrics Emergency by LSS trained nurses/midwives	14.78	4.14	0.68

df(469)1.96>0.05.

Table 4.6 above shows significant influence of LSS provided by trained nurses and midwives to maternity clients on the followings: effective ante natal care, skilled attendance at birth, care of women with obstetric emergency, and care for women at puerperium; since the t-calculated is greater than t-critical of 1.96. Therefore, the null hypothesis was rejected. This means that LSS trained nurses and midwives provided a skilled service that reduces maternal mortality in Bauchi state.

### **Sub-Hypothesis I:**

Ho: There is significant influence of LSS trained nurses and midwives on the provision of effective ante natal care in Bauchi state.

To test the hypothesis, t-value of the statements related to provision of effective ante natal care were computed and the result is shown in table 4.7 below:

**Table 4.7 t- values, means and standard deviations on responses to statements related to provision of effective ante natal care by LSS trained nurses/midwives.**

Variable	N	Mean	df	t-value
Provision of effective ante natal care by LSS trained nurses/midwives	470	4.24	469	18.94

df(469)1.96>0.05.

Table 4.7 above shows significant effect of the effective ante natal care provided by LSS trained nurses and midwives on maternity client in Bauchi state, since the t-calculated of 18.94 is greater than t-critical of 1.96. Therefore, the null hypothesis was rejected. This means that there is significant effect of effective ante natal care provided by LSS trained nurses and midwives to maternity clients in Bauchi state which is positive.

#### **Sub-Hypothesis II:**

Ho: There is no significant influence of LSS trained nurses and midwives on the care for women in labour (skilled attendance at birth) in Bauchi state.

To test the hypothesis, t-value of the statements related to provision of care for women in labour were computed and the result is shown in table 4.8 below:

**Table 4.8 t- values, means and standard deviations on responses to statements related to provision of skilled attendance at birth by LSS trained nurses/midwives.**

Variable	N	Mean	df	t-value
Provision of skilled attendance at birth by LSS trained nurses/midwives	470	4.17	469	17.53

df(469)1.96>0.05.

Table 4.8 above shows significant effect of the quality of care provided for women in labour by LSS trained nurses and midwives in Bauchi state, since the t-calculated of 17.53 is greater than t-critical of 1.96. Therefore, the null hypothesis was rejected. This means that there is significant effect of skilled care at birth provided by LSS trained nurses and midwives to maternity clients in Bauchi state which is positive.

### Sub-Hypothesis III:

Ho: There is no significant influence of LSS trained nurses and midwives on the treatment of obstetric emergency in Bauchi state.

To test the hypothesis, t-value of the statements related to provision of treatment of obstetric emergency were computed and the result is shown in table 4.8 below:

**Table 4.9 t- values, means and standard deviations on responses to statements related to provision obstetrics emergency treatment by LSS trained nurses/midwives.**

Variable	N	Mean	df	t-value
Provision of care to women with obstetrics emergency By LSS trained nurses/midwives	470	4.14	469	14.78

df(469)1.96>0.05.

Table 4.8 above shows significant effect of the treatment provided for obstetric emergency by LSS trained nurses and midwives in Bauchi state, since the t-calculated of 14.78 is greater than t-critical of 1.96. Therefore, the null hypothesis was rejected. This means that there is significant effect of treatment for obstetric emergency by LSS trained nurses and midwives to maternity clients in Bauchi state which is positive.

### Sub-Hypothesis IV:

Ho: There is no significant influence of LSS trained nurses and midwives on the care for women at puerperium in Bauchi state.

To test the hypothesis, t-value of the statements related to provision of care for women at puerperium were computed and the result is shown in table 4.8 below:

**Table 4.9 t- values, means and standard deviations on responses to statements related to provision of care to women at puerperium by LSS trained nurses/midwives**

Variable	N	Mean	df	t-value
Provision of care to women at puerperium by LSS trained nurses/midwives	470	4.26	469	16.48

df(469)1.96>0.05.

Table 4.8 above shows significant effect of care provided for women at puerperium by LSS trained nurses and midwives in Bauchi state, since the t-calculated of 16.48 is greater than t-critical of 1.96. Therefore, the null hypothesis was rejected. This means that there is significant effect of care provided to women at puerperium by LSS trained nurses and midwives in Bauchi state which is positive.

#### **4.5 DISCUSSION**

The investigator examined the influence of LSS by trained nurses/midwives on maternal mortality in Bauchi state. In general, this study revealed that the LSS trained nurses/midwives had significant effect on maternal mortality as evidenced in the provision of effective ante natal care, skilled attendance at birth, treatment of obstetric emergency, and care of women at puerperium.

The general perception of the respondents of this study was that LSS trained nurses/midwives provided services that significantly contributed to the provision of quality ante natal obstetric care in Bauchi state and this finding supports the statement of the Nigeria Demographic Health Survey (NDHS) (2003) that "the ante natal care from trained provider is important in monitoring pregnancy and helps to reduce the risks for the mother and child death during this period." This may be attributed to the fact that the life saving skills acquired by nurses/midwives help them to take appropriate and timely action to prevent ante natal obstetric death. The implication of this finding is that the training of nurses/midwives in LSS is cost effective and efficient in promoting maternal health and preventing ante natal death, which is a compelling reason to provide greater opportunities for nurses and midwives for this kind of training.

The general perception of the respondents on statement related to provision of skilled attendance to women undergoing delivery by LSS trained nurses/midwives was that, the skilled provided significantly contributed to safe delivery and prevention of maternal morbidity and mortality. The findings support the statement of Luc De Bernis, e tal; (2003) " that it is better for

women and their newborn to have care from a skilled health worker than from some one without skills". It also supports the statement of Lucas and Gilles (2003) that "current strategies to save the lives of pregnant women rightly focus on skilled birth attendance; skilled attendant must be able to manage normal labour and delivery, recognize the onset of complications, perform essential interventions start treatment, and supervise the referral of mother and baby for interventions that are beyond their competence or not possible at a particular setting." It also gives credence to the statement of NDHS (2003) that "proper medical attention and hygienic conditions during delivery can reduce the risk of complication and infection that can cause serious illness or the death of the mother, her baby, or both and that the level of assistance received by a woman during delivery can reduce maternal and child death and related complications." This may also be attributed to the fact that the life saving skills acquired by nurses/midwives make them competent to take appropriate and timely action to provide skilled attendance at birth. The implication of this finding is that the training of nurses/midwives in LSS is cost effective and efficient in promoting maternal health and preventing maternal morbidity and mortality, which is compelling reason to provide greater opportunities for nurses and midwives for this kind of training.

The general perception of the respondents of this study was LSS trained nurses and midwives provided care that significantly contributed to prevention of maternal mortality as a result of obstetric life threatening condition. This is in line with statement of Fariyel, Heidi and Erin (2007) that " midwives help avert maternal deaths by facilitating timely access to emergency obstetric care which is essential to save women's lives". It also gives credence to statement of Nigeria National Reproductive Health Strategic Framework and Plan (2002-2006) that provision of emergency obstetric care form a significant component of international

reproductive health (RH) programme of action and Federal Ministry of Health Strategy to reduce maternal mortality and statement Belhocine (2003) whom state that "ultimately emergency obstetric care will lead to a reduction in preventable death of mothers and their children before , during and after delivery"; and improvement in the quality of obstetric emergencies would go a long way to significantly reduce the frequency of maternal death (Oladapo et al; 2006). But the findings go in contrasts to observation of Silas (2004) that the readiness and responsiveness of the staff in federal medical centre Makurdi, Benue state, Nigeria to obstetric emergencies during the ; 2004 was low. The difference between the findings of this study and the observation of Silas (2004) may be attributed to the fact that the latter make observation only in one health institution, which may be an exception rather than a general practice as this observation is made in number of similar health institutions the findings may have been very similar to this study.

Finally the general perception of the respondents of this study was that LSS trained nurses and midwives provided skilled care for women at pueperium that significantly contributed to reduction of maternal mortality due to postnatal complications. The findings give credence to the statement of UNICEF (2004) that "access to skilled care, ---- after the first month after delivery is a key to saving women's lives and statement of NDHS (2003) that "postnatal care is important both for the mother and the child to treat complications arising from the delivery, as well as to provide the mother with information on how to care for herself and child". This may also be attributed to the fact that the life saving skills acquired by nurses and midwives help them to take appropriate and timely action to provide care to women at pueperium when the need arises.

The overall finding of this study was that the respondents perceived that there was a significant influence of LSS trained nurses and midwives on the reduction of maternal mortality. This was achieved through the provision of the following services/care: provision of ante natal

care, skilled attendance at birth, obstetric emergency treatment/control, and care of women at puerperium. In other words the respondents opined that LSS trained nurses/midwives skilled maternity care contributed to reduction in maternal mortality in Bauchi state.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1.1 SUMMARY

Available data from world organizations like WHO, UNICEF, UN, and UNDP have shown that 52,000 maternal deaths at a minimum are recorded every year, of which less than 1% occur in the developed world and nearly all maternal deaths (99%) occur in the developing world. Nigeria contributes 10% of the world Maternal Mortality Ratio (MMR). Studies in Nigeria have shown that the North East geo-political zone has the highest figure of maternal death of about 1,549/100,000 and Bauchi State has a figure of about 650/100,000. Studies have shown that maternal mortality trends allow for certain amount of optimism in some areas of North Africa, Latin America, Asia and the Middle East, but the situation in sub-Saharan Africa still remains alarming. To arrest the situation, cost effective services to reduce MM are very vital. One of such services involves the training of midwives and nurses in Life Saving Skills (LSS). This is based on the assumption that, skilled care during pregnancy, child birth, and immediately after birth is important because it saves lives of millions of women and newborns and prevents serious and hard to predict complications during pregnancy, delivery, or immediately after delivery.

LSS has been in practice by nurses, since 1992, to address the problem of maternal morbidity and mortality. However, it is not clear as to what extent the training of midwives and nurses in LSS has contributed to the reduction of MM in Bauchi state. To achieve the purpose of the study a questionnaire on a contribution of midwives and nurses trained in LSS was prepared and standardized that contained five sections- one on demographics of the respondents and four on contribution of LSS trained midwives and nurses to reduction of maternal mortality and

morbidity in Bauchi state. This questionnaire was administered on 522 randomly selected respondents, who consisted of clients, and LSS trained midwives and nurses, 470 respondents duly filled in the questionnaire. The information thus received was statistically analysed the result which revealed the respondents perceived the followings:

1. The LSS trained nurse and midwives contributed positively to provision of effective ante natal care.
2. The LSS trained nurses and midwives contributed significantly to provision of skilled attendance at birth.
3. The LSS trained nurses and midwives contributed significantly to provision of obstetric emergency care.
4. The LSS trained nurses and midwives provide effective care for women at puerperium.

All these are services that helps reduce maternal mortality and morbidity.

## **5.2 CONCLUSION**

On the basis of the results and limitations of the study, the following conclusions are drawn:

1. The conduct of LSS trained nurses and midwives contribute significantly to the provision of effective ante natal care, which results in the reduction of maternal mortality.
2. The LSS trained nurses and midwives provide significant skilled attendance at birth which ensures safe delivery and prevents delivery complications and thus directly reduces MM.
3. The LSS trained nurses and midwives provide obstetric emergency care which significantly prevents ante natal, natal, and post natal morbidity that may result in MM.

4. The LSS trained nurses and midwives provide care to women at puerperium, including puerperal sepsis, which put into controls puerperal complications that may result in women's death, which is a positive influence in the reduction of MM.

### **5.3 RECOMMENDATIONS**

On the basis of the findings of this study, the following recommendations are made for effective and efficient provision of maternity care by LSS trained nurses and midwives in Bauchi State.

- The State governments and local government, whose responsibility is to provide facilities and equipment for the efficient and effective running of LSS acquired by nurses and midwives, should do so adequately and timely based on WHO recommendations to help reduce MM.
- The State and local governments should ensure adequate provision of LSS trained nurses and midwives to cater for the needs of the citizens.
- The State and local governments should ensure staff remunerations that will prevent the attrition of the LSS trained nurse and midwives, as their contribution to the prevention of MM are very positive.
- The State and local governments should ensure retraining of the already trained midwives and nurses on a continuous basis.
- The State and local governments should ensure adequate and constant supervision; monitoring and evaluation of the activities of LSS trained nurses and midwives to make their work more efficient.

- Communities should be mobilize through community leaders/traditional rulers, such village heads, district heads, and clergy men and women, school teachers, students, village health committees In order for women reap the benefits of LSS.
- The State and local governments should ensure health education and public enlightenment to the communities about the contribution of LSS trained nurses and midwives to maternity services.

#### **5.4 SUGGESTION FOR FURTHER RESEACH**

-Comparative study between influences LSS trained nurses and midwives and Non LSS trained nurses and midwives on Maternal Mortality are suggested for further research.

-Influence of LSS trained nurses and midwives on MM in other states are suggested for further research.

-Influence of LSS trained nurses on Maternal Mortality ratio is suggested for further research.

-Influence of LSS trained nurses on Maternal Mortality rate is suggested for further research.

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## **APPENDIX A**

### **RESEARCH QUESTIONNAIRE**

#### **QUESTIONNAIRE ON THE INFLUENCE OF NURSES AND MIDWIVES TRAINED IN LIFE SAVING SKILLS {LSS} ON MATERNAL MORTALITY IN BAUCHI STATE.**

The purpose of this research is to find out the influence of nurses and midwives trained in LSS on maternal mortality rate in Bauchi state. To achieve this purpose, these questionnaire is being prepared, which has six {6} section. Section one contains statement on personal information, all other section contain statement on the influence of nurses and midwives trained in LSS on different aspect of maternal mortality.

You are requested to kindly tick the appropriate column that best represent your position and feelings.

Section B-E is on five point Likert scale. You have to tick the column against each statement of each section that best represent your feelings.

There is no right and wrong responses, all your responses will be treated strictly confidential.

Your cooperation in this regard will be highly appreciated.

**Section A: Personal Data of respondents**

Please tick (✓) the status that best fit you.

**1. Sex**

Male [ ]

Female [ ]

**2. Age:**

(a) Below 20 [ ]

(b) 20 – 29 [ ]

(c) 30 – 39 [ ]

(d) 40 – 49 [ ]

(e) 50 and above [ ]

**3. Occupation**

(a) Nursing/midwifery [ ]

(b) Client [ ]

**4. Marital status**

(a) Single [ ]

(b) Married [ ]

**5. Highest Educational qualification.**

(a) Primary [ ]

(b) Secondary [ ]

(c) Nursing/Midwifery certificate [ ]

(d) Other Tertiary Institution e.g. Polytechnic diploma [ ]

(e) University degree [ ]

**6. Type of Health facility:**

(a) Primary health centre [ ]

(b) Maternity home [ ]

(c) General hospital/specialist hospital [ ]

The following statements in section B-F are on a five point Likert scale, please tick the column of each section that best present your feelings. The key for the column is given below:

SA = Strongly Agree

A = Agree

U = Undecided

D = Disagree

SD = Strongly Disagree

**Please tick (✓) the column that best represent your feeling.**

**Contributions of LSS trained nurses and midwives to:**

**Section B: provision of effective ante natal care.**

S/No.	Statement	SA	A	U	D	SD
1.	Provide quality ante-natal care to pregnant women in health institution she finds her self.					
2.	Recognize life-threatening conditions above their capabilities and thus refer the patients appropriately.					
3.	Enlighten the community on effect and prevention of obstetric death.					
4.	Recognize and manage malaria in pregnancy.					
5.	Recognize and manage aneamia in pregnancy.					
6.	Recognize and refer cases of sexually transmittable diseases. E.g. Gonorrhoea, syphilis HIV etc.					
7.	Involve the community to plan on how to prevent obstetric death effectively.					
8.	Work in partnership with other agency at governmental and non governmental level on prevention of obstetric death.					

**SECTION C: Skilled attendance at birth**

S-NO	Statement LSS trained nurses and midwives	SA	A	U	D	SD
1.	Are capable of recognizing the onset of true labour.					
2.	Recognize the process of labour satisfactorily.					
3.	Are capable of conducting normal delivery successfully.					
4.	Are capable of assessing and recognizing, abnormal delivery when it occurs.					
5.	Are capable of conducting some simple abnormal deliveries like Breech, presentations successfully.					
6.	Are capable of recognizing abnormal labours that they can't be able to handle successfully.					
7.	Have team spirit during the conduct of deliveries.					
8.	Allow the client to choose among alternatives the type of deliver she desire.					

**Section D: Obstetric emergency**

S/NO.	Statement	SA	A	U	D	SD
1.	Detect and manage obstetric haemorrhages promptly and skillfully.					
2.	Detect and manage emergency abortion and its complications promptly and skillfully.					
3.	Detect and manage emergency obstetric shock promptly and skillfully.					
4.	Hydrate and rehydrate emergency obstetric shock or dehydration successfully.					
5.	Detect and manage eclampsia and pre-eclampsia skillfully.					
6.	Detect and manage cord prolapsed.					
7.	Detect and treat as an emergency uterine inertia {tired uterus}.					
8.	Refer cases that are beyond their capability to appropriate health facility, during emergency.					

**SECTION E: Care for women at puerperium.**

S-NO	Statement	SA	A	U	D	SD
1.	Able to repair delivery induced laceration. E.g. .simple vaginal tears during puerperium.					
2.	Able to prevent and treat postpartum haemorrhage.					
3.	Able to prevent and manage puerperal sepsis.					
4.	Able to resuscitate women when the need arise during puerperium.					
5.	Able to teach women during puerperium on how to take care of themselves health wise.					
6.	Able to educate women at puerperium, various family planning methods.					
7.	Able to refer women with complex puerperal cases like severe puerperal sepsis to appropriate health facility.					
8.	Able to detect puerperal abnormality and act promptly as required.					

**APPENDIX B**  
**REQUEST TO VET QUESTIONNAIRE**



**DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION**  
**AHMADU BELLO UNIVERSITY, ZARIA - NIGERIA**  
**(OFFICE OF THE HEAD OF DEPARTMENT)**

**Vice Chancellor:** Professor Shehu U. Abdullahi, DVM (ABU) Ph.D (Min) FCVSN, FIMC, mni  
**Head of Department:** Dr. A. I. Kabido, B.Ed., M.Ed., Ph.D. (ABU), AMNIM

DATE: 6th, September, 2007.

Dear Sir,

**REQUEST TO VET QUESTIONNAIRE**

Mallam Babayo Muhammad Tukur is a Master's student of this Department specializing in Health Education. He is conducting a research on " Influence of Nurses and Midwives trained in Life Saving Skills on Maternal Mortality Rate in Bauchi state", in partial fulfillment of the requirements of this programme. In this regard, he has prepared a questionnaire to collect the required information for this study.

On the basis of your professional expertise and experience, you have been selected as one of the jurors to vet the questionnaire.

I would appreciate it very much if you kindly vet the questionnaire, which I am sending here with and return it to the investigator as soon as possible.

Thank you.

Yours faithfully,

  
**Professor K. Vankateswarlu,**  
MAJOR SUPERVISOR

APPENDIX C

PERMISSION TO ADMINISTER QUESTIONARE



**DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION**  
**AHMADU BELLO UNIVERSITY, ZARIA - NIGERIA**  
**(OFFICE OF THE HEAD OF DEPARTMENT)**

**Vice Chancellor:** Professor Shehu U. Abdullahi, DVM (ABU) Ph.D (Min) FCVSN, FIMC, mni

**Head of Department:** Dr. A. I. Kabido, B.Ed., M.Ed., Ph.D. (ABU), AMNIM

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30<sup>th</sup> October, 2007.

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.....  
Dear Sir/Madam,

**PERMISSION TO ADMINISTER QUESTIONAIRE**

Malam Tukur Babayo Muhammad is a Masters' student of this Department in Health Education. He is conducting research on "Influence of Nurses/Midwives trained in Life Saving Skills (LSS) on Maternal Mortality Rate in Bauchi State", in partial fulfillment of the requirements of his programme.

In this regard, he has prepared a questionnaire to be administered within your health facility. I therefore, request for your kind permission for him to administer the questionnaire on the nurse/midwives trained in LSS and maternity clients, who are the subjects of his study.

Thanking you for your cooperation.

Yours faithfully,

Professor K. Venkateswarlu

Major supervisor