KNOWLEDGE OF AND CHALLENGES EXPERIENCED BY HEALTH WORKERS MANAGING MATERNITY PATIENTS IN PRIMARY HEALTH CARE (PHC) CLINICS OF YOBE STATE, NIGERIA

A RESEARCH REPORT

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DECLARATION:

This research report was read, checked and corrected by my supervisor Dr. Sue Armstrong and has been approved as having met the partial fulfillment of the requirement for the award of a Master's Degree in Nursing Sciences by the Witwatersrand University of Johannesburg, South Africa.

Signed …… Signed……

Student Supervisor

DEDICATION

THIS DISSERTATION IS DEDICATED TO MY LATE PARENTS (THE ALI ILYA FAMILY) WHO DID EVERY THING POSSIBLE FOR ME TO GO TO SCHOOL IN THE MIDST OF MY FRIENDS WHO WERE ROAMING STREETS WITHOUT EITHER ISLAMIC OR WESTERN EDUCATION. I AM MOST PROUD OF YOU AND PRAY TO ALLAH TO REWARD YOU WITH JANNATUL FIRDAUSI

ABSTRACT

This study, entitled "Knowledge of and challenges of health workers managing maternity patients at PHC facilities of Yobe State, Nigeria," had the following objectives:

- To describe the socio-demographic characteristics of the health workers in the Primary health care (PHC) facilities in the state.
- To determine the level of knowledge of the health workers regarding the management of maternity patients in Primary health care facilities in Yobe State.
- To determine the challenges experienced by the health workers in the Primary health care facilities in the state.

The study was primarily aimed at exploring the health workers level of knowledge, skills and competencies in the management of maternity patients and their contributions towards the control and reduction of maternal mortality in the state.

METHODS: A cross sectional survey study in PHC clinics of six selected local government areas of the state, namely Gujba, Geidam, Fune, Fika, Nguru and Jakusko local government areas. A total of 221 health workers (n=221) were interviewed using structured questionnaires, whilst 46 facility managers (n=46) were given self-administered questionnaires while on duty, and data were collected concurrently from clinic records. The data were cleaned, entered in to Epi info statistical software, imported and analysed using STATA. Descriptive and inferential statistics were used to interpret the outcomes of the analysis.

RESULTS: More than half of the respondents were female (65.61%) with an average age of 33 years (SD± 8.1). Categories of the health workers who participated in the study were SCHEW, JCHEW, SSCE, TBAS, EHA/EHO and others who were not trained in any form as health workers, but were found running the affairs of maternity patients. More than 80% of the clinics did not have functional ambulances and there was gross inadequacy of basic services in most of the clinics; only 14 out of 46 clinics had portable water supply and electricity. There was a large seasonal turnout of patients in the clinics but poor patronage by maternity clients. The health workers in the maternity unit were found to be deficient in the knowledge, skills and competencies to manage maternity patients. Protocols were not followed (68.78%), some significant information about ante-natal care was not given to

clients and maternity clients were not adequately informed of some of the danger signs of pregnancy. There was a poor standard of institutional deliveries and the majority of the Health Workers had no training on EOC or conducting a clean and safe delivery.

CONCLUSION: Examining the background of the current health workers in the primary health care facilities, the attainment of MDG 5 by 2015 will not be a reality, unless urgent measures are put in place, including large recruitment and motivation midwives, and deployment of these midwives to the rural health clinics. There is a need for the existing health workers to be supported by government and enrolled in short course training in Colleges of Midwifery to acquire the much needed skills and competencies for the care of maternity patients.

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ABBREVIATIONS USED IN THE STUDY

ANC	Antenatal care
APH	Ante partum hemorrhage
CDC	Centre for Disease Control
CHC	Comprehensive health centers
EBF	Exclusive breastfeeding
EOC	Emergency Obstetric Care
FANC	Focused antenatal care
FP	Family planning
GHWA	Global Health Workforce Alliance
IMCI	Integrated management of childhood illnesses
ITN	Insecticide treated net
IUDF	Intrauterine foetal death
JTF	Joint task force
KMC	Kangaroo mother care
LGAs	Local government areas
LSS	Life-saving skills
JCHEW	Junior community health extension worker
MSS	Midwives service scheme
MCH	Maternal and child health
MDG	Millennium Development goals
MMR	Maternal mortality rates/ratio

MNCH	Maternal, neonatal and child health
MVA	Manual vacuum aspiration
NDHS	National Demographic Health and survey
NGOS	Non-Governmental organizations
NSBAS	Non-skilled birth attendants
NC	Neonatal care
PRRINN	Partnership for reviving routine immunizations in Northern Nigeria
PHC	Primary Health Care
PNC	Postnatal care
PPH	postnatal partum haemorrhage
SCHEW	Senior community health extension worker
SBA	Skilled birth attendants
SD	Standard Deviation
SPHCMB	State primary health care management board
SURE-P	Subsidy Re-investment and empowerment program
UNFPA	United Nations population fund
WHA	World Health Assembly
WHO	World Health Organization

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CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

High maternal deaths and child mortality globally and in sub-Saharan Africa in particular, is a major concern to all health workers and policy makers. The unacceptably high rates of approximately 342,900 deaths is receiving the attention of international communities, particularly the World Health Organization (WHO) and other concerned Non-Governmental Organisations (Hogan et al., 2010). This hazard requires urgent interventions, from all angles, in order to have a lasting solution to ensure a healthy and productive future population. Although there was a significant drop in the maternal death figure to 273,500 in 2011(Lozano et al., 2011), the problem is still very serious in developing countries, especially sub-Saharan Africa.

In 2010 alone, almost 287,000 women died during pregnancy and childbirth and in the same period, approximately 3.1 million newborns died in their neonatal period (WHO, 2010b). Most of these deaths occurred in rural areas where health care accessibility is minimal. Sub-Saharan Africa and Southern Asia account for more than 85% of the risk. The problem in developing countries was said to be 15 times more than in developed and industrialised regions.

Two countries were believed to account for more than one third of the global maternal deaths: India (19%) and Nigeria (14%). This was one of the reasons why WHO advocated for the unconditional provision of skilled care at every birth from accredited health professionals. Such care could best be provided by a midwife, doctor or a nurse/midwife who are trained and have the necessary skills and competencies to handle normal (uncomplicated) pregnancies. In addition to the necessary skills, these health professionals should be well-motivated, stationed in the right place, at the right time, with the right supplies and equipment to do the right job(WHO, 2010c).

To record a substantial reduction in this part of the world, multi disciplinary approaches are required as well as human and material resources in order to achieve substantial improvements in maternal and child health programmes.

A report by WHO (2005) emphasised that attending to approximately 136 million births yearly is one of the challenges facing the world health system today. The high number remains a serious challenge in developing countries where skilled and responsive care at birth is not readily available in many rural health facilities. The report further stressed that nearly all obstetric risks could be averted and much of the suffering eased when skilled care is available at birth and for children under the age of five (WHO, 2005). Such care could best be provided by a registered and licensed midwife or a health worker with midwifery skills. This will rescue many life threatening obstetric problems that may arise before, during or after child birth and will dramatically reduce maternal and child mortality in the developing countries.

The term 'skilled attendant' in this context refers to professionals with midwifery skills (midwives, doctors and nurses) who have been trained with the necessary skills to manage normal deliveries or refer obstetric complications (WHO, 2004). They must be able to recognise 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 their setting(UNFPA, 2012).

"United Nation Population Fund (UNFPA) has begun using the expression 'midwives and Others with midwifery skills' (MOMS) rather than the term 'skilled attendant' partly because the latter lends itself to confusion with 'skilled attendance" (UNFPA, 2012).

Skilled attendant refers to a professional with midwifery skills working within an enabling environment or health care delivery system capable of delivering appropriate emergency obstetric care to maternity clients. For a skilled birth attendant to save lives and prevent complications, there is need to link the services with a larger health care system with the facilities, supplies, transport and professionals to provide emergency obstetric care when necessary (UNFPA, 2012).

The need for skilled birth attendants in Yobe state primary health care facilities and all other rural health care facilities in Northern Nigeria is an urgent requirement that concerned authorities should focus attention on. This is because it is one of the major indicators for the attainment of MDGs 4 and 5 and is the most required strategy for government and concerned NGOs to give serious attention if they want to achieve a reduction in maternal and child deaths in this particular region and Nigeria as a whole. It was seen in a study (Doctor et al.,

2013) that poor or non-attendance at ante-natal care and ignorance of the critical danger signs of pregnancy were attributable to clients' poor contact with skilled birth attendants.

1.2 PROBLEM STATEMENT

Maternal mortality in Northern Nigeria is known to be very high, Doctor et al. (2012)found that maternal mortality in four states of the North (Jigawa, Katsina, Yobe and Zamfara states) is about 1,751 per 100,000 live births. It was also estimated that approximately 87.2% of women in those areas delivered at home without the supervision and assistance of skilled birth attendants, and less than 25.5% receive ANC, whilst the few fortunate ones hardly report back to the clinics for PNC (Doctor et al., 2011). Many attempts have been made by donor agencies through research, funds, donations and materials to reduce the problem of maternal deaths in the northern region. There has been support to curb the problem of maternal mortality in the region, particularly the bold steps taken by the partnership for reviving routine immunisations in Northern Nigeria (PRRINN-MNCH) and its subsequent effort to strengthen maternal and child health services in four states of the region, of which Yobe is one. Whilst currently there is an inadequate number of skilled staff to provide the basic required MNCH services, it is essential that the health workers who do attempt to provide the maternity services be retrained, motivated and equipped with the needed tools to render safe maternal care (Doctor et al., 2012). Little is known about the health workers' current knowledge and skills in the care of maternity patients, and the challenges they experienced in their clinical settings. Baseline information on their current knowledge and circumstances in which they practice is needed to plan an intervention at a later stage and to improve their performance which will bring about reduction in maternal and child mortalities in Yobe State.

1.3 JUSTIFICATION OF THE STUDY

The study is focused towards the knowledge of the maternity health workers who manage the patients and the challenges they experienced in the primary health care clinics of the State. There have been many claims on the causes of maternal mortality but little or no attention has been paid to the level of knowledge of the existing staff of the facilities and the challenges they face in the management of maternity patients. Studies have also shown that the increase in maternal mortality in Northern Nigeria is partly due to the reliance on the untrained workers in the obstetric units (Kalu-Umeh et al., 2013, UNFPA, 2010). This study will stimulate the primary health care workers to acquire the necessary skills through continuous

capacity development programs, workshops and seminars. The findings of the study will stimulate the government of Yobe State to support in-service training, with full in service benefits particularly to female health care workers who want to go for additional studies in the field of midwifery education.

1.4 AIM OF THE STUDY

The main aim of this study is to determine the level of knowledge of the obstetric health workers and the challenges experienced in the maternity units of primary health care clinics, so as to establish baseline information on the state's human resources for health in the areas of maternal and child health programmes in Yobe State.

1.5 RESEARCH QUESTIONS

To reach the above aim, this study will be guided by the following research questions:

- What are the socio-demographic characteristics of the obstetric health workers in the PHC facilities of Yobe State?
- What is the level of knowledge of the obstetric health workers regarding the management of maternity patients at the PHC facilities?
- What are the challenges experienced by the obstetric health workers in the PHC facilities?

1.6 OBJECTIVES OF THE STUDY

The objectives of conducting this study are threefold:

- To examine the socio-demographic characteristics of the obstetric health workers in the PHC clinics in the state.
- To determine the knowledge of the obstetric health workers regarding the management of maternity patients in the PHC clinics in Yobe State.
- To determine the challenges faced by the obstetric health workers in the PHC clinics in the state.

1.7 DEFINITION OF TERMS

1. **Primary health care facilities** (PHC): these are grassroots health facilities comprising maternal and child health clinics, comprehensive health centres and model primary health care centers where midwifery/obstetric services are rendered.
2. **Skilled birth attendants**: these are health care workers who have been trained and licensed by regulatory bodies to render midwifery/ obstetric services.
3. **Obstetric health care workers**: for this study, these are health care workers at the primary health care clinics rendering maternal and child health services, who have no formal midwifery training.
4. **Licensed health care worker:** this is an individual who is by law of the state, authorised within his/her professional competence to provide health care services. In this case, it refers to a person trained, certified and licensed to provide midwifery services.
5. **Trained health care worker**: a trained health worker is an individual who is taught and certified in a formal health institution to provide health related services such as environmental sanitation, health education of clients and community mobilisation towards proper healthy life style.
6. **Maternal mortality rate**: number of maternal deaths in a given period per 100,000 women of reproductive age during the same time period (WHO, 2010b).
7. **Maternal mortality ratio**: number of maternal deaths during a given time period per 100,000 live births during the same time period (WHO, 2010b).
8. **Maternal death:** The death of a woman whilst 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 (WHO, 2010b).
9. **Midwives service scheme (MSS):** A policy that calls for mobilisation of both retired and newly graduated midwives and posted to some high maternal and child mortality areas, with the aim of reducing the risk.
10. **Pregnancy-Related death:** the death of a woman whilst pregnant or within 42 days of termination of the pregnancy, irrespective of the cause of death (WHO, 2010a).

11. **Skilled birth attendant (skilled health provider): according toNDHS (2013)** refers to doctor, midwife, nurse, or auxiliary midwife who manage maternal patients depending on their level of skills and competencies.

1.8 SUMMARY OF THE CHAPTER:

Maternal mortality still remains high in many low and middle-income countries and despite the serious attention of the MDG and various NGOs the situation will not change its status without putting the right persons with the right skills into the right place. Huge budgetary provisions have been made by various governments, supported by concerned international donor bodies, however, the right manpower to deliver the necessary health services at the primary health care facilities is critical in attaining the WHO'S target of reducing maternal deaths, achieving MDG 5 of the improvement of maternal health and reducing mortality by 75% by 2015. The main aim of this study is to determine the knowledge of the health workers at PHC clinics and learn about the challenges experienced in the facilities of Yobe State.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 INTRODUCTION

The death of a mother profoundly affects the chance of the child's survival; these two can hardly be separated. It is a known fact in any societal setting that the death of a mother shatters the entire members of the family and invariably threatens the wellbeing of the surviving child, not only because of the care, including breastfeeding, the mother gives but also the natural bond that exists between the two. Women are clearly the losers when it comes to issues of poor maternal health care, more especially in under developed countries where immediate and responsive care is not readily available. It was estimated in 2010 that approximately 287,000 maternal deaths occurred globally and of this, nearly 85% occurred in developing countries (WHO, 2010c). Whilst some gradual decline in maternal mortality was recorded in recent times, probably due to multi-dimensional approaches and more specifically to the intervention of the millennium development goals (MDGS), maternal and neonatal mortality and morbidity remains unacceptably high in developing countries and in particular sub-Saharan Africa(WHO, 2010c)

It was also noted (WHO, 2012) that every day, approximately 800 women globally die from pregnancy and childbirth related complications. Almost all of these deaths occurred in low-resource settings. Poor women in remote areas are the least likely to receive adequate health care, which is especially true for regions with low numbers of skilled health workers, such as sub-Saharan Africa and South Asia. Similar report from WHO In 2010 presented an estimate of 287,000 women died during pregnancy or giving birth and nearly 2.6 million new-borns died within the first 24 hours of life (WHO, 2012). "Lack of access to quality health facilities or qualified health professionals is to be blamed for the majority of these deaths (Adegoke et al., 2011). Midwifery services could help bridge the gap and save lives" (WHO, 2010c). Whilst levels of antenatal care have increased in many parts of the world in the past decade, only 46% of women in low-income countries benefit from skilled care during the antenatal period and childbirth (WHO, 2012).

Nigeria, being the most populated black African nation, is a signatory to the UN 2000 MDG agreement to reduce maternal mortality by 75% by 2015. It is also said to be amongst the leading countries in maternal deaths, with approximately 10% of the total global estimate occurring in the country (Ogunjimi et al., 2012). Many studies have shown some fluctuations in the rates of maternal deaths, in Nigeria for example, it was reported in a multi-country study that its maternal mortality rate (MMR) had actually increased from 473 deaths per 100,000 live births in 1990 to 608 deaths per 100,000 live births in 2008 (Hogan et al., 2010). Another study by Doctor et al. (2013) reported the death toll was 630 per 100,000 live births, although this varies from region to region with the highest burden in the Northern region, possibly because of the degree of awareness, the acceptance of family planning and variation in availability of skilled birth attendants in the south east and south west, compared to the low literacy and cultural inclination in the Muslim dominated North.

The Nigerian health industry has been plagued with a crisis of poor quality services, unfriendly workers attitudes, inadequate skilled staff, poor infrastructure and shortages of essential drugs (Mojekwu and Ibekwe, 2012). These problems are more pronounced in the Northern part of the country where maternal death is believed to be higher and attributable to most of the factors mentioned above, i.e. the cultural attachment and the low literacy level of the women in the rural and semi urban areas. The point of the researcher's argument is that WHO and other concerned NGOs focused their attention on immediate causes of maternal deaths such as bleeding, infections, hypertensive disorders (eclampsia), obstructed labour and other complications during the antenatal and postnatal periods (WHO, 2012). Most of these problems can be well handled when timely decisions are made to access care from a skilled and experienced health worker. Mojekwu and Ibekwe (2012) explained "the causes of maternal deaths can be classified into medical factors, health factors, reproductive factors, unwanted pregnancy and socioeconomic factors." According to these authors, medical factors include direct obstetric deaths, indirect obstetric deaths and unrelated deaths. Direct obstetric deaths result from complications of pregnancy, delivery or their management; indirect obstetric deaths result from worsening of some existing conditions such as hypertension, hepatitis, HIV and diabetes mellitus. Health service factors include: deficient medical treatment, mistaken or inadequate action by medical personnel, lack of essential supplies and trained and skillful personnel in the facilities, lack of access to maternity services. Other risk factors to maternal mortality in Nigeria include: maternal age, illiteracy, non-utilisation of antenatal services and grand multi-parity.

However, not until recently has any attention been paid to the level of skills and competencies of the obstetric health workers in rural primary health care facilities. Mojekwu and Ibekwe (2012) asserted that approximately two thirds of Nigerian women deliver outside health facilities, without the assistance of skilled attendants. The study and other similar findings byDoctor and Dahiru (2010) indicated that all maternity complications could be averted or brought to the barest minimum if skilled practitioners were stationed in a place where rural women could easily access their services.

The situation is more worrisome in the Northern part of the country, as the maternal mortality rate is higher in the North West and North East than in the other geopolitical zones of the country. A study in Northern Nigeria by Doctor et al. (2011), reported an estimate of 1,025 deaths per 100,000 live births in the North West and approximately 1,549 similar deaths per 100,000 live births in the North East (Borno, Yobe, Bauchi, Gombe, Adamawa and Taraba states). In another study conducted in three states of Northern Nigeria (Yobe, Katsina and Zamfara), only 25% of clients attended ANC and approximately 91% of the births (nine out of 10 deliveries) were conducted at home (Doctor et al., 2013) . The study cautioned that with this very slow progress, the likelihood of attaining 75% of MDG 5 in the region is very slim. Reduction in deaths could be possible in the Northern states when the "three delay models" are well handled and timely decisions taken. These delays, as seen by Doctor et al. (2013) are:

- Delay in decision to seek care.
- Delay in reaching care.
- Delay in receiving care.

The delays and more importantly the last one, tell much about the health worker/client relationship. It is unfortunate that a client, when she eventually manages to reach the facility, finds her problems cannot be handled competently and no adequate arrangement is available to speed up her referral. This and many other factors lead to inappropriate waste of time from the grassroots health facility and eventually to maternal and child mortality. There were recommendations that for the health system to record significant improvements, emphasis must be geared towards long term benefits such as:

- Recruitment and ensuring availability of skilled birth attendants.
- Balancing the misdistribution of skilled health workers.
- Encouraging facility delivery and discouraging staff from promoting home deliveries.
- Promoting antenatal care attendance through provision of free drugs, mama kits and free services.
- Implementation of an emergency transport scheme in hard-to-reach rural areas as advocated by PRRINN-MNCH.
- Family planning.

These and many other recommendations of WHO, PRRINN, and UNPFA will help in accelerating the attainment of MDG5 in Yobe state and Nigeria in general (Doctor et al., 2013).

2.2 MILLENNIUM DEVELOPMENT GOAL TARGET

As the countdown to 2015 for maternal, newborn and child survival is fast approaching, less than 500 days from the time of this report, the likelihood of some countries achieving the MDG 5 target of reducing maternal deaths by three-quarters from its 1990 level is unrealistic. Of the 68 targeted countries, only 16 were on the right track to meet the MDG 4 and trends in maternal mortality that would indicate progress towards MDG 5 were not available in 56 of the countries. Though interventions such as immunisations and antenatal care had much higher coverage, other services such as skilled attendance or emergency obstetric care were far below attainment due to critical shortage of manpower. In the low income level, 49 priority countries categorized by the World Bank to meet the minimum threshold of 23 doctors, nurses and midwives per 10,000 population as skilled birth attendants, Nigeria fell below the target (WHO, 2010a). The report further stressed that community health workers could provide a number of life saving services such as immunizations, management of simple infections but not be counted as skilled and competent to deliver essential maternal and child health services (WHO, 2010a). The progress of the MDG5 was said to be regionalised in Nigeria, as some areas are still faced with manpower crises in their health industries. In some parts of Nigeria MMR had been reduced by 32% from its 800/100,000 live births in 2003 to 545/100,000 live births in 2008. However, the proportion of births attended by skilled health

workers remained very low and this could hold back further progress of the MDG5 (Chidinma, 2012, Doctor and Dahiru, 2010, UNFPA, 2010). Achieving MDG5 is still possible in Nigeria if the government is committed, and if the implementation of the midwives service scheme (MSS) is well sustained and community health workers are given the support to go for post basic midwifery training in an accredited schools/colleges of midwifery.

The attainment of success therefore could not be "business as usual in Northern Nigeria" (Ashir et al., 2013). Innovative approaches must be identified and put in place to fast track the coverage and uptake of quality maternal, newborn and child health services. Such an innovative approach is "performance based financing," which when implemented appropriately with good supervision, will improve the already weak health systems and promote consumers patronage in the region (Ashir et al., 2013) .

Another innovative measure is the proper implementation of emergency obstetric care at the facility level (Campbell et al., 2005). Emergency obstetric care is a WHO package of management that includes nine 'signal functions' which a well-structured and skilled staffed health facility is expected to perform in an attempt to reduce maternal and child mortality in their cluster setting (Adegoke et al., 2011). This package includes;

- Parenteral administration of uterotonic drugs (oxytocin, ergometrine, misoprostol),
- Procedure of administration of antibiotics,
- Administration of anticonvulsants for pregnancy induced hypertension,
- Protocol of manual removal of a retained placenta,
- Removal of retained products of conception,
- Procedure of assisted delivery,
- Resuscitation of a baby using an ambu bag and mask,
- Procedure of blood transfusion,
- Caesarean section (WHO, 2009).

The first six procedural aspects of the care are expected to be delivered effectively by a skilled birth attendant at any rural primary health care institution. It was seen in a study that the use of uterotonics were either abused, or health workers were completely ignorant of their

efficacy and the appropriate ways of using them. For example, in Nigeria, less than 5% of the PHC maternity staff had the knowledge of the use of Misoprostol (Ogunjimi et al., 2012).

In a joint sitting of WHO, the International Confederation of Midwives (ICM) and the International Federation of Obstetricians and Gynecologists (FIGO), skilled birth attendant (WHO, 2004) was defined as "an accredited health personnel such as a midwife, doctor or a nurse who has been educated and trained to be proficient in the skills needed in the management of normal (uncomplicated) and complicated pregnancies, childbirth and the immediate postnatal period, as well as referral of complications appropriately" (Adegoke et al., 2012)

The presence of a skilled birth attendant (SBA) during childbirth is one of the key indicators for achieving MDG 5 and a strategic process to reducing maternal and neonatal mortality in sub-Saharan Africa. The study pointed out that, of 21 teams of staff who claimed to be skilled birth attendants in nine African countries including Nigeria, with the exception of obstetricians, doctors and licensed nurse-midwives, there was no clarity and evidence in the level of training and technical knowledge of the remaining health workers rendering essential obstetric care. These teams also did not have the legislative rights to perform the key signal functions of essential obstetric care (Adegoke et al., 2012, WHO, 2009).

The term skilled birth attendance, as cited in many WHO, UNFPA reports, is defined as "the process by which a woman is provided with adequate care during labour, delivery and the early postpartum period. This requires skilled personnel to attend the delivery in an enabling environment, including adequate supplies, equipment, drugs as well as effective communication and referral systems. A skilled birth attendant is an accredited health professional - such as a midwife, doctor or nurse - who has been educated and trained to proficiency in the skills needed to manage normal pregnancy, childbirth and the immediate postnatal period and in the identification, management and referral of complications in women and new-borns"(Adetoro and Aboda, 2011).

2.3 YOBE STATE HEALTH PROFILE

Primary health care (PHC), was initially defined at a conference in the USSR as "essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community,

through their full participation and at a cost that the community and the country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination" (Henry, 2008)

One of the basic objectives of primary health care services is the provision of essential care to women, babies and children under five years at the grass root facilities, proximal to the clients' localities, at a low cost and in a friendly manner. These population groups are considered vulnerable to diseases and better service provision will determine their health outcomes and survival rates. To achieve this, it requires necessary knowledge, skills and competencies of health workers in providing antenatal care, postnatal care, safe deliveries, emergency obstetric care, Integrated Management of Childhood Illnesses (IMCI) and neonatology.

The term "community health extension worker" (CHEW) embraces a variety of community health aides that are selected, trained and work in the communities to which they belong. The most widely accepted definition is that of WHO Study Group of 1989; "Community health workers should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization, and have shorter training than professional health workers"(Lehmann and Sanders, 2007). CHEWs can make a lot of vital contributions to the community development more specifically, in the areas of improved access to and coverage of communities with basic health services. There is evidence that CHWs can undertake actions that lead to improved health outcomes, especially, but not exclusively, in the field of child health. However, although they can implement effective interventions when guided, they do not consistently provide services likely to have substantial health impact, and the quality of services they provide is sometimes poor (Lehmann and Sanders, 2007). According to the study conducted in Yobe state and three other states in Northern Nigeria by Doctor and Dahiru (2010) CHEWs are classified as non-skilled birth attendants (NSBAs) as they were found with no knowledge, skills and competencies in terms of management of maternity patients.

The feeling of many developing countries that community health extension workers could bridge the gap of skilled birthing care is not realistic. This class of health workers has insufficient training and educational capability for the management of maternity patients,

particularly in complicated labour. They do not even have the first aid skills needed to stabilize a woman before referral. According to Koblinsky et al. (2010), the community health extension workers have a variety of other tasks that require their time and for which they are likely better prepared, these include: immunizations, family planning, environmental sanitation and community visits for health promotion efforts. They are not educationally skilled enough to give better delivery care but could assist skilled attendants in many maternal health service delivery (Koblinsky et al., 2010).

Primary health care facilities are mainly manned by community health extension workers and only a few nurses or midwives in some settings. The presence of the CHEWS has a positive impact on the health of the communities, as this cadre of health workers reaches the people easily and the communities contact them first for any medical advices and assistance. Their training and acquisition of basic skills to handle maternity conditions is of great value towards reducing maternal deaths, hence the need to expose them to midwifery training is a necessity.

2.4 HEALTH WORKERS AND MATERNAL MORTALITY IN PHC CLINICS

The Nigerian setting of PHC is very complex in terms of manpower and obtaining the best service result is difficult as most of the health workers do as they please and not what they were trained and acquired skills to do. Medical doctors are rarely found in rural PHC settings and probably few midwives and nurses, considered to have some level of skills and competencies, are seen in PHC clinics. The community health extension workers (CHEWS), who have a long standing history of connection with the grass root facilities, lack the necessary training, knowledge and skills to reduce maternal and child mortality in the community. Their presence, for more than three decades at PHC level in Nigeria and other developing countries, has not changed the trend of maternal and child deaths, but despite these deficiencies, they are often left to head the majority of the facilities at community level even in the presence of more skillful health personnel (Nyango et al., 2010).

With a population of more than 2.3 million, (National population commission, 2010), Yobe State health system more especially PHC was at the verge of collapsing because of infrastructural decay, lack of essential drugs, poor personnel remuneration and health

workers' attitude of service for money in the facility. Other reasons include; inappropriate prescription of antibiotics, sedatives and controlled substances, blind attempts to manage critically ill cases in an effort to extort patients, lack of control and supervision, poor working tools and inadequate skilled personnel. It was found that only after the 2007 general elections, when there was a new government and with the support of NGOS, that the "business as usual approach" was viewed as a serious threat to the survival of the rural populace.

Yobe State was fortunate to have a government committed to revitalising the deteriorated system by creating an enabling environment for both clients and health care workers in all the facets of health institutions. This was evidenced by the approval and release of substantial budgets for the health industry, cooperating with donor agencies and creation of state primary health care management board (SPHCMB) as a unitary umbrella to coordinate, control and execute the activities of all public PHC facilities in the state. These measures taken by the *Geidam's* administration from 2007 to 2013 was as a result of evidence indicating the high rates of maternal and child mortality and morbidity in the state, the fast spread of the pandemic HIV infection, malaria and tuberculosis.

On average, it was found only 33.2% of pregnant women receive ANC from skilled birth attendants, with approximately 10.2% delivered by skilled attendants with no fewer than 7.6% deliveries in a health facility of the state (NDHS, 2013). The programme of partnership reviving routine immunisation in Northern Nigeria (PRRINN), a non-governmental body supported by British and Norwegian Governments which was launched in 2007/2008 in the state and three others in the North, have done much to change the trend of maternal and child health programmes positively. Initially it was only interested in immunisations, until it perceived there was a serious need to incorporate maternal health in order to reduce the risk of maternal mortality in the states. PRRINN has done so much in the areas of advocacies, research, supplies of consumables, restructuring PHC facilities, training and retraining, as well as strengthening training health institutions and academic staff capacity development in the state. However, the task is enormous and requires a lot of political will from both the state and federal governments, as well as support of donor agencies, to reach its peak.

2.5 MOBILISATION OF MIDWIVES TO RESCUE THE SITUATION

On realising the need for an increase in the proportion of deliveries by skilled birth attendants and the deficient competencies of the existing health workers in the PHC facilities, an urgent call for recruitment and deployment of retired but active and newly graduated nurse-midwives by the National primary health care development agency (NPHCDA) to all high mortality states was made (Adegoke et al., 2011). The programme was tagged midwives service scheme (MSS) supported by MDG and PRRINN-MNCH, under the supervision of senior staff appointed by Nursing Council senior staff. The ultimate goal was to ensure healthy deliveries and child care by SBAs aiming at achieving MDG5 target. Against this background, 2,500 midwives were recruited and deployed to highly needed areas, with four midwives per facility, to ensure the provision of 24 hours a day maternal and child health services (Adetoro and Aboda, 2011).

All the midwives attended induction courses on LSS, IMCI, NC, EOC, FANC and KMC before deployment and were keenly monitored and supervised by the senior Nursing Council staff with regard to:

- The knowledge and skills acquired during the training,
- The improvement of the job capacity of the midwives to provide quality services,
- The compliance of midwives required to be at their duty post,
- The adequate utilisation of supplies at designated MSS PHC facilities.

Within a year of evaluation, there was a marked impact and changes in the performance of their services. Evidence noted was an increase of ANC attendance from 44 to 504 and facility based deliveries from 18 to 46, between May and June 2010, in CHC Yunusari, Yobe State (Adetoro and Aboda, 2011). Having recorded reasonable progress in the scheme implementation, another 4,000 midwives redeployed to 1000 PHC clinics, mostly in the northern states and 1,000 community health workers were also deployed to close persisting gaps in under-served areas without midwives (Pate, 2012).

In December 2010 the scheme was expanded to cover some community health extension workers who would be supervised by the deployed midwives. The state was supposed to have 200 MSS staff, but unfortunately 27 midwives left by December 2009 and subsequently, by 2013, more than half had quit their jobs due to serious security challenges in the state, caused

by the activities of Boko Haram insurgents. This meant the good efforts of the policy makers reverted back to almost status quo (Adetoro and Aboda, 2011).

2.6 SUMMARY OF THE CHAPTER

This topic reviews the related and relevant articles of the study. It portrayed the gross shortage of human resources for health with particular emphasis on skilled birth attendants globally, regionally, in Nigeria and the study area –Yobe State. In accordance with the WHO recommendation, 'It was the right of every woman where ever she lives to be attended and delivered by a licensed midwife (WHO, 2004). Unfortunately this is not obtainable in many communities of sub-Saharan Africa and the end result was an increase in both maternal and child mortality. The death toll of maternity was believed to be highest in India, followed closely by sub-Saharan Africa and Northern Nigeria records the most alarming rates.

Community health extension workers (CHEW) have been the predominant workers at the PHC clinics for decades and their presence has not changed the situation. This has called for governments and non-governmental organisations to address the alarming situation, hence the need to have more midwives or health workers with midwifery skills in all grassroots health facilities.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 STUDY DESIGN

This is a descriptive, cross sectional study, using a researcher administered survey tool for data collection. The study was conducted in six local government areas of Yobe State, where Facility managers were given a questionnaire to complete and the health workers interviewed between 10th October and 25th November, 2013 by the principal researcher supported by research assistants**.**

3.2 THE RESEARCH SETTING

The study was conducted in Yobe State of Nigeria, which has a population estimate of 2,321,339 (National population commission, 2010). The State comprises 17 local government areas, divided into three senatorial districts namely zone A, B and C with different ethnic groups, mainly Kanuri, Hausas, Fulani, Ngizim, Karai-Karai, Bolewa and Bade. Areas covered for the study were Gujba, Fune, Fika, Geidam, Nguru and Jakusko local government areas.

The state health institutions in Yobe state are: two tertiary hospitals, 12 general hospitals, 47 health centres, 47 maternal and child health clinics (MCH), 13 model PHC clinics, 59 health posts, eight comprehensive health centres (CHC), 97 health clinics and 236 dispensaries (Yobe state MOH, 2013).

For the purpose of this study, the PHC clinics included were: maternal and child health clinics, comprehensive health centres, model primary health care centres and some health clinics/posts that carry out maternity services. These facilities were mostly manned by community health extension workers, contract health workers under subsidy of the Re-investment and empowerment programme (SURE-P), health assistants and rarely nurse-midwives under MDG/MSS programme.

Yobe State was selected for the study because of its high maternal mortality and because a significant percentage of its population resides in rural areas. Apart from the two tertiary health institutions and the 12 general hospitals mentioned above, all other health facilities are predominantly found in the rural areas. This study was concerned with the primary health

care facilities that manage maternity patients in the rural areas where maternal and child mortalities are common.

3.3. POPULATION

Yobe State PHC clinics have a mixture of different health teams with a total population of 7,955 staff working in various health facilities (see annexure 1). Out of this, 6,644 of them were health assistants, compound cleaners and dressers, who have either secondary school certificate, primary certificate or none, constituting over 80% of the employees. Only 1,311 health workers were said to have undergone formal training in either health or health related institutions. However, it was found that only 76 were skilled birth attendants who had been trained and licensed by the Federal Government of Nigeria to conduct deliveries and manage maternity cases.

The population targeted for the study was 1,311 obstetric health workers in the maternity units of the PHC clinics in the state. From the six selected LGAs, there were 570 health workers actively working at maternity units (MOH, 2012).

3.4. SAMPLING

3.4.1. SAMPLING PROCEDURE

A simple random sampling approach was used to select six out of 17 local government areas in the state. This method was used because it gives each element an equal chance and opportunity to be included in the sample, reduces bias and minimises error. The areas were grouped into three clusters according to senatorial district, where each local government area was assigned a number in the group. The numbers were written on pieces of papers, wrapped, mixed and picked randomly one at a time with a replacement from each cluster. The LGA whose number was picked was included in the sample. The exercise was repeated six times, thus the selected areas were Fika, Jakusko, Fune, Nguru, Geidam and Gujba local government areas. In each LGA, an homogeneous purposive sampling technique was applied in selecting the PHC facilities that have the same characteristics of managing obstetric cases which were usually MCH clinics, the Model PHC clinics and the CHC clinics. All health workers that render maternal and child health services in the PHC clinics were approached for consent and participation in the study to obtain the required number of respondents in each local government area. Because of different numbers of the health workers in the selected LGAs (N= 570), the number of respondents in each LGA was selected based on the

probability proportionate to the number of obstetric workers in each LGA. The distribution of the sample is given in Table 3.1

Table 3. 1 Distribution of sample sizes by LGAs

Local Government areas	No. of PHC Facilities	No. of obstetric workers	No. of respondents selected
Fune	6	57	23
Fika	13	141	57
Gujba	7	40	16
Geidam	5	68	27
Jakusko	7	89	36
Nguru	8	175	71
Total	46	570	230

In each LGA, health facilities conducting MCH services either formal or informal were selected and visited for the study. A total of 230 health workers consented and were interviewed (n=230) and 46 facility managers were given a self administered questionnaire to complete after obtaining informed consent.

3.4.2. SAMPLE SIZE

The sample size was calculated using Epi info version 3.5.4, a Centre for Disease Control (CDC) designed statistical software used for computation of data, sample size, etc. From a sampling frame of 570 of the six selected LGAs, a sample size of 230 was obtained which is equivalent to 40.4% of the population (570). Since this study uses a confidence level of 95% and margin of error of 5%, the sample size increases the explanatory power and therefore reduces the level of bias (error). The facility managers were selected dependent on the clinic captured for the study. A total of 46 clinics were visited corresponding to the number of managers who responded to the questionnaires.

3.4.3. INCLUSION CRITERIA

Obstetric health workers in the PHC clinics of the six selected local government areas having at least one year working experience were purposively selected. These included all workers that conduct ANC, PNC, deliveries and referral processes. The sample also covered facility managers, and other health workers with non health background but who were found managing maternity patients.

3.4.4 PILOT STUDY

A pilot study was carried out with a group of 10 participants at MCH Gwange, Damaturu to check for content validity of the instrument and its applicability in the study setting. These participants, who were not included in the main study, were selected from the same population to ensure the content of the questionnaire was well understood and applicable to the larger sample. Data from the facility manager showed there were two Registered nurses, five Registered midwives, nine health extension workers and 40 non-skilled workers (71%) in the facility, mainly environmental health assistants, environmental health officers, secondary school leavers, record keepers, card Issuers, TBAs, drivers and cleaners. The clinic on average sees 503 patients a month and approximately 29 maternity clients (6%) visit the clinic monthly. According to the facility records, six to eight deliveries were conducted monthly. The facility had a functional ambulance and a mobile phone, but was not connected to electricity and did not have portable water supply. It was found that six (6) patients were referred to a specialist hospital within a period of one year.

Table 3.2 below shows which materials were or were not available in the clinic.

Table 3. 2 Availability of basic services and tools in the piloted study setting;

MATERIALS	AVAILABLE	NOT AVAILABLE
Family Health cards	✓	
Latrine in the clinic	✓	
FP counseling cards		✓
Anti-shock garment		✓
Functional BP apparatus		✓
Functional Salter scale	✓	
Functional thermometer	✓	
Delivery kit	✓	
Delivery couch	✓	
Tables and chairs	✓	
Antiseptics, alcohol, Savlon	✓	
Functional refrigerator	✓	
Vaccines	✓	
Foetoscope	✓	
Log (registration) book	✓	
Hand gloves	✓	
Anti-malaria (COARTEM)	✓	
Pit latrine for solid waste	✓	
Moderate analgesics		✓
Iron tablets		✓
Oxytocin injections	✓	
Misoprostol	✓	
Magnesium Sulphate	✓	
Stationery (pens, papers etc.)	✓	
Educational materials (posters etc.)	✓	
Contraceptives (pills, depo, etc.)	✓	

From the 10 participants in the pilot study, eight were female and two were male, within the age range of 20 to 49 years. They all agreed they had made a referral as a result of the following conditions; excessive vaginal bleeding, prolonged labor > 12 hours, convulsion and baby in abnormal position. All the respondents had cell phones but only three of them used them to facilitate referral. The participants agreed they receive assistance from doctors, midwives and nurses within the facility and the specialist hospital closest to them, but rarely from health extension workers' supervisors.

3.5. TRAINING OF RESEARCH ASSISTANTS

The researcher recruited five research assistants to facilitate the process of data collection. These assistants were trained nurse-midwives from the local college who had no supervisory relationship with the participants but were locally available. The aim and objectives of the study was explained and the entire content of the tool was reviewed with them. To ensure reliability, they were trained on how to approach participants, obtain consent and conduct the interviews. The training of the assistants was carried out at Shehu Sule College of Nursing and Midwifery Damaturu on the 30th of September, 2013.

3.5.1 DATA COLLECTION

There were two sets of questionnaires, one for the facility managers which was self administered were completed by the officers in charge of the clinics and returned on the same day to the researcher (refer to annexure 6). The other questionnaire was for the health workers conducted by means of an interview (see annexure 7). For the health workers instrument, a validated questionnaire from a study conducted in Ethiopia and subsequently published (www.ncbi.nih.gov/pubmed/23171076) was found to be appropriate applicable to this study and was used after obtaining permission to do so (see annexure 11).

The health workers' questionnaire was arranged into four sections. Section 1 contained the socio-demographic characteristics of the respondents; Section 2 assessed the challenges of the workers; Section 3 covered the health workers' knowledge on antenatal care, deliveries; post natal care, manual vacuum aspirator (MVA), danger signs of pregnancy, principles of anti-shock garment and the nine WHO signal functions of emergency obstetric care; Section 4, which was solely the original part of the adopted tool, assessed the competency of the health workers in the management of maternity clients in the facility.

The method of data collection was a survey by means of a researcher-administered semi-structured questionnaire. The reason for conducting the survey in this manner was due to the low literacy levels of the health workers and because the original questionnaire was administered in this manner and found to be valid. The health workers' questionnaire has predetermined standardised questions. The data collection was carried out in 46 health facilities and 221 health workers were physically interviewed out of the 230 intended for inclusion in the sample for this study i.e. 96% inclusion rate. The 221 health workers were visited at their places of work between 10th October and 25th November, 2013 by the researcher and trained research assistants. The interviews lasted, on average, between 15 and 25 minutes per respondent. A shortfall of nine respondents, who were not included, resulted from security problems in the areas where they were based due to the activities of Boko Haram insurgents in some parts of the state.

The facility managers' questionnaires were concurrently collected with the health workers responses. Forty six (46) managers responded to facility manager's questionnaire across the six selected local government areas in the State. The questionnaire generated information on the clinics' availability of supplies, basic services, facilities and logistics of which all were confirmed by observation.

Table 3.3 shows the facilities covered in each of the local government areas and the number of respondents per clinic with dates during the data collection process.

Table 3. 3 Local Government Areas and Health Facilities visited

LOCAL GOVT. AREA	HEALTH FACILITIES	NUMBER. OF RESPONDENTS
GUJBA	A	3
	B	4
	C	3
	D	1
	E	1
	F	2
	G	2
FUNE	A	8
	B	1
	C	5
	D	1
	E	5
	F	3
FIKA	A	4
	B	3
	C	3
	D	8
	E	1
	F	3
	G	4
	H	8
	I	9
	J	9
	K	2
	L	2
	M	1
GEIDAM	A	2
	B	4
	C	6
	D	8
	E	7
NGURU	A	16
	B	9
	C	6
	D	5
	E	6
	F	4
	G	8
	H	4
JAKUSKO	A	3
	B	6
	C	7
	D	10
	E.	7
	F	2
	G	5

3.5.2 LIMITATIONS IN THE DATA COLLECTION PROCESS

One of the major challenges faced during the process of data collection was the inaccessibility to health facilities in some local government areas. This was as a result of insecurity encountered in the areas, due to the activities of the Boko Haram insurgents. The research team was advised by the State Joint Task Force Commandant (JTF) to avoid some specific areas. Some facilities were grossly understaffed although this was attributed to the activities of national program on immunisation, in which staff were mobilised to conduct house to house immunisation. Some of the clinics were manned by only one member of staff, whilst the rest were reported to have contract staff which had left due to the insecurity situation in the area.

3.6. VALIDITY AND RELIABILITY OF THE INSTRUMENT

An existing and validated instrument developed by Medhanyie et al. (2012) in Ethiopia was used with some modifications for the data collection (Annexure 8). The original questionnaire was validated by pre-testing the tool using a group of five participants to assess clarity and smooth flow of the questions, as well as time taken to conduct the interview with each participant. It was discovered from the pre test that there were two questions with long list of options which consumed time and were not comfortable to the respondents. These questions were removed from the questionnaire. The first three sections of the health workers part of the original have been modified to suit the context of Yobe State. The facility managers' questionnaire was also an extract of the original. A pilot study was carried out amongst 10 participants who did not form part of the actual study to check for the clarity of the items, content validity and appropriateness of the tools for the facility managers and the health workers, which found to be relevant.

3. 6.1 DATA ENTRY

The collected questionnaires were thoroughly checked for consistency and completeness before coded into Epi Info statistical software. A total of 267 collected copies were entered for both the health workers and the facility managers.

3.6.2 DATA ANALYSIS

After data collection, the information was coded and entered onto statistical software (Epi-Info version 3.5.4) programmed into an MS Access database. Tables from the MS Access database were exported to Stata (Statacorp, 2011) for data analysis. This was admitted as an advice from a statistician for easy manipulation during analysis. The data were cleaned by generating frequencies and identifying and deleting anomalies.

The analysis used a quantitative approach. Two levels of the analyses were used namely: univariate and bivariate.

Univariate involved generating frequencies and percentages to reflect the background characteristics of the respondents. At the bivariate level, Chi square test was used to explore some of the associations between dependent and independent variables. This involved cross tabulating two variables at a time.

3.7 ETHICAL CONSIDERATIONS:

Before conducting the study, approvals were obtained in writing from the following institutions:

- The University of the Witwatersrand Human research ethics committee (Medical), Johannesburg (Annexure 3),
- The University of the Witwatersrand Post Graduate Research Committee,
- Approval from Yobe state ministry of health, Human ethics committee (Annexure 4)
- The Director General, State Primary Health Care Management Board, Yobe State, (Annexure 5),
- The Chief Health Officers of the six local government areas (same as annexure 5),
- Informed consents of all the participants (Annexure 9 & 10).
- Permission from the author of the original questionnaire (Annexure 11).

The researcher also ensured the maintenance of anonymity, confidentiality and objectivity as the study was concerned with human subjects. The participants would not be identified as names and identification numbers were not given, and, equally names of the clinics were

labeled anonymously as “A, B, C… and dates of the data collection which could be used to track the duty rosters of the participants were concealed in the research report.

3.8 SUMMARY OF THE CHAPTER:

This chapter explained the materials and methods used in conducting the study, the study setting and the population used as well as the sampling procedure adopted. Other activities include the descriptive process of pilot study, data collection method, data coding, entry into Epi info data entry file, the statistical software used was Epi info (version 3.5.4) and its analysis using Stata for easy data cleaning and analysis.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.0 INTRODUCTION

This chapter presents the analysis and interpretations of the data. The analyses aim to answer the following research questions:

- What are the socio-demographic characteristics of the obstetric health workers in the PHC facilities of Yobe State?
- What are the challenges experienced by the Obstetric health care workers in the PHC facilities?'
- What is the level of knowledge of the obstetric health workers regarding the management of maternity patients at the PHC facilities?

The analyses are presented in tables, graphs and charts, with the results obtained from 221 health workers in PHC clinics and 46 facility managers of clinics of the same study area in Yobe State, Nigeria.

The facility managers who responded to a self-administered questionnaire were interviewed on the same days as the health workers in each clinic and supplied information about the clinic's personnel, infrastructure, equipment, consumables and monthly records of patients' activities. This included daily numbers of out-patients, admissions, maternity profiles, as well as maternal death records.

4.1 FACILITY MANAGERS AND HEALTH WORKERS RESPONSES

The outcomes of the computation of scores from the data entry file of the 46 Facility Managers and the Health Workers imported from Epi info into Stata are presented below.

4.1.2 SOCIO DEMOGRAPHIC CHARACTERISTICS OF THE HEALTH WORKERS:

Results of the social characteristics of the health workers are presented below; these include age, sex, educational background, years of experience of the workers in the clinics, as well as

categories of the health workers found to be involved in the management of maternity patients.

4.1.3 GENDER OF THE RESPONDENTS

The majority of the respondents 145(65.61%), in the study were females who were found concentrated in semi-urban clinics, whilst their male counterparts 76 (34.39%) were predominately found in the hard-to-reach rural health clinics.

4.1.4 AGE IN YEARS AND THE DISTANCE OF THE RESPONDENTS FROM THEIR PLACE OF WORK

The mean age of the health workers was 33.4 (SD ±8.1), with the youngest staff member being 22 years of age and the oldest 65 years. Approximately 117(52.94%) health workers live between one and two kilometres from the clinics, 20.8% lived between three and four km from their clinics, 32 (14.48%) live between five to 10 km from their clinic and around 26 (11.76%) live more than 10 km away. The majority of the health workers residing close to the facilities were unskilled and mostly junior workers, who were of no help to maternity patients.

4.1.5 YEARS OF EXPERIENCE OF THE HEALTH WORKERS

Seventy seven (77) of the health workers (33.9%) had more than 10 years of experience in the clinics, 69 (31.22%) had between five and nine years of experience, whilst 33.94% had below four years of experience. Unfortunately those with the most experience were mainly secondary school leavers, primary school leavers and the traditional birth attendants (TBA's), as most of them were employed as health assistants on completing post primary education, married at a tender age and secured work proximal to their husbands' residences. Some converted to TBA's as their level of education was either a primary certificate or secondary school drop-out. In reality, the majority of them were given appointments not based on merit, hence the reasons for their large numbers and long years of experience in the clinics without additional qualifications. Most of the inexperienced staff had recently been appointed under the midwives service scheme (MSS) and subsidy reinvestment and empowerment programme (SURE-P), despite the fact they were not Midwives.

4.1.6 CATEGORIES OF HEALTH WORKERS IN THE PHC CLINICS

The information obtained from the facility managers, is shown in Figure 1. The categories of the health workers in the 46 health facilities according to the managers were as follows:

Nurses 7 (1.65%), Midwives 26 (6.12%), SCHEWS (23.53%), JCHEWS (20.24%), EHA/EHO (5.18%), SSCE (36.94%) and TBAS (6.35%).

This indicates the majority of the staff in the facilities were non-skilled in terms of management of maternity patients.

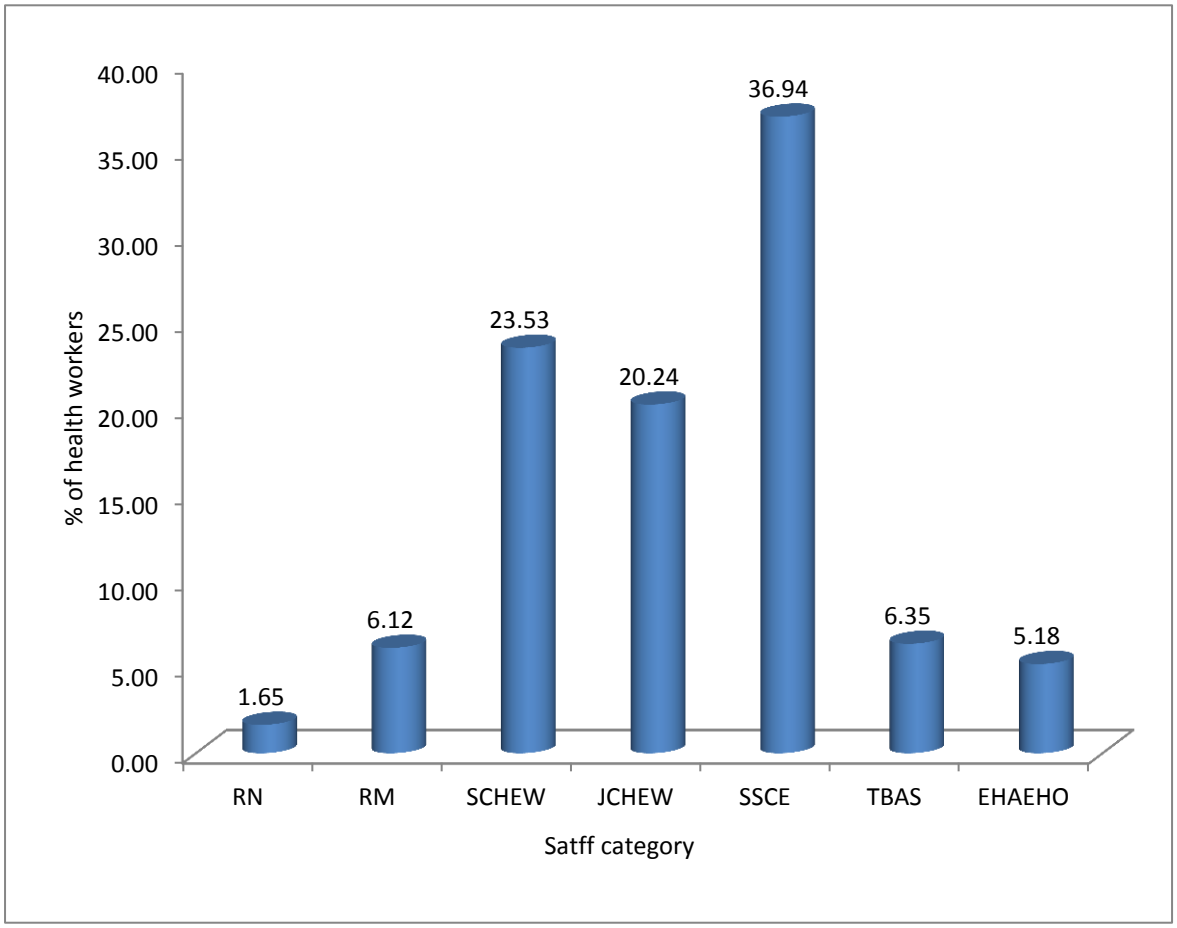

Figure 1 Distribution of Health workers in PHC clinics (n=221)

4.1.7SOCIO DEMOGRAPHIC PROFILE OF THE HEALTH WORKERS INCLUDED IN THE STUDY.

Of the health workers interviewed in the maternity clinics, who were found to be active in the care of maternity patients and therefore included in the study, 33.94% were Senior community health extension workers, 23.51% were junior community health extension workers and 37.55% were "others" comprising secondary school leavers, TBAs, Diploma holders in non-health fields, environmental health assistants and primary school leavers.

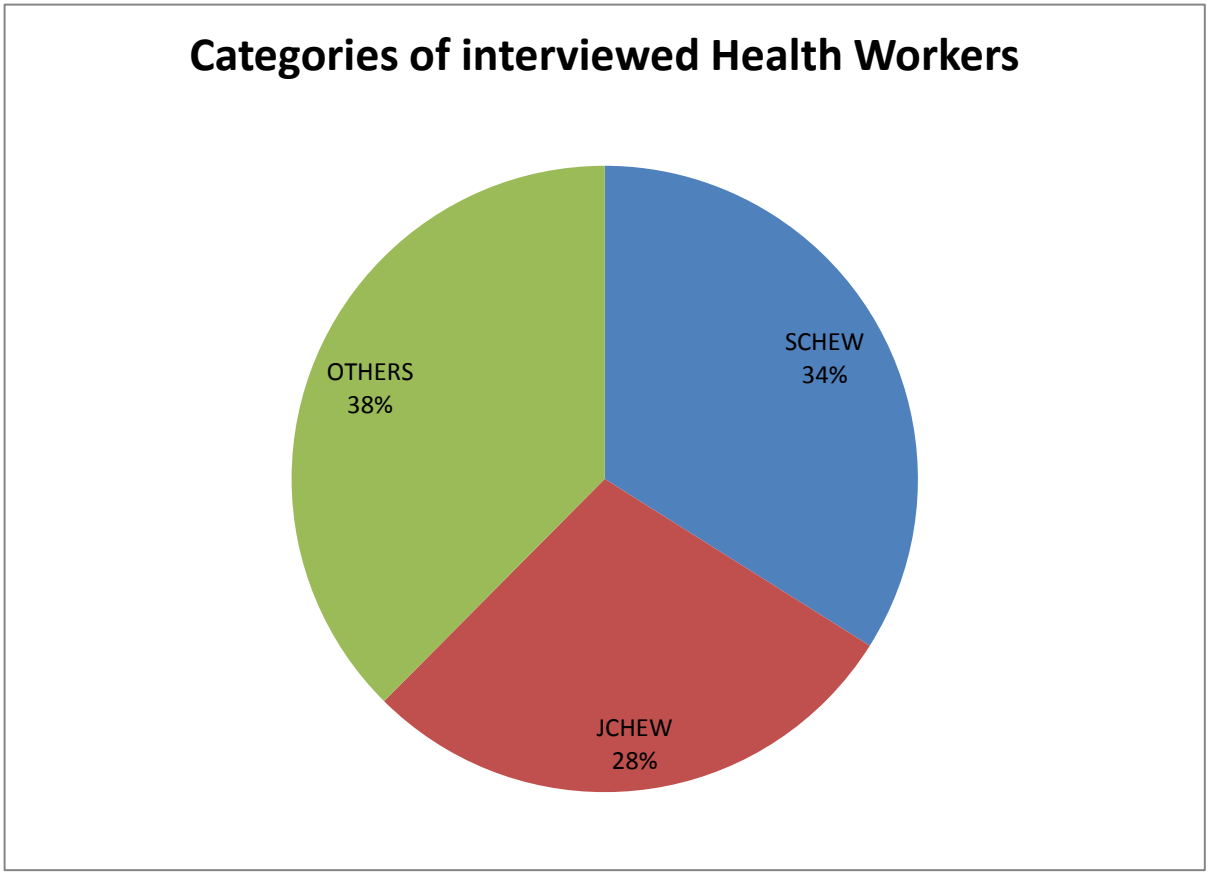

Figure 2 Profile of Interviewed health workers in the maternity clinics (n=221)

4.2. CHALLENGES OF THE HEALTH WORKERS:

This section presents the challenges encountered by health workers in the management of maternity patients. It included the findings from the facility managers and the maternity health workers.

4.2.1 MONTHLY RECORD OF GENERAL PATIENTS' IN THE CLINICS.

Although this varies with season, facility managers reported the average monthly turnout of general patients per clinic was 256, with the highest in some of the facilities up to 846 and the lowest 30 in a month. The monthly average turnout of maternity patients was 81 per clinic, with a minimum of four and a maximum of 300 per clinic. Deliveries (live births per clinic) averaged at 18 a month, with up to 120 at one clinic. Deaths were also documented in the range of one to 36, with an average of five deaths per month per clinic, with a maximum of 36 maternal deaths in one of the clinics within the six month period reviewed.

4.2.2. AVAILABILITY OF FUNCTIONAL AMBULANCES IN THE CLINICS.

Patients referred to higher level health centres usually did not have access to available transport. Seven of the facility managers said they had an ambulance, which represents 15.22% of the clinics in the sample, whilst 39 PHC clinics (84.78%) were without. Most of the referred patients had to resort to public transport or other means accessible to them, as the majority of the clinics did not have functional ambulances.

Table 4. 1 Availability of ambulances in the clinics for referred maternity patients (n=46)

ACTIVITIES	FREQ	%
Yes there is Ambulance readily available	07	15.22%
No available Ambulance	39	84.78%
Total	46	100.00%

4.2.3 BASIC TOOLS AND SUPPLIES IN THE CLINICS.

The data on table 4.2 shows the availability, or otherwise, of the various necessary resources/working tools in the primary health clinics.

Table 4. 2 Resources and tools available in the facilities (n=46)

ACTIVITIES	**Yes**	**%**	**No**	**%**
Basic services (electricity, water)	14	30.43	32	69.57
Misoprostol	21	45.65	25	54.35
Anti-shock garment	01	2.17	45	97.83
Blood pressure machine	44	95.65	02	04.35
Weighing scale	39	84.78	07	15.22
Delivery kits	25	54.35	21	45.65
Delivery couch	29	63.04	17	36.96
Vaccines	19	41.30	27	58.70
Anti-malarial (Coartem)	34	73.91	12	26.09
Contraceptives e.g. pills, Depo, Norris. Etc.	28	60.87	18	39.13
Oxytocin injections	38	82.61	08	17.39
Magnesium sulphate injection	21	45.65	25	54.35

The scale below tells us whether services such as; basic tools and supplies are adequate in a facility. For convenience the scale was structured by the researcher by dividing 100% by 5 descriptive items giving the range of 20%. The descriptive items were developed to give a concise and better understanding of Table 4.2 above.

1= grossly inadequate (1-20%),

2= weak (21-40%),

3= need more (41-60%),

4= adequate (61-80%)

5= excellent (81-100%).

Table 4.3 Scores of basic services, drugs and tools in the health clinics

ACTIVITIES	SCORES				
	1	2	3	4	5
Basic services (water and electricity)		✓			
$MgSO_4$ Misoprostol, vaccines, delivery kits			✓		
Weighing scale, contraceptives				✓	
Anti-shock garment	✓				
Delivery couch, anti-malaria				✓	
Blood pressure machines, Oxytocin injections					✓

The scale shows some of the facilities do not have adequate life-saving drugs/tools such as Misoprostol, Magnesium sulphate injections and delivery kits (score 3), Anti shock garments (1), a portable water supply and electricity (score 2).

4.2.5 ACCESSIBILITY TO SKILLED BIRTH ATTENDANTS

The chance of getting assistance from health professionals to help the health workers was very remote. As can be seen from Table 4.4, below, 138 (62%) of the health workers had no access to the assistance of medical doctors and also 160 (72.40%) could not get the help of midwives, whilst 213 (96.38%) had no access to Obstetricians. These indicate that maternity patients, with complications or in need of emergency care from health professionals would be left at the mercy of the non-skilled health workers. Assistance was only on referral to higher facilities and never by means of professionals coming down to the PHC level.

Table 4. 4 Assistance from health professionals (n=221):

Assistance of health professionals	**Yes**	**%**	**No**	**%**
Medical Doctors	83	37.56	138	62.44
Midwives	61	27.60	160	72.40
Nurses	99	44.80	122	55.20
Health Extension Workers Supervisors	42	19.00	179	81.00
Obstetricians/ Gynaecologists	08	3.62	213	96.38

4.2.6 BARRIERS EXPERIENCED IN THE PROVISION OF ANC, DELIVERIES AND PNC:

Health workers experience numerous challenges in the conduct of antenatal, deliveries and postnatal services. These range from inadequate working tools, lack of skilled staff to non-compliance and ignorance from the clients and their husbands.

Table 4. 5 Barriers to ANC, Deliveries and PNC (n=221)

Activities	**Barriers**	**Freq.**	**%**
Antenatal care	Inadequate seats	52	23.53
	Inadequate skilled staff	34	15.38
	Inadequate equipment	29	13.12
	Ignorance	75	33.93
	No laboratory services	31	14.03
Total		**221**	**100.00**
Deliveries	Home deliveries	73	33.03
	Inadequate equipment	53	23.98
	Inadequate skilled staff	47	21.27
	No delivery kits	48	21.72
Total		**221**	**100.00**
Postnatal care	Low patronage	99	44.80
	Come only when have a problem	69	31.22
	Ignorance	15	06.79
	Inadequate skilled staff	14	06.33
	No response	24	10.86
Total		**221**	**100.00**

Problems were encountered by the health workers with regard to the provision of ANC, PNC and deliveries in the facilities, which ranged from inadequate seats for the clients 52 (23.53%), home deliveries 73 (33.03%), low PNC patronage 99 (44.80%), reporting to the clinics only when in trouble 69 (31.22%), inadequate skilled staff 95 (42.98% cumulative), inadequate working tools 82 (37.10% cumulative). Some of the facilities reported lack of laboratory services 31(14.03%) and lack of delivery kits 48 (21.72%). Non-compliance of the clients was attributed to lack of awareness, which was basically ignorance 88 (40.72% cumulative).

4.3.1 KNOWLEDGE AND COMPETENCIES OF THE HEALTH WORKERS

Health Workers were interviewed on their routine activities regarding management of maternity patients in the PHC clinics and the results presented.

4.3.2 THE USE OF PROTOCOLS IN THE MANAGEMENT OF MATERNITY CLIENTS:

Generally, the knowledge and the use of protocols among the health workers were found to be poor. Of the 221 health workers, 69 (31.22%) used one or two protocols in the care of the clients, whilst the remainder never used them because they did not know how to.

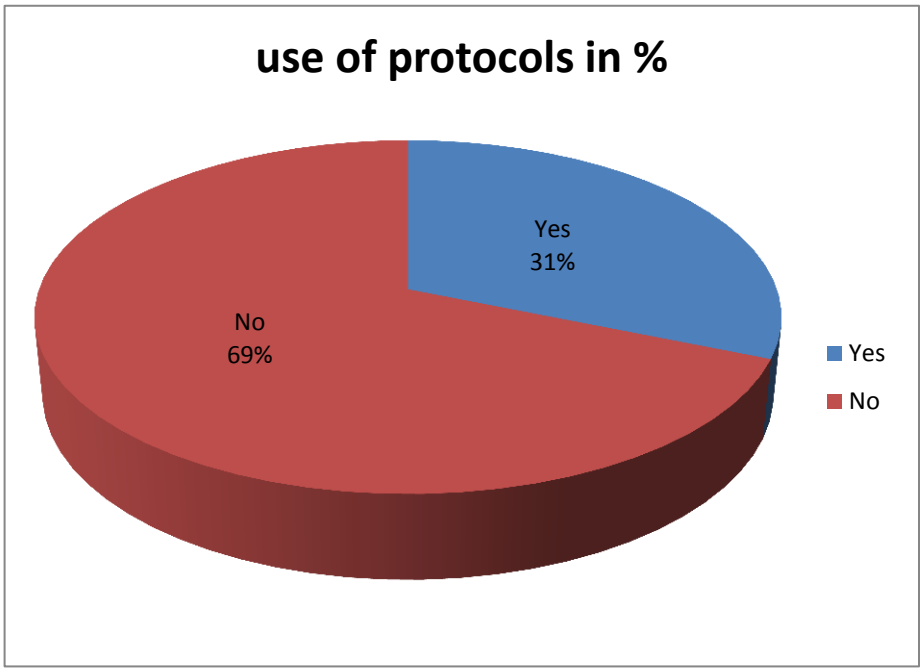

Figure 3 Percentage of the use of protocols in the care of maternity patients (n=221)

4.3.3 From the data in figure 3 above, 31% health workers admitted using protocols in the care of maternity patients, whilst the different types of protocols used by the only 31% of the health workers in the facilities under study were computed in Table 4.6.

Table 4. 6 Protocols used in the care of maternity patients (n=221)

Activities	**Yes**	**%**	**No**	**%**	**Total/%**
Antenatal protocol	60	27.15	161	72.85	221 (100.00)
Birth protocol	38	17.19	183	82.81	221 (100.00)
Postnatal protocol	15	06.79	206	93.21	221 (100.00)
Partograph	13	05.88	208	94.12	221 (100.00)
Diagnosing/Treating bleeding	18	08.14	203	91.86	221 (100.00)

Those health workers who used protocols in the management of patients were categorised based on the types with the (n) value of 221 (see Table 4.6). Antenatal protocol 60 (27.15%), birth protocol 38 (17.19%), postnatal protocol 15 (6.79%), partograph 13(5.88%) and diagnosing and treating bleeding 18 (8.14%).

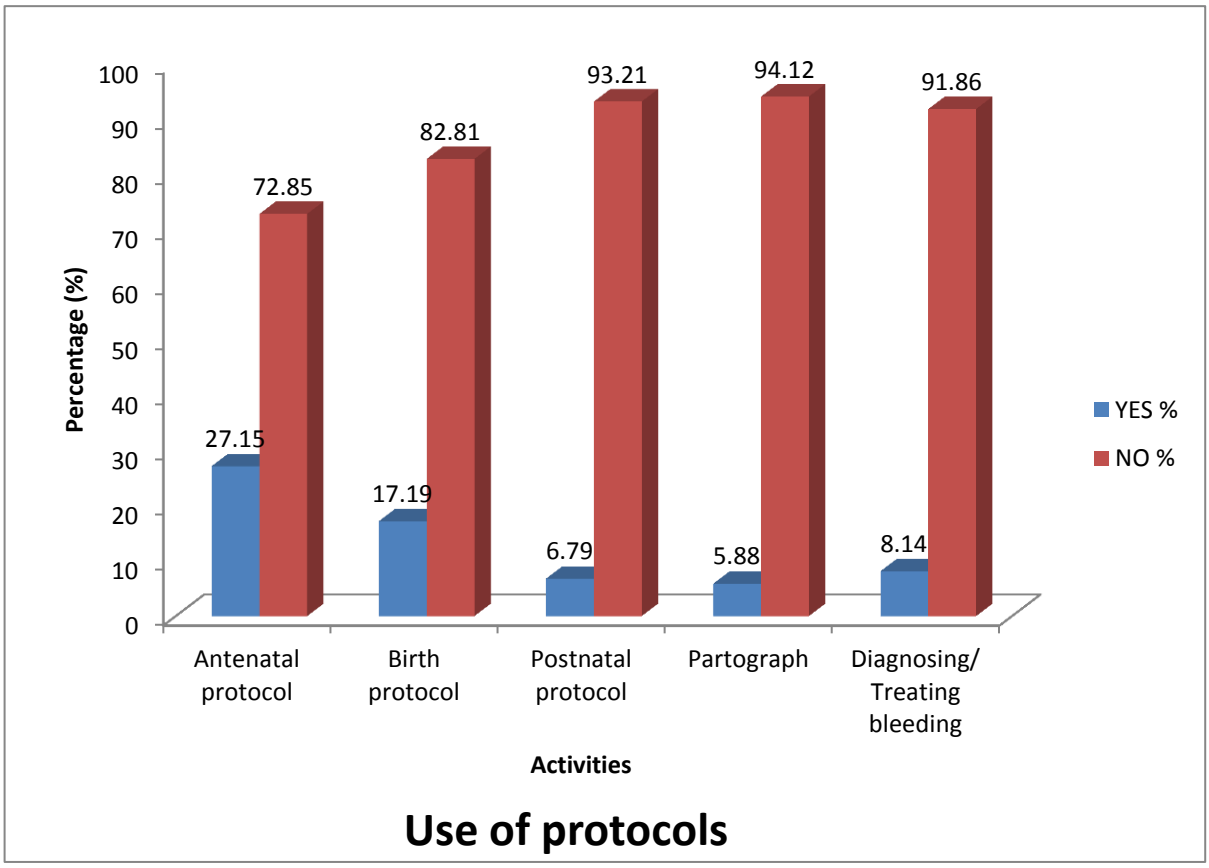

Figure 4. The use of protocols (n=221)

As shown in Figure 4, most of the health workers (72.85%) did not use antenatal protocol, in the care and treatment of maternity patients. The partograph, which is a WHO recommended and an inexpensive labour monitoring tool, was not used by 208 (94.12%) of health workers. Compliance to the protocol "Diagnosing and treating bleeding" , which is vital to saving lives in critical maternal bleeding disorders, was not practiced by 203 respondents (91.86%) . Also 183 (82.81%) of the health workers did not use birth protocol, this also applied to postnatal protocol.

4.3.4 KNOWLEDGE OF CONTENT OF HEALTH EDUCATION IN ANTE-NATAL CARE

Health workers usually arrange bookings of new clients and give health talks before conducting the activities of antenatal services. Table 4.7 presents the information given during the health talk.

Table 4. 7 Health education given during ANC (n=221)

ACTVITIES	**YES**	**%**	**NO**	**%**
The need for a check-up during pregnancy	158	71.49	63	28.51
The importance of receiving a TT vaccination	174	78.73	47	21.27
The need to take extra amount of food	164	74.21	57	25.79
The need to rest	142	64.25	79	35.75
The need to avoid strenuous work	114	51.58	107	48.42
The need to save money for emergencies	60	27.15	161	72.85
The need to arrange for emergency transport	57	25.79	164	74.21
The need to seek advice from a skilled attendant	155	70.14	66	29.86
The need to put baby to breast immediately after delivery	39	17.65	182	82.35
The need to give Colostrum	29	13.12	192	86.88
The importance of exclusive breastfeeding practice (EBF)	175	79.19	46	20.81
Cord care	27	12.22	194	87.78
The importance of delay in bathing babies until after 24 hours	20	09.05	201	90.95
The importance of sleeping under a bed net (ITN)	180	81.45	41	18.55
The need for counselling and testing for HIV	172	77.83	49	22.17
The importance of a skilled birth attendant	170	76.92	51	23.08
The benefits of a facility delivery	143	64.71	78	35.29
The importance of ANC visits at least four times during pregnancy	81	36.65	140	63.35
The expected date of delivery	100	45.25	121	54.75

Table 4.7 illustrates how the health workers showed compliance in providing information about the importance of antenatal check-ups (71.49%), receiving TT injections (78.73%),

nutrition (74.21%), avoiding heavy work (51.58%), the importance of being attended to by a skilled Birth Attendant (76.92%), counselling and testing for HIV, sleeping under ITN, EBF (77.83%, 81.45%, 79.19%) respectively.

Compliance was poor with regard to giving information on significant activities such as the importance of attending ANC at least four times during pregnancy (36.65%),the importance of saving money and arranging for transport in case of emergencies (27.15% and 25.79%) respectively, only 17.65 % stated the importance of putting the baby to the breast immediately after delivery, 13.12% gave advice on the importance of giving colostrum,12.22% gave advice on cord care which should include the importance of not applying any substances (herbs) to the umbilicus except the recommended spirits and only 9.05% health educated mothers on the need to delay bathing babies until after 24 hours to prevent hypothermia and preserve the protective vernix caseosa.

4.3.5 SERVICES RENDERED DURING ANC IN THE CLINICS.

These services, or procedures, are the technical skills expected to be provided to the clients during antenatal clinic days. The health worker is responsible for detecting any deviation from normal in the pregnant or postnatal woman's health status and manages appropriately, or refers where applicable.

Table 4. 8 Services/procedures rendered during ANC (n=221)

ACTIVITIES	YES	%	No	%
Measuring Weight	211	95.48	10	04.52
Measuring Height	58	26.24	163	73.76
Measuring Blood pressure	211	95.48	10	04.52
Testing a urine sample	53	23.98	168	76.02
Testing a blood sample	35	15.84	186	84.16
Administration of anti-malarial drugs	197	89.14	24	10.86
Providing breastfeeding information	184	83.26	37	16.74
Providing F/P information	147	66.52	74	33.48
Providing HIV/AIDS information	174	78.73	47	21.27
Testing for HIV and STI	17	07.69	204	92.31
Providing maternal nutrition information	179	81.00	42	19.00
Giving iron supplements	183	82.81	38	17.19
Advising patients of the danger signs of pregnancy	149	68.35	69	31.65
Counselling on birth preparedness	39	17.65	182	82.35
Counselling on neonate care	21	09.59	198	90.41
Educating patients about possible neonatal complications	17	07.69	204	92.31
Estimation of gestational age	154	69.68	67	30.32
Looking for oedema	162	73.30	59	26.70
Measuring Fundal height	137	61.99	84	38.01
Diagnosing Anaemia	155	70.14	66	29.86
Registration of the baby	194	87.78	27	12.22
Examining the position of the foetus	66	29.86	155	70.14
Listening to foetal heart sound	73	33.18	147	66.82

Knowledge of ANC services was assessed in activities such as measurement of weight, measurement of Blood Pressure, providing iron supplementation, administration of anti-malarial medication, maternal nutrition, HIV/AIDS information and assessment for oedema, anaemia and registration of babies. Compliance for all these aspects was above 70%, however, there were inadequacies in the areas of height measurement (26.24%), testing urine (23.98%), testing blood for and HIV/STI (07.69%) and other tests (15.84%).

The majority of health workers did not conduct the following procedures: examination of the foetal position (29.86%), listening to foetal heart sounds (33.18%), counselling on birth preparedness, neonatal care and neonatal complications (17.65%, 09.59% &07.69%) respectively.

4.3.6 TRAINING RECEIVED ON EMERGENCY OBSTETRIC CARE

Twenty three (10.40%) out of 221 health workers had received training on some of the topics of emergency obstetric care, whilst the remainder 198 (89.59%) had not been exposed to such training.

4.3.7 KNOWLEDGE OF SIGNS OF FIRST STAGE OF LABOUR:

One hundred and thirty eight (138) health workers (62.44%) recognised the onset of show as one of the signs of first stage of labour and were able to indicate other signs of first stage of labour such as lower abdominal pains 115 (52.94%) and dilatation of the cervix 137 (61.99%). However, 74 (33.48%) did not identify regular rhythmic uterine contraction as a sign of first stage of labour.

Table 4. 9 Signs of onset of labour (n=221).

ACTIVITIES	**YES**	**%**	**NO**	**%**
Onset of a show	138	62.44	83	37.56
Dilatation of the cervix	137	61.99	84	38.01
Regular rhythmic uterine contractions	74	33.48	147	66.52
Lower back and abdominal pains	115	52.04	106	47.96

4.3.8 SIGNS OF THIRD STAGE OF LABOUR.

Questions were asked to establish whether the health workers could identify the onset of the third stage of labour, which is one of the most critical stages as mismanagement of this stage could lead to loss of life of the mother**.**

Table 4. 10 Health workers' knowledge of signs of third stage of labour (n=221)

Activities	**Frequency**	**%**
Delivery of placenta	69	31.22
Birth of the baby	63	28.51
Full cervical dilatation	73	33.03
No response	16	07.24
Total	221	100.00

The majority of the health workers wrongly believed that full cervical dilatation 73 (33.03%) was the main indicator of the third stage of labour. Sixty three (28.51%) of the health workers responded when the baby is out of the uterus, whilst 69 (31.22%) stated that delivery of the placenta indicated the commencement of the third stage. The knowledge of the third stage of labour was not well established in many of the health workers.

4.3.9 MANUAL REMOVAL OF RETAINED PLACENTA.

A number of health workers 165 (74.66%) stated they could remove a retained placenta manually, whilst 56 (25.34%) admitted not removing retained placenta. However, when those who stated they could remove the placenta were asked to explain the procedure or steps, the following results were found.

Table 4. 11 Manual removal of retained placenta (n=221)

Activities	**Frequency**	**%**
Couldn't Explain	94	42.53
Gentle Cord Pulling	44	19.91
Controlled cord traction	37	16.74
Oxytocin Injection in Drip	27	12.22
Abdominal Pressure	19	08.60
Total	221	100.00

The knowledge and appropriate skills for the removal of placenta amongst the health workers was not adequate, as 94 (42.53%) did not explain how to remove it, 19.46% said they would remove the placenta by pulling the cord gently, 12.22% would use Oxytocin injection in an infusion to stimulate uterine contraction, whereas 19 (08.60%) would apply abdominal (Fundal) pressure.

4.3.10 HEALTH WORKERS' AWARENESS OF THE CAUSES OF APH AND PPH

The health workers awareness of the causes of ante partum haemorrhage and postpartum haemorrhage is an important indicator of their ability to provide safe management to maternity patients and appropriate steps towards the prevention of maternal mortality**.** Table 4.12 presents the findings.

Table 4. 12 Health workers awareness of the causes of APH and PPH (n=221)

ACTIVITIES	**YES**	**%**	**NO**	**%**
ANTEPARTUM HAEMORRHAGE (APH)				
Abruptio placentae	26	11.76	195	88.24
Placenta Previa	13	05.88	208	94.12
Ruptured tubal pregnancy	10	04.52	211	95.48
POSTPARTUM HAEMORRHAGE (PPH)				
Uterine atony	17	07.69	204	92.31
Genital trauma	46	20.81	175	79.19
Retained products of conception	115	52.04	106	47.96

The health workers have limited knowledge of factors responsible for ante partum haemorrhage and postpartum haemorrhage (See table 4.12 above). 115 (52.04%) of the health workers knew PPH was caused by retained products of conception, genital trauma 46 (20.81%) and uterine atony 17 (7.69%). Those who responded to knowing causes of APH were abruptio placentae 26 (11.76%), placenta previa 13 (5.88%), whilst ruptured tubal pregnancy 10 (4.52%) was not well recognised.

4.3.11 AWARENESS OF HEALTH WORKERS ON THE USE OF PARTOGRAPH

Primary health care workers who knew and used a partograph as a tool for monitoring labour numbered 22 (09.95%) and those who did not know the tool or use it, numbered 199 (90.05%).

4.3.12 KNOWLEDGE, SKILLS AND COMPETENCIES OF HEALTH WORKERS IN THE FOLLOWING CONDITIONS

Management of shoulder dystocia, puerperal sepsis and care during and after third stage of labour, as well as control of postpartum bleeding were not well established amongst the health workers as evidenced by high percentages of lack of ideas and outright referrals as presented in Table 4.13.

Table 4. 13 Health workers awareness and management of the following conditions (n=221)

ACTIVITIES	**FREQUENCY**	**%**
SHOULDER DYSTOCIA		
Refer	38	17.19
Rotate manually	06	02.71
No idea	177	80.09
PUERPERAL SEPSIS		
Refer	55	24.89
Antibiotics	32	14.48
Manage if fails, refer	07	03.17
No idea	127	57.47
MANAGEMENT OF THIRD STAGE OF LABOUR		
Manage	93	42.08
If manage fails, refer	58	26.24
Refer	47	21.27
Manage by placenta removal, stop bleeding	16	07.24
No idea	07	03.17
POSTPARTUM HAEMORRHAGE		
Refer	87	39.36
Manage if fails, refer	75	33.94
Manage	51	23.08
No idea	08	03.62

The vast majority (80.09%) of health workers had no idea of how to manage shoulder dystocia and 57% had little knowledge regarding the management of puerperal sepsis (refer table 4.13 above). Only 2.71% knew about managing shoulder dystocia by attempting to rotate the shoulders manually and only 14.5% used antibiotics to treat puerperal sepsis. Many of them claimed they could manage third stage of labour (42.08%) however, 87 of the workers (39.36%) would refer patients with postpartum bleeding without first trying to manage the problem.

4.3.13 DANGER SIGNS OF PREGNANCY:

The health workers were evaluated on the knowledge of danger signs of pregnancy requiring immediate referral or help from skilled health personnel. Table 4.14 presents the obtained results.

Table 4. 14 Danger signs of pregnancy (n=221)

ACTIVITIES	YES	%	NO	%
Severe headache	163	73.76	58	26.24
Visual disturbance	12	5.43	209	94.57
Vaginal bleeding	208	94.12	13	5.88
Abdominal pain associated with episode of fainting	37	16.74	184	83.26
Severe vomiting	22	10.00	198	90.00
Preterm rupture of membranes	30	13.57	191	86.43
Offensive or irritating vaginal discharge	122	55.20	99	44.80
Multi foetal pregnancy	62	28.05	159	71.95
Abnormal presentation	143	64.71	78	35.29
Suspected oligo or polyhydramnios	10	4.52	211	95.48
Intrauterine foetal death (IUFD)	85	38.46	136	61.54
No foetal heart sound	113	51.13	108	48.87
Low blood pressure	20	9.05	201	90.95
Severe oedema	153	69.23	68	30.77
Moderate to severe anaemia	161	72.85	60	27.15
Previous operative deliveries	10	4.52	211	95.48

The health workers, to a certain level, were aware of some of the following danger signs of pregnancies: severe headache (74%), vaginal bleeding (94%), offensive or irritating vaginal discharges (55%), abnormal presentation (65%), absence of foetal heart sound, severe oedema and moderate to severe anaemia (51%, 69% & 73%) respectively.

However, from the data in Table 4.14 above, it could be seen that the health workers were not conversant with other danger signs such as: visual disturbance (5.43%), abdominal pain associated with the episode of fainting (16.74%), severe vomiting (10.00%), preterm rupture of membranes (13.57%), multiple foetal pregnancy (28.05%), suspected oligo or polyhydramnios (4.52%), IUFD (38.46%), low blood pressure (9.05%) and previous operative deliveries (4.52%). These danger signs are equally important in assessing and predicting possible complications during pregnancy, delivery or even after delivery.

4.3.14 TRAINING ON CLEAN AND SAFE DELIVERY

The figure below shows the percentage of health workers who had received short course training on the activities of safe delivery in the management of maternity patients.

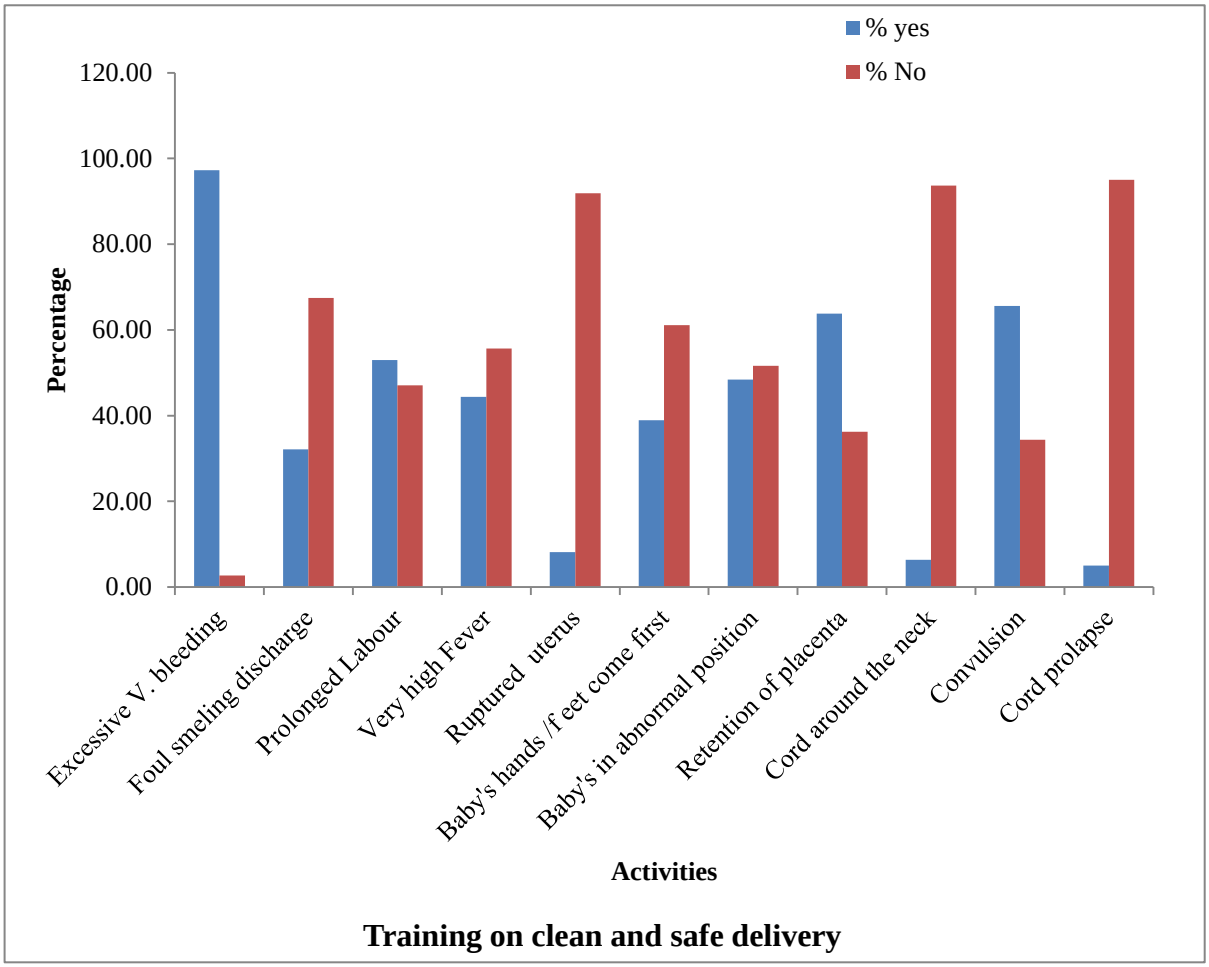

Figure 5 Training on clean and safe delivery (n=221)

Health workers admitted they had some exposure in training in the areas of excessive vaginal bleeding 215 (97.27%), retention of placenta 141 (63.80%), convulsion 145 (65.61%) and prolonged labour >12 hours 117 (52.94%). However, most of the health workers said they had not received training on the following: foul vaginal discharge 71 (32.13%), very high fever 98(44.34%), ruptured uterus 18(8.14%), baby's hand or foot comes first 86 (38.91%), cord around the neck 14 (6.33%), prolapsed cord 11 (4.98%) and baby's in abnormal position 107 (48.42%).

4.3.15 KNOWLEDGE AMONGST HEALTH WORKERS OF COMPLICATIONS THAT MAY ARISE DURING LABOUR

Possible complications commonly seen during child birth and sometimes after delivery should be well known to service providers. Lack of such knowledge of complications could lead to poor management and the likelihood of maternal death.

Table 4. 15 Complications commonly seen during child birth (n=221)

ACTIVITIES	YES	%	NO	%
Excessive vaginal bleeding	215	97.29	6	2.71
Foul smelling discharges	71	32.27	149	67.73
High fever	98	44.34	123	55.66
Compound presentation (Baby's hands or feet come first)	86	38.91	135	61.09
Baby is in abnormal position	107	48.42	114	51.58
Prolonged labour (>12 hours)	117	52.94	104	47.06
Retained placenta	141	63.80	80	36.20
Ruptured uterus	18	8.14	203	91.86
Cord prolapse	11	4.98	210	95.02
Cord around the neck	14	6.33	207	93.67
Convulsion	145	65.61	76	34.39

As seen in table 4.15 above, complications commonly known to the health workers were: excessive vaginal bleeding (97.29%), prolonged labour greater than 12 hours (52.94. %), retained placenta (63.80%) and convulsion (65.61%). There was poor awareness of other dangerous complications such as: foul vaginal discharge (32.27%), high fever (44.34%), hand or foot prolapse (38.91%), abnormal foetal position (48.42%), ruptured uterus (8.14%), cord prolapse (4.98%) and cord around the neck (6.33%).

4.3.16 ACTIVITIES PERFORMED WHILE ASSISTING CHILD BIRTH

Health workers' give assistance and perform examinations to ensure the success of the labour or detect any deviation from normal and take appropriate measures to prevent complications and restore health, which usually requires skilful applications and competencies to achieve the desired outcomes. They were therefore asked which assessments and what assistance they give to labouring women in order to prevent complications.

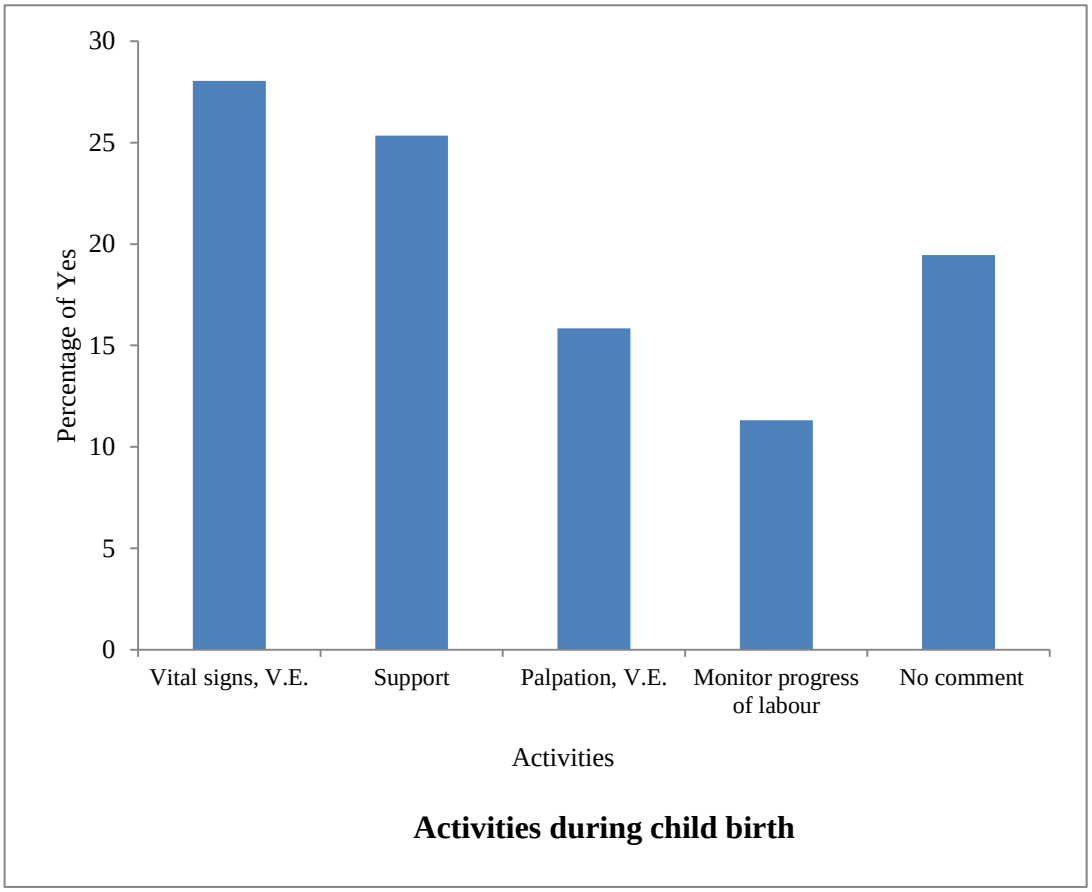

Figure 6 Activities performed by health workers during child birth (n=221)

The knowledge of the technical skills and competencies expected of health workers during deliveries was poor. Most of the activities rendered to clients involved monitoring vital signs and conducting vaginal examination 62 (28.05%), supporting the woman which was nonspecific 56 (25.34%), some said they palpate the woman to determine the position and do vaginal examination 35 (15.84%), 25 (11.31%) monitored the progress of labour and 43 (19.46%) had no comment.

4.3.17 REFERRAL OF MATERNITY PATIENTS TO A HIGHER FACILITY

There was evidence health workers mostly refer patients 191 (81.43%) above their level of competency to higher health centres, but 30 (13.57%) had not made referrals in the last six months. Referrals in many instances were done by the community health extension workers, or, when responsible persons are not around, by any available health worker on identifying the need and magnitude of the condition.

4.3.18 OVERALL KNOWLEDGE OF HEALTH WORKERS IN THE CARE OF MATERNITY PATIENTS

In the preceding sections, the findings in respect to the health workers' knowledge of the various aspects relating to the management of maternity patients (see figures 3 & 4; tables 4.7; 4.8 & 4.12) were consolidated and their average percentages and standard deviations were obtained to establish their overall knowledge performances shown in Table 4.16 below. Each individual's score was calculated for selected aspects of the "knowledge test" and their competence was calculated for overall knowledge of how individual worker manages a maternity patient. This was done to find out how much health workers know about selected issues of managing maternity patients with regard to the prevention of maternal morbidity and mortality. The knowledge, skills and competencies of the health workers in the management of maternity patients are summarised in Table below.

Table 4. 16 Overall knowledge of health workers in the care of maternity patients

KNOWLEDGE AREA	AVERAGE % OBTAINED	S.D.
Use of protocols in the care of maternity patients	13.03	23.75
Causes of Ante partum Haemorrhage	7.39	17.34
Causes of Postpartum Haemorrhage	26.85	21.86
Knowledge of Observations recorded in Partograph	4.48	14.98
Health Education during ANC	51.42	15.87
Knowledge of procedures in ANC	55.40	14.67
Danger signs of Pregnancy	37.71	13.43
Complications during child birth	43.48	13.52

Health workers were found to have acceptable knowledge of the content of ante-natal health education (51.42%) with standard deviation (SD) ± 15.87 and of conducting ante-natal procedures (55.40%) SD±14.67. The workers however, lack the education, skills and competencies in the areas of the content of partograph (4.48%), SD± 14.98, causes of ante-partum haemorrhage (7.39%) SD± 17.34 and postpartum haemorrhage (26.85%) SD± 21.86, as well as the use of protocols (13.03%) SD±23.75.

With regard to the findings for knowledge of the content of ante-natal education and of conducting ante-natal procedures, the significance of this finding would depend on "which half" they know. Clearly some aspects may be more important in terms of preventing life-threatening complications than others.

The finding that only 4.48% of the health workers have knowledge of the partograph indicates they do not use it. This is one of the most fundamental tools for saving lives of labouring women and this in itself is of extreme concern.

Health workers also had poor knowledge of the danger signs of pregnancy (37.71%) SD± 13.43 and that of complications during child birth requiring immediate referral (43.48%), SD± 13.52. The lack of knowledge of these two aspects indicates health workers do not refer patients when needed. This should be considered in the light of the findings in the section of challenges the health workers face which indicates that, even if they did know when and how to refer patients, transport is seldom available and there are few qualified and knowledgeable health professionals available to whom they could refer these patients.

The wide standard of deviations for the scores of all the items in Table 4.16 shows how knowledge varies widely between health workers. This indicates the chance of being attended to by a health worker with knowledge of any of the aspects tested varies too. This leads to the question, if some health workers have knowledge on an aspect of care, why do others not and indicates varying access to training? Table 4.17 demonstrates this issue.

Table 4. 17 Training received by health workers

Training received by the Health Workers	AVERAGE % OBTAINED	S.D.
Courses taken in emergency obstetric care	6.03	19.24
In-service training on clean and safe delivery	42.08	13.39

The majority of the health workers did not receive training on maternity care, only 6.03% had training on the World health organization's package of emergency obstetric care SD± 19.24 and 42.08% had in-service training on clean and safe delivery.

4.4 INFERENTIAL STATISTICS APPLICATION USING PEARSON CHI SQUARED TESTS

These indicate the relationship between two variables using 2 × 2 contingency tables.

4.4.1 THE RELATIONSHIP BETWEEN THE USE OF PROTOCOLS AND THE MANUAL REMOVAL OF RETAINED PLACENTA

Table 4. 18 Association between the use of protocols and the removal of retained placenta (n=221)

Use of protocols in the care of maternity patients	Manual removal of retained placenta		Total (%)
	Yes/%	No/%	
Yes/%	13 (18.84)	56 (81.16)	69 (100.00)
No/%	7 (4.61)	146 (95.39)	153 (100.00)
Total/%	20 (9.05)	201 (90.95)	221 (100.00)

Pearson $chi^2(1) = 11.6840$ Pr = 0.001

The association between manual removal of retained placenta and the use of protocols was found to be significant with the p= 0.001, Chi (X^2) of 11.68. Out of 69 health workers who used protocols, only 13 (18.84%) could remove retained placenta manually, whilst 56 (81.16%) could not. from the 152 respondents, 146 (95.39%) had neither used protocol nor removed retained placenta manually.

4.4.3 Relationships between training of health workers on emergency obstetric care and the administration of anticonvulsants.

Table 4. 19 Association between workers who received training and the administration of anticonvulsants (n=221)

Received training	Administration of anticonvulsants		Total (%)
	Yes	No	
Yes/%	9 (39.13)	14 (60.87)	23 (100.00)
No/%	2 (1.01)	196 (98.99)	198 (100.00)
Total/%	11 (4.98)	210 (95.02)	221 (100.00)

Pearson $chi^2(1) = 63.3121$ Pr = 0.001

Most of the health workers 196 (98.99%) had not received training and could not administer anticonvulsants to pre-eclamptic or eclamptic patients. From the above 2×2 contingency table, only nine (39.13%) had received training and could administer anticonvulsants. The Chi ($X^{2)}$ of 63.31 and p value of 0.001 indicates there is a strong association between training and the administration of anticonvulsants to fitting maternity patients, meaning lack of training could affect service delivery.

4.4.2 RELATIONSHIP BETWEEN THE WORKERS HIGHEST EDUCATIONAL LEVEL AND THE STAGES OF LABOUR.

Table 4. 20 Relationship between the workers highest educational level and the stages of labour

Major sign(s) of third stage of labour	Level of Education		Total/ %
	Highest Educ. (%)	Least educ. (%)	
Birth of the baby	48 (76.19%)	15 (23.81%)	63 (100)
Delivery of placenta	52 (75.36%)	17 (24.64%)	69 (100)
Full cervical dilatation	42 (73.68%)	15 (26.32%)	57 (100)
Total	142 (75.13)	47 (24.87)	189 (100)

Pearson chi^2 (2) = 0.1037 Pr = 0.949.

The contingency table above, with chi (X^2) 0.104, DF = 2 and P value=0.95, indicated that there was no significant association between level of education of health workers and identification of the commencement of third stage of labour. Even the highest, in terms of educational level,(48 (76.19%) could not identify or mention correctly the sign of third stage of labour.

4.5 CONCLUSION

The findings indicate that health workers operate in a seriously under-resourced health environment and there were gross inadequacies in terms of their knowledge. These findings will be discussed in the next chapter together with the limitations of the study and the recommendations for practice, education and research.

CHAPTER 5

DISCUSSION OF FINDINGS, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION:

5.0 INTRODUCTION

The study was conducted on the topic "*Knowledge of and challenges experienced by health workers managing maternity patients at PHC clinics of Yobe State, Nigeria."* It was conducted in six local government areas of the state using the facility managers and the health workers who were involved in the care of obstetric clients as participants in the study. The study aimed to answer the following research questions:

- What are the socio-demographic characteristics of the obstetric health workers in the PHC facilities of Yobe State?
- What is the level knowledge of the Obstetric health workers regarding the management of maternity patients at the PHC facilities?
- What are the challenges experienced by the obstetric health care workers in the PHC facilities?

This chapter discusses findings reported in chapter four, addresses the limitations of the study and makes recommendations for nursing education, research and practice.

In order to view the findings in context, it should be remembered that pregnant women patronising rural clinics are usually domiciled in the village or villages proximal to the facility and nearly all of them are illiterate and ignorant of their rights or privileges and therefore have no choice of health services. Any harm or damage to their health by service providers is considered as something destined by GOD, '*Allah ne yasa haka' meaning "It is the will of God*." That is why many of the maternal complications, injuries and deaths in the communities were not natural, but caused or facilitated by poorly trained health workers, who are not reported or acted upon and not held accountable for any form of malpractice, as monitoring and supervisory roles are ineffective. The implication is that more harm would be inflicted on the maternity women without reporting and the likelihood of complications will be obvious and the consequences extreme.

Yobe State Government has been attempting to curb the problem of the high rate of maternal deaths and promote maternal and child health. One of its aims was to attain the MDG 5 by the year 2015 through revitalisation of its health industries at all levels. Whilst the good efforts and intentions of the government towards quality improvement of health of the populace are admirable, the findings of the research study undertaken in the state between 10th October and 25th November 2013 have unveiled some aspects which require urgent consideration.

Community health extensions workers (CHEWs) are a group of health service providers based in the community and serve as a bridge or link between the community and the formal health sectors. They are trained for a year or two to perform services such as home visits, first aid, sanitation, management of uncomplicated malaria, pneumonia, provision of safe water supply, treatment of minor and common illnesses, nutrition, health education promotion, simple family planning and maternal and child health, under the supervision of the nurse or midwife in charge of the area's health centre (Lehmann and Sanders, 2007).

However, the most popular and widely accepted definition was that of a WHO Study Group (WHO 1989): Community health workers should be members of the communities where they work, should be selected by and answerable to the communities for their activities, should be supported by the health system, but not necessarily be a part of its organisation and have shorter training than professional workers (Lehmann and Sanders, 2007).

However, evaluation of the performance of the community health workers was found to be inadequate in many unsupervised public health fields (Medhanyie et al., 2012). Although they can implement effective interventions in many simple areas, they do not consistently provide services likely to have a substantial health impact and the quality provided is sometimes poor (Lehmann and Sanders, 2007).

According to Crispin et al. (2012), the training of community health workers is faced with many challenges including: low education level or no education, lack of professional training in health, poor technical supervision and too much workload in the community's health providers. These developments have some relationship with the findings and discussions of this study.

5.1 DISCUSSION OF FINDINGS

5.2 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE HEALTH WORKERS

Information obtained from the facility managers' responses indicated that the majority of the service providers were not sufficiently skilled to manage maternity cases. The categories of workers who were predominately found in primary health care clinics do not have the technical know-how of managing maternity conditions, a fact confirmed by Adegoke et al. (2012), who state there was no clear evidence with regard to their pre-service training or the knowledge of managing obstetric cases. Very few skilled birth attendants (seven nurses and seventeen midwives) were recorded for the entire 46 health facilities of the research area (see Figures 1 & 2). There are evidences from international sources (Gerova et al., 2010, UNFPA, 2011, WHO, 2010a) that in some developing countries the levels of staffing, particularly the level of skilled human resources for health have a direct influence on the morbidity and mortality of women during and after labour (Rafferty et al., 2007). This was a reason why PHC clinics with poor skilled workers were clustered around a referral hospital which had the capacity (midwives and doctors) to provide comprehensive emergency obstetric care (Abimbola et al., 2012). It is believed an effective two-way referral system through the cluster model could be of great help in reducing maternal and child mortality in the rural areas of Yobe State, Northern Nigeria and the country at large.

The majority of health workers were females (65.61%), who were found concentrated and poorly distributed in semi-urban clinics, whilst the peripheral clinics were understaffed and mainly manned by inexperienced males who in some cases were either environmental health assistants (EHA), secondary school leavers or others with undefined qualifications , claiming to be birth attendants (see Chapter 4.1.3). Yobe State is a Muslim dominated community and with Islamic tradition securely entrenched in the rural areas, the women do not allow themselves to be attended by male health workers, preferring to stay at home until the problem is almost out of control, or obliged to be attended by them, or what is usually the enforced preference to deliver at home unattended. These problems of poorly skilled staff in the PHC facilities from the experience of the researcher in the region are connected to political attachment, people were employed in the clinics not because of their merit and competencies, but their political affiliation. This has detrimental effects as they may not give the best possible services required, resulting in the rural woman having complications and in

some cases losing her life, which increases the already very high mortality rate in the region (Abimbola et al., 2012).

The years of experience varies with the categories of the workers. The most experienced ones, in terms of long years of service, were the unskilled staff (refer Chapter 4.1.5). This experience, without the background knowledge and skills is dangerous as the workers may attempt tasks beyond their scope and could be of high risk to the maternity woman. Newly employed staff under the midwives service scheme (though mostly not midwives by qualification) were inexperienced (33.94%) having between one and four years in service, with the majority employed for no more than a year under a special National youth empowerment programme called "Subsidy Reinvestment and Empowerment Programme" (SURE-P), (see Chapter 4.1.5). It is expected of such new staff to work under the supervision of a midwife to ensure probity, accountability and quality assurance in the care of the clients.

5.3 CHALLENGES EXPERIENCED BY THE HEALTH WORKERS:

The study identified problems with patient numbers and lack of access to skilled health care providers, lack of functional ambulances for referral purposes and inadequate basic resources in the clinics. An ambulance is believed to be an essential component of any clinic, and has been of great help to the referral process, this agrees with the suggestion of Tayler-Smith K et al. (2013) that ambulance referral network improves access to emergency obstetric and neonatal care. The clinics have varying demands on their services which varied with seasons, but the issue remaining constant was the usually under-qualified and under-skilled available staff to do the right work allocated to them. The exceptionally high rate of maternal mortality reported by the health workers (refer chapter 4.2.1) testifies to the fact that they were not safe practitioners.

Nigeria is one of the African countries with vast human resources, but unfortunately faces inadequate production and inequitable distribution of human resource for health as well as poor standard of quality assurance in terms of health care service delivery in its facilities, which seriously retards progress of its health industries (GHWA., 2008). Equally reported (Ebuehi and Campbell, 2011) that one of the major problems of the Nigerian health sectors is the chronic shortage of skilled health workers particularly in the rural PHC clinics and the absence of attractive welfare packages. There has been a massive annual production of doctors, nurses and midwives in Nigeria, but according to the HRH country profile (GHWA., 2008), less than half of these professionals on the country's registers are practising in the

country. This was attributed to migration of the health workers to other countries. Medhanyie et al. (2012) in their study in Northern Ethiopia have established that CHEWS do not have the required knowledge and skills to be included in the rank of skilled birth attendants. Also Nyango et al. (2010) have established that Doctors cannot be retained at the primary health care level due to their shortage in number. This means access to maternal care in Yobe State remains a concern and whilst it has been suggested that midwives should be mobilised and deployed to the grass root health facilities to prevent and mitigate the problems of maternal and child mortalities in the state, this recommendation has been difficult to enact.

Access to skilled birth attendants (doctors, nurses and midwives) is very poor in the state, particularly in the rural and semi-urban primary and secondary health facilities. Many of the professional health workers were found concentrated in urban secondary and tertiary health care centres, leaving the PHC clinics with the semi-skilled and non-skilled workers (Abduraheem et al., 2012). From the findings of this study, more than 62% of the PHC workers could not access SBAS for help in their area (see table 4.4). Ideally all PHC clinics should be manned and managed by at least one midwife (Pate, 2012). Clients in the rural clinics are usually seen and attended by the non skilled birth attendants (Doctor and Dahiru, 2010).

This deficiency of health professionals, from the point of this study, is attributable to poor human resource management, poor remuneration and lack of established attractive welfare packages to entice professional health workers to stay in the rural areas. There is need for proactive human resources for health strategic plans for quality assurance and quality improvement for better service delivery to the rural communities, as was evident by the presence of semi-skilled workers, who have been in the posts of PHC institutions for more than three decades, have not brought a significant reduction in maternal and child mortality in the State or Nigeria at large. Antenatal care, postnatal care and deliveries were also found to be facing challenges ranging from inadequate seats and skilled staff, clients ignorance of the services, lack of laboratory services, high rates of home deliveries, to low patronage. There can be no effective intervention in PHC without a proper workforce plan in addressing issues of maternal and child health. This agrees with the findings of (Obansa and Orimisan, 2013), who showed that challenges of human resources, infrastructure, equipment, inadequate laboratory facilities and poor remuneration of the health workers were amongst the problems facing health institutions in Nigeria.

According to the records of the facility managers, a maximum of 300 maternity clients visit each clinic monthly (Chapter 4.2.1). Deliveries in the facilities were however low, with an average of 18 per month per clinic, whilst records of home deliveries were found to be high and probably encouraged by the community health workers for reasons known only to them. This high rate of home deliveries was also found in a study by Doctor et al. (2011). Whilst the health workers in each clinic claimed to have been conducting more than 60 deliveries a month, records in the facilities reflected much lower numbers leading to the assumption that they were conducting home deliveries, which is against regulations and were doing so without backup services, equipment and proper documentation, and this could be fatal if a problem arose in the process. The researcher assumes they were doing this to earn extra money. Medhanyie et al. (2012) made a similar finding in a study conducted in Ethiopia, which found the health workers, contrary to the policies of the health facility, conducted over 80% of deliveries at home.

Maternal mortality remains a problem in the state and the only authentic records of maternal deaths being a community survey, which probably uses retrospective analysis. Many health workers testified that when a woman is rushed to the clinics and dies within an hour or two, they do not document the case in their clinic's records because of the fear of loss of organisational reputation. From the records available on facility managers' desks, between one and 36 maternal deaths per clinic were noted within a period of six months before the commencement of this study, although most of them accepted these records did not reflect the true occurrence of the mortalities in many of the community.

With regards to the shortage of ambulances, these are a basic requirement in all clinic settings. Without them the aim of reducing maternal mortality can never be effective and the attainment of the MDG 5 by 2015 is unrealistic, since effective referral system is a requirement and without ambulances this cannot be achieved. There is anecdotal evidence that ambulances are poorly maintained and used by staff for different personal reasons. Due to the inadequacies of the ambulances in the clinics, PRRINN-MNCH, a non-governmental organisation, came up with the innovation of sensitising the community and road transport workers to the need to make their commercial vehicles readily available whenever there is a call for help in terms of pregnant woman in labour needing urgent referral (PRRINN-MNCH, 2009).

A project implemented by Medecins sans Frontiers (Tayler-Smith et al., 2013) in a district of rural Burundi with high maternal mortality, showed an effective impact of ambulance referral network and did improve access to emergency obstetric and neonatal care and therefore reduced maternal morbidity and mortality in the area. Yobe State does not have such a coordinated system, but if introduced it could well assist its maternity patients and their babies.

The shortage of basic services, including water and electricity, which are fundamental to being able to provide proper care even if other resources were available, make it impossible for the health workers to perform adequately and the shortage of specific items such as essential drugs, like magnesium sulphate meant to save life was absent in 25 clinics out of 46, and misoprostol was also not available in 8 clinics (see table 4.2). These findings were supported by Medhanyie et al. (2012) who found that most of the clinics had inadequate supply of Oxytocin, but which reportedly was sold by the service providers as private drugs with the price varying from person to person, and clinic to clinic with clients having no option of where to buy the drugs.

A Ugandan study by Bantebya and Kyomuhendo (2003) indicated that lack of resources and skilled staff have, despite good policies, resulted in women staying away from what they perceive as poorly resourced facilities and as in Nigeria, there are socio-cultural reasons for poor utilisation of the facilities. These reasons for not seeking health care need to be addressed if the battle to reduce maternal mortality is to be won.

Another study conducted in Tanzania by Penfold et al. (2013) discussed the relationship between the poor maintenance of equipment and the inadequate supply of drugs in relation to poor quality maternity services. Whilst pointing out that such shortages result in a delay in care provision and therefore have an impact on maternal mortality and morbidity, they do provide some encouragement by saying the staff in their study showed a high degree of resourcefulness in managing the shortages. Though the participants were all nurses and midwives who have the principles of hospital economy in scares resource settings. Whether health workers in Yobe State, working without water, electricity and other basic medical facilities would be able to be as resourceful, is questionable (Lehmann and Sanders, 2007).

5.4. KNOWLEDGE AND COMPETENCIES OF THE HEALTH WORKERS

On reviewing the findings, it would be simple to conclude from the overwhelming evidence that the knowledge of the health workers is inadequate and they should either be re-trained or replaced. It could also be argued the government of Yobe State has been negligent in allowing this situation to persist, when it is clear that lack of knowledge of the health workers is contributing to the very high maternal mortality rate in the state.

Knowledge acquisition is however a complex subject with different theories of how knowledge is acquired, practised, retained and applied (Gleitmann et al., 2007). From a behaviourist point of view, there should be no problem with training health workers with poor educational backgrounds and teaching them to carry out skills and memorise facts. When reviewing the findings in Tables 4.16 & 4.17, which demonstrated the level of education, made no significant difference to their knowledge of the management of the third stage of labour, it would be tempting to believe the behaviourists. The practice of midwifery, however, requires an ability to assess patients holistically, make individualised plans for their care and evaluate the outcomes of the management. Supporters of cognitivism would say the health workers can use prior learning to build new knowledge (Bruce et al., 2011). Again, the findings in this study do not indicate the experienced workers are faring any better than the ones with little experience. In reviewing the findings they suggest the opposite – that the experienced health workers simply perpetuate the mistakes they have made previously and in the absence of good guidance and supervision, never improve their knowledge. The constructivists would consider their approach highly suitable in the situation of the health workers as it requires them to construct meaning out of their experiences and to change their practice based on fresh insights. In Yobe State, however, there were no mentors for the health workers in their duty post who could assist them to engage in such activities. This leaves the adult education approach, which believes learners are self-directed. This is probably true of health workers commencing their work in the maternity clinics, but whether motivation to continue to learn can be maintained in the negative learning environment they find themselves in, in the clinics is questionable. Looking at the overall picture in Yobe State maternity services, it would seem the behaviourist approach may at least provide workers with basic skills even if they are unable to apply their knowledge. The PRRINN-MNCH training approach has been successful in some areas in reducing maternal mortality as it concentrates on training health workers what to do in an emergency. There is little doubt that

using this approach would not receive comprehensive, individualised and responsive care, but it may save lives in a less than ideal situation.

From the above discussion it is probably true that health workers should be drilled on the application of protocols, as this is the only likely way of training poorly educated workers to do the right thing even if they do not have the insight to understand why. This makes the finding that out of 221 health workers interviewed, only 69 (31.22%) claimed to have used one or two protocols in managing maternity patients very concerning. The lack of use of the partograph is of particular concern, as it was designed to be a simple tool to improve labour assessment and management to reduce maternal and foetal morbidity and mortality (Kwast et al., 1994) and has been part of the safe motherhood initiative since 1987. Its correct use is known to distinguish between normal and abnormal labours, which would be beneficial to health workers who would then know who to refer to, prior to serious problems presenting. One has to remember, however, in the earlier section of this discussion, there were few ambulances available for the transfer of patients with problems and also few skilled health professionals who would be able to receive these women and take over their care.

5.5 KNOWLEDGE OF ANC, LABOUR, AND PNC SERVICES.

Overall awareness and the provision of health education were better than the knowledge of the management of labour. It was interesting that some semi-urban clinics fared better in this regard than the hard to reach rural areas, as this finding tallied with the finding of Dagne (2010) and is probably because of the presence of one or two midwives at these clinics.

According to similar findings (Duysburgh et al., 2013a) in studies carried out in Burkina Faso, Ghana and Tanzania, most of the maternity women were not counselled adequately on the danger signs of pregnancy: only 5.5% of women in Burkina Faso, 30.0% in Ghana and 22.5% in Tanzania were educated about the danger signs. This was apportioned to low educational background of the CHEWS and the absence of professional birth attendants (midwives) to support them. Knowledge of complications arising during labour was also not adequate as many (80.09%) did not know how to recognise or manage shoulder dystocia and other complications, as seen in Table 4.15, meaning the health workers could not predict/identify and respond to emergencies during labour. Referral was almost a daily occurrence by the health workers and in the six months before the study, 81.43% admitted referring maternity patients who had problems beyond their scope of practice.

The findings on the provision of ANC services (procedural) indicated many health workers have a poor understanding of skills application during the conduct of ANC and were not performing the required clinical interventions, probably due to their level of knowledge and/or the lack of adequate tools. The urine test is a good indicator for detecting the possibility of preeclampsia but was not done by >76% of health workers, whilst >84% failed to test blood for HIV and STI's. This finding was in agreement with that of (Duysburgh et al., 2013b) in selected rural PHC clinics of Burkina Faso, Ghana and Tanzania, where they found health workers did not test urine for proteins and glucose of more than half the clients. Other possible reasons could be attributed to lack of test kits and laboratory services, as was evident in this study (Table 4.8). Counselling for birth preparedness, neonatal care and information on neonatal complications were not well established in ANC activities in many clinics of the state. All these poor performances are attributable to inadequate knowledge of the health workers in promoting facility deliveries and skilled care, as they could not put activities in place to stimulate behavioural changes amongst the communities. These could be reasons for the low rate of ANC patronage and low utilisation of the clinics and could translate to an increase in maternal mortality, as found in an Ethiopian study on socio demographic factors on utilisation of maternal health care services (Medhanyie et al., 2012, Dagne, 2010).

Most of the health workers had not received any in-service training on emergency obstetric care (EOC) and even those who had the training, was as a result of the glaring maternal problems in situ. The majority of the health workers acknowledged they acquired their skills through their contacts and interactions with midwives during their brief clinical experiences in maternity wards and those posted to the clinics under the midwives service scheme (MSS) (Abimbola et al., 2012). This short stay inadequate exposure could be a reason why many of them do not recognise rhythmic uterine contractions (66.52%) as one of the signs of onset of labour and were confused and unsure about the commencement of the third stage of labour (Tables 4.9 & 4.10). Additionally, knowledge of the sequence of the stages of labour was poor amongst the health workers (Nyango et al., 2010).

Health workers perform procedures on patients blindly without knowing the rationale or scientific bases. These were evident in the finding of the study (chapter 4.3.11 and table 4.8). Bleeding was one of the common causes of maternal deaths and the knowledge of detecting, treating and preventing haemorrhages was found to be unsatisfactory (Duysburgh et al., 2013b).

5.6 SUMMARY OF FINDINGS

Health workers in most of the facilities were not skilfully equipped to manage maternity patients, were operating under stressful situations and faced many preventable challenges. These could possibly be the reasons behind low performance of the workers and their inability to make significant contributions in preventing and reducing maternal mortality in the rural health facilities of the state.

- Every health worker has the potential to be a birth attendant regardless of age, sex, educational background and level of experience or competency; they conduct deliveries both within and outside the clinic for financial gains.
- It was established there were no appropriate health personnel in the PHC clinics with the right skills and competencies to give the proper care to maternity patients, as more than 80% of the health workers were not skilled birth attendants.
- The few existing semi-skilled workers in the clinics had not been exposed to in-service education programmes and more than 80% had not received training on clean and safe deliveries and emergency obstetric care (EOC).
- Health workers were found to be ignorant of the causes of APH and PPH, which translates into their inability to identify life-threatening situations and apply swift response.
- Knowledge and competencies of the health workers in the contents of ANC, deliveries and identification of danger signs of pregnancy, as well as complications arising during and after deliveries were found to be poor. There was inadequate emphasis on birth plan or birth emergency preparedness during ANC, more especially saving money for emergencies and transport arrangement, even though there is a plan for support from government (free maternal and childcare) this may not be always available in the rural areas.
- The referral system was found to be very inadequate, as most of the clinics (84.78%) did not have functional ambulances to convey emergency cases to higher facilities.
- Management of maternal conditions seems to be very difficult and was haphazardly carried out, as the majority of the health workers did not use protocols.
- Records available in some of the public clinics were not true representations of what was obtained. For example, records of deaths and deliveries in the facilities did not tally with the happenings.

In summary, the study discovered health workers in the obstetric units of PHC facilities in the entire Yobe State lack the required knowledge, skills and competencies to manage maternity patients and their presence will not bring the drastic change in maternal mortality as expected in attaining MDG 5 by 2015.

5.7 SUMMARY OF THE STUDY

This study, which was a primary health care based research, was conducted on the topic "*Knowledge of and challenges experienced by health workers managing maternity patients."* Having identified maternal mortality was a problem in the state, the researcher felt it necessary to delve into the background knowledge of the existing health workers in the PHC clinics, their activities in the care of maternity clients and the challenges possibly experienced which could be other factors contributing to more deaths of women in the area. The study primarily tries to answer the following research questions:

1. What are the socio-demographic characteristics of the health workers managing maternity patients in PHC clinics of Yobe State of Nigeria?
2. What is the level of knowledge of the health workers regarding the management of maternity patients in the PHC settings?
3. What are the challenges experienced by the health workers in the PHC facilities in the state?

The study aimed at establishing baseline information about the knowledge and challenges of health workers in PHC facilities and to proffer solutions, or ways of improving maternal and child health in Yobe State. A descriptive cross sectional study method was found suitable, using the researcher's survey as a process for data collection. After obtaining approval and clearance from the Human Research Ethics Committee (medical) of the Witwatersrand University and the approval of the Director General, Yobe State Primary Health Care Management Board, data were collected from 46 health facilities corresponding to equal number of responses from facility managers (n=46) and a total of 221 health workers (n=221) were interviewed after receiving their informed consent. Data were designed and programmed in Epi info statistical software and imported into Stata for cleaning and analysis. Find attached copies of the tools in Annexure 6 & 7.

The analysed data was interpreted in tables and graphs using percentages and bivariate descriptions. Results obtained were discussed in Chapter four of the study and the summary of major findings are presented in chapter 5.

5.8 LIMITATIONS OF THE STUDY

The conduct of this study was faced with challenges regarding data collection due to the activities of the insurgents popularly known as 'Boko Haram' in the North-Eastern states of Nigeria. The name 'Boko Haram' means no to anything concerning western education and includes academic activities, health services and the democratic processes of governance. Fortunately, although this resulted in extending the period of data collection, 221 out of the planned 230 health workers were captured in the study, which statistically remained a satisfactory sample.

A possible limitation was the use of a verbal questionnaire to solicit answers from the health workers, however, this method and the pre-validated tool used was chosen because of the low levels of literacy. The tool was designed in English and the researchers had to interpret some of the questions to many of the lower level health workers. It is also possible that given a written pen and paper test, had it been possible, health workers may have listed more answers than when speaking directly to a researcher. The study was carried out in Yobe State and the sampling ensures the findings are generalizable to all clinics in Yobe State, but not to other parts of Nigeria.

5.9 RECOMMENDATIONS

For the lives of the rural maternity women to be improved and the health system at primary health care level to be more responsive to the women's needs, the following recommendations are made.

5.9.1. RECOMMENDATIONS FOR THE PRIMARY HEALTH CARE SERVICES

1. The Yobe State Government should put more emphasis on training, employment and deployment of skilled birth attendants to rural health facilities, as well as designing a special welfare packages for the rural health workers. These could probably help to motivate and retain them.
2. A framework for quality improvement needs to be developed for the health services in the State to ensure a regular programme of auditing and accreditation. This will result in a proactive rather than reactive approach to dealing with health care problems

relating to maternal health. This system would include all aspects of quality, i.e., structure, process and outcomes in ensuring institutional quality improvement in all the PHC facilities. Once problems are identified, this would inevitably require investing heavily in structure standards which include manpower, money and material. Only if structure and process issues are dealt with will outcome standards improve (Armstrong et al., 2013).

3. Communities should be enlightened and encouraged to patronise facility delivery and seek maternal care only from skilled birth attendants, which is in accordance with the recommendations of the WHO.,. This in itself would require a programme of empowerment for the women ((Ordinioha and Seiyefa, 2013, Pfeiffer and Mwaipopo, 2013).
4. It was clear the level of supervision of health workers is inadequate. They need close and constant supervision to acquire new skills, to register their complaints and have free interaction with their supervisors. This responsibility should be vested in the coordinating body of the PHC clinics, i.e. State Primary Health Care Management Board (SPHCMB).

5.9.2 RECOMMENDATIONS FOR EDUCATION OF THE HEALTH CARE WORKERS

a. A School of Midwifery should be established within the College of Nursing in the state, to train more skilled birth attendants so that prospective candidates for nursing and midwifery do not go elsewhere in the country for training. This may result in production of the needed birth attendants locally within the state.
b. The existing health workers of the obstetric units of the PHC facilities should be well supported; the capable ones especially should be encouraged and given the opportunity to go for short course in-service training in Schools of Midwifery with emphasis on skills acquisition in managing maternity patients.

c. The management staff of the College of Nursing and Midwifery in the state should put more efforts with regards to quality improvement in training nurses and midwives to meet the challenges of globalisation and new disease patterns. This could be done by revising the training curriculum periodically to meet up with the current health challenges.

d. More opportunities and plans should be created to accommodate the training of the community health extension workers on skills acquisition and competencies towards managing maternity clients.

e. Another way of achieving quality improvement amongst the community health workers is through mandatory continuous capacity development in workshops and seminars. this may bring about the expected behavioral changes of the health workers and better service delivery the in clinics (Armstrong et al., 2013).

5.10 CONCLUSION

Yobe State, like most of the northern states in Nigeria, has its own problem of service delivery to the rural areas. Sometimes government may take the services to the community doorsteps but for them to accept, patronise and make good use of such services becomes a matter of families and religious leaders' consultations and authorisation. Typical examples are acceptance of immunisations against childhood killer diseases, family planning and institutional delivery, where women have no right to patronise even if they want to, except with the full consent of the head of the family or local leader. These and many other factors have added to a difficult situation for the rural woman to get better health care or seek redress in some unpleasant circumstances.

Whilst we are aware of the absence of competent staff and the inadequacies of the skilled care in most of the primary health care facilities in the state, society's orientation should also be changed towards acceptance of the little but beneficial services rendered. Government is doing well in the areas of provision of infrastructure and basic equipment in the clinics, however; without the right health worker stationed in the facility such good efforts are wastes.

The study found that majority of the community health care workers at PHC facilities in the state lack the basic knowledge and skills to render effective care to maternity patients. This was because most of them were found to be unqualified to do the job. This has an impact on the health of the pregnant women, and in some instances leading to disability and death.

Focusing on the availability of skilled birth attendants and adjusting their misdistribution in the state primary health care institutions is the only solution to prevention and control of maternal mortality in the state. This could help significantly in reducing the threat in the affected areas and is cost effective to both the government and the communities.

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ANNEXURE 1 SUMMARY OF PHC STAFF BY LGA

LGA	CHO (1)	SCHEW (2)	JCHEW (3)	RN (4)	RM (5)	EHO (6)	EHA (7)	OTHERS (8)	TOTAL (9)
Bade	3	35	21	1	1	18	1	293	373
Bursari	2	19	11	1	0	2	1	331	367
Damaturu	2	6	7	7	4	8	5	429	468
Fika	2	38	58	3	0	14	29	551	695
Fune	4	21	24	3	5	3	5	545	610
Geidam	4	19	30	4	5	8	7	294	371
Gujba	2	14	9	1	3	3	12	485	529
Gulani	3	22	23	0	0	4	23	372	447
Jakusko	0	28	40	3	0	7	14	477	569
Karasuwa	0	29	30	8	2	7	14	370	460
Machina	3	14	21	1	1	3	19	234	296
Nangere	3	26	43	3	1	14	33	590	713
Nguru	1	46	43	4	4	30	57	609	794
Potiskum	5	19	29	4	5	8	4	294	368
Tarmuwa	4	8	10	0	0	0	0	186	208
Yunusari	4	14	24	2	0	6	13	294	357
Yusufari	0	10	23	0	0	1	6	290	330
TOTAL	**42**	**368**	**446**	**45**	**31**	**136**	**243**	**6644**	**7955**

ANNEXURE 2 SUMMARY OF GENERAL HOSPITALS DOCTORS AND NURSES/MIDWIVES

Hospital	**Doctors**	**Nurses/midwives**
General Sani Abatcha State Specialist Hospital Damaturu	24	Available – 107
General Hospital Potiskum	Available – 11	Available – 86
General Hospital Gashua	Available – 6	Available – 48
General Hospital Geidam	Available – 4	Available – 29
General Hospital BuniYadi	Available – 3	Available – 33
General Hospital Damagum	Available – 2	Available – 20
General Hospital Fika	Available – 2	Available – 19
General Hospital Kannamma	0	Available – 4
General Hospital Kumaganam	0	Available – 4
General Hospital Dapchi	0	Available – 6
General Hospital Jakusko	0	Available – 9

General Hospital Nangere	0	Available – 12

Source: HR Database HMIS/SMOH Yobe

ANNEXURE 3 Ethics clearance certificate

R14/49 Mr Abdullahi Ali Danchua

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M130730

NAME: (Principal Investigator) Mr Abdullahi Ali Danchua

DEPARTMENT: Nursing Education
University of Witwatersrand
Yobe State Primary Health Facilities,Nigeria

PROJECT TITLE: Knowledge of, and Challenges Experienced by Health Workers in Managing Maternity Patients in PHC Clinics of Yobe State, Nigeria

DATE CONSIDERED: 26/07/2013

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Dr Sue Armstrong

APPROVED BY: _____
Professor PE Cleaton-Jones, Chairperson, HREC (Medical)

DATE OF APPROVAL: 28/08/2013

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 10004, 10th floor, Senate House, University.
I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**.

_____ _____
Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

ANNEXURE 3 ETHICS CLEARANCE CERTIFICATE

SECRET

YOBE STATE GOVERNMENT OF NIGERIA

MINISTRY OF HEALTH & HUMAN SERVICES

Near General Sani Abacha
Specialist Hospital,
Along Gujba Road, P. M.B. 1047
Damautru, Yobe State.

Our Ref: MOH/GEN/243/Vol.I *Date:* 19th August, 2013

Abdullahi Ali Danchua,
University of Witwatersrand,
Faculty of Health Science,
Johannesburg,
South Africa.

APPROVAL TO CONDUCT RESEARCH STUDY AT YOBE STATE PRIMARY HEALTH CARE FACILITIES

Sequel to your application dated on 5th August, 2013 requesting for the permission to conduct research at the State Primary Health care facilities.

2. In view of the above, I am directed to write and convey to you the approval of Yobe State Health Research Ethics Committee (YOHREC) to interview Health Workers managing Maternity Patients on a study title "Knowledge of, and challenges experienced by Health Workers in Managing Maternity Patients in Yobe State, Nigeria" in the State PHC Clinics.

3. Our Health system values the contribution of such human resource development programs which improve maternal health and reduce maternal mortality in the state.

4. Once again, you are most welcome.

Muhammad Liman
Secretary YOHREC
For: Chairman

All Correspondence to the office of the Honourable Commissioner

ANNEXURE 4 APPROVAL TO CONDUCT RESEARCH

SECRET

YOBE STATE PRIMARY HEALTH CARE MANAGEMENT BOARD

OFFICE OF THE DIRECTOR GENERAL

MINISTRY OF WORKS COMPLEX,
ALONG DAMATURU-GASHUA ROAD,
P.M.B 1163 DAMATURU,
YOBE STATE
e-mail: yobestatespchmb@yahoo.com

YB/PHCMB/GEN/208/VOL.1/14

Ref No: .....

Date: .....19th/September/2013.....

To:
Mallam Abdullahi Ali Danchua
University of Witwatersand,
Faculty of Health Science,
Jahnnesbug,
South Africa.

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH STUDY

I am directed to write and introduce Mallam Abdullahi Ali Danchua, a masters student from the faculty of Health Sciences, University of Witwatersrand, Johannesburg, South Africa, who is currently Conducting a research in Primary Health Care facilities in Yobe state.

2. The title of his research work is KNOWLEDGE OF, AND CHALLENGES EXPERIENCED BY HEALTH WORKERS IN THE MANAGEMENT OF MATERNITY PATIENTS IN PRIMARY HEALTH CARE CLINICS OF YOBE STATE, NIGERIA

3. You are therefore requested to accord him all the necessary assistance, Please.

4. Thank you

MOHAMMED MUSA
DEPUTY DIRECTOR

All correspondence be directed to Dg's office

ANNEXURE 5 PERMISSION TO CONDUCT THE RESEARCH

ANNEXURE 6 FACILITY MANAGER'S QUESTIONNAIRE

Facility…… Date……

101	How many staff are there in the clinic? (*categorize them please)*	RN…….. RM……. CHEWS…… OTHERS……		
102	On average how many patients visit the clinic in a month? (*ask for the record*)			
103	What is the number of maternity patients who visit the clinic in a month?			
104	How many deliveries are done in the clinic in a month? (*check record*)			
105	How many maternal deaths occurred in the clinic in the last 12 months?			
106	Do you have a functional ambulance in the clinic?	Yes…… No……		
107	Do you have functional mobile phone?	Yes…….No…….		
108	Is the facility connected to electricity?	Yes…… No……		
109	Does the facility have an adequate water supply?	Yes..... No.....		
110	How many patients were referred to hospitals in the last 12 months?			
111	Which of the following facilities, supplies and materials are available at the health post? *(confirm by observation)*		Yes	No
		Family health card	1	2
		Latrine in the Health post	1	2
		FP counselling card	1	2
		Anti shock garment	1	2

		Functional BP measuring apparatus	1	2
		Functional weighing scale	1	2
		Functional Salter scale	1	2
		Functional thermometer	1	2
		Delivery kit	1	2
		Delivery couch	1	2
		Table and chair	1	2
		Antiseptics, alcohol and Savlon	1	2
		Functional refrigerator	1	2
		Vaccines	1	2
		Partograph/functional fetoscope	1	2
		Log (registration) book	1	2
		Gloves	1	2
		Anti malaria drugs (COARTEM)	1	2
		Pit latrine for solid waste in the health post	1	2
		Moderate analgesics	1	2
		Iron tablets	1	2
		Oxytocin	1	2
		Misoprostol	1	2
		Magnesium sulphate	1	2
		Stationery materials (pens, papers)	1	2

		Educational materials (pamphlets, posters)	1	2
		Contraceptives(pills, depo)	1	2
		Other, specify---------- ---------- ----------		

Thank you

.

ANNEXURE 7 HEALTH WORKERS QUESTIONNAIRE

TITLE: KNOWLEDGEOF, AND CHALLENGES EXPERIENCED BY, HEALTH WORKERS MANAGING MATERNITY PATIENTS IN PHC CLINICS OF YOBE STATE, NIGERIA				
	Name of the local government			
	Name of facility			
	Date of interview			
	Name of the interviewer			
SECTION 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS				
101	Age (in completed years)			
102	Gender	1=MALE 2=FEMALE		
101	Highest educational level			
104	Distance you live from the clinic? (in km)			
105	Years of experience in PHC clinic			
200 SECTION 2: CHALLENGES OF THE HEALTH WORKERS				
201	If you need to refer patient is there transport readily available?	YES..... NO.....		
202	What is the transportation means used to transport referred pregnant/mothers to a health center or hospital?	On foot …… Yes/no Bus ……..... Yes/No Taxi…….....Yes/No Mule or Horse.....Yes/No Ambulance….....Yes/No Other (specify).....		
203	What are the reasons for referral of a pregnant/ mother to health center or hospital *(multiple responses*)	a) Excessive vaginal bleeding	1	2
		b)Foul-smelling discharge	1	2
		c) High fever	1	2
		d)Baby's hand or feet come	1	2

		first		
		e)Baby's in abnormal position	1	2
		f)Prolonged labor (>12 hours)	1	2
		g)Retained placenta	1	2
		h)Rupture uterus	1	2
		i) Prolapsed cord	1	2
		j) Cord around neck	1	2
		k) Convulsions	1	2
		Other,specify_____ _____		
204	Are you able to access a mobile phone?	Yes…… No……		
205	If yes, how does it facilitate your referral process?	Comment please.....		
206	If you need assistance of health professionals Within or from outside the clinic, are they available?	Yes…….. No……..		
207	What categories of health professionals who gave you assistance in the past six months?	Expected responses	Mentioned	Not mentioned
		Doctor (GP)	1	2
		Health officer	1	2
		Midwife	1	2
		Nurse	1	2
		Health extension worker supervisor	1	2
		Gynaecologist or obstetrician	1	2
		Other		

		(specify)…… ……....
208	Would you please tell me the barriers (problems) you have had in the provision of the following services?	Antenatal care..... ..... Deliveries..... ..... Postnatal care..... .....
209	Would you tell me about existing favourable conditions that facilitate your work in the provision of ANC, Deliveries and postnatal?	Antenatal Care..... Deliveries..... Postnatal care.....

SECTION 3: SOME KNOWLEDGE QUESTIONS RELEVANT TO THE NIGERIAN SETTING				
301	Do you use protocols in the care of maternity patients?	Yes…….. No……		
302	If yes, what are the protocols you use? (*confirm by observation)*	Expected responses	YES	NO
		Antenatal protocol		
		Birth protocol		
		Post natal protocol		
		Partograph		
		Diagnosing and treating bleeding		
303	Have you ever receive any training on emergency obstetric care (EOC)?	Yes……. No…….		
304	If yes, what courses were you trained in EOC? *(do not mention the options)*		mentioned	Not mentioned
		Administration of uterotonic drugs	1	2
		Administration of anticonvulsants	1	2
		Manual removal of retained placenta.	1	2
		Removal of retained products of conception	1	2
		Assisted delivery	1	2
		Administration of antibiotics	1	2
305	Do you know how to remove manually retained placenta?	Yes..... No.....		

306	If yes what are the steps/procedure of removing retained placenta?	Comment please..... ....

<table>
<tr><td></td><td></td><td>.....</td></tr>
<tr><td>307</td><td>What do you do when you are faced with the following situations in the facility:
1. Shoulder dystocia
2. Puerperal sepsis
3. Management of third stage of labour
4. Postpartum haemorrhage.</td><td>1. .....
.....
2. .....
.....
3. .....
.....
4. .....
.....
.....</td></tr>
<tr><td>308</td><td>How do you recognize first stage of labour? Ask only.
(do not mention responses)</td><td>
<table>
<tr><td>Expected Reponses</td><td>mentioned</td><td>Not mentioned</td></tr>
<tr><td>Onset of show</td><td>1</td><td>2</td></tr>
<tr><td>Dilatation of cervix</td><td>1</td><td>2</td></tr>
<tr><td>Regular rhythmic uterine contraction</td><td>1</td><td>2</td></tr>
<tr><td>Lower abdominal pain</td><td>1</td><td>2</td></tr>
<tr><td colspan="3">Others(specify).....
.....
.....</td></tr>
</table>
</td></tr>
<tr><td>309</td><td>What are the signs of third stage of labour?</td><td>……
.....
.....</td></tr>
<tr><td>310</td><td>Can you please tell me what could lead to anti partum haemorrhages (APH)?</td><td>
<table>
<tr><td>Expected responses</td><td>Mentioned</td><td>Not mentioned</td></tr>
<tr><td>Abruption placentae</td><td>1</td><td>2</td></tr>
<tr><td>Placenta previa</td><td>1</td><td>2</td></tr>
<tr><td>Tubal pregnancy</td><td>1</td><td>2</td></tr>
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</table>

<table>
<tr><td>311</td><td>Mention 3 factors that could lead to immediate PPH? (do not mention them to the respondent)</td><td>Expected responses</td><td>Mentioned</td><td>Not mentioned</td></tr>
<tr><td></td><td></td><td>Uterine atony</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td>Genital trauma</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td>Retained products of Conception</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td colspan="3">Others.....
.....
.....</td></tr>
<tr><td>312</td><td>Mention the three delays model in maternity that could lead to maternal and foetal death.</td><td colspan="3">1. .....
2. …….
3. …….</td></tr>
<tr><td>313</td><td>Do you know how to manage a placenta praevia?</td><td colspan="3">Yes..... No.....
If yes, how do you manage it?
.....
.....</td></tr>
<tr><td>314</td><td>Do you know what a partograph is?</td><td colspan="3">Yes..... No.....
(If no, skip next question)</td></tr>
<tr><td>315</td><td>What are the observations recorded on partograph?(Multiple answers)</td><td>Expected responses</td><td>Mentioned</td><td>Not Mentioned</td></tr>
<tr><td></td><td></td><td colspan="3">Progress of labour:</td></tr>
<tr><td></td><td></td><td>Cervical dilatation</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td>Descent of the foetal head</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td>Uterine contractions, Frequency per 10 minutes</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td>Duration (shown by differential shading)</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td colspan="3">Foetal condition:</td></tr>
<tr><td></td><td></td><td>Foetal heart rate</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td>Membranes and liquor</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td>Moulding of the foetal skull</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td colspan="3">Maternal condition:</td></tr>
<tr><td></td><td></td><td>Pulse, blood pressure and temperature</td><td>1</td><td>2</td></tr>
</table>

		Urine (volume, protein, acetone	1	2
		Drugs and IV fluids	1	2
		Oxytocin regime	1	2
316	What are the major problems that may arise during labour from slow cervical dilatation?	Prolonged and obstructed labour	1	2
		Uterine rupture	1	2
		Intra uterine foetal death	1	2

400	**SECTION 4: COMPETENCY OF THE HEALTH EXTENSION WORKERS (HEWs) ON ANTENATAL CARE AND ASSISTING BIRTHS.**			
401	When did you receive your pre-service training as a health worker? (year of graduation)	Year [__|__|__|__] Don't know year….0		
402	Have you received any in-service training on antenatal care and delivery? (if more than one, tell us the recent one)	Yes, in the past one year…….....1 Yes, in the past 2 years……......2 Yes, in the past 3 years…….……..3 Yes, before 3 years……..... 4 I didn´t receive…….....……..5 No response…….....0		
403	What do you discuss with pregnant women during ANC visit? ***Do not read responses*** ***ASK: Anything else?*** ***Record all responses***	**Expected responses**	**Mentioned**	**Not Mentioned**
		To get checked up during pregnancy	1	2
		To get TT vaccination	1	2
		To take Iron Folate tablet	1	2
		To take extra amount of	1	2

		food		
		To take rest	1	2
		To avoid heavy work	1	2
		To save money for emergency	1	2
		To arrange for emergency transport	1	2
		To seek advice of Trained Birth Attendant when in need	1	2
		Put the baby to breast immediately after delivery	1	2
		Give colostrums	1	2
		Exclusive breastfeeding	1	2
		Nothing to be applied to the umbilical stump	1	2
		Delay bathing until after 24 hours	1	2
		To sleep under a bed net	1	2
		Counsel and test for HIV	1	2
		Importance of skilled birth attendant	1	2
		Importance of institutional delivery	1	2
		ANC at least 4 visits	1	2
		Expected date of delivery	1	2
		Others(specify)---------- Don't remember----------		

404	During ante natal care visit, what do you as a health worker perform? (Multiple answers) ***Do not read responses***	**Expected responses**	**Mentioned**	**Not Mentioned**
		Measure Weight	1	2
		Measure Height	1	2
		Measure Blood pressure	1	2

	ASK: Anything else?	Test Urine Sample	1	2
	Record all responses	Blood Sample	1	2
		Give drugs for Malaria	1	2
		Provide	1	2
		Provide family	1	2
		Give information	1	2
		Test for HIV/STI	1	2
		Maternal Nutrition	1	2
		Give Iron/Folate	1	2
		Tell about danger		
		Counsel on birth	1	2
		Counsel on neonatal care	1	2
		Tell about neonatal	1	2
		Estimation of gestation age	1	2
		Looking for oedema	1	2
		Measure Fundal height	1	2
		Diagnosing Anaemia	1	2
		Registration	1	2
		Examining the position of the foetus (abdominal examination)	1	2
		Hearing foetal heart beat (fetoscope)	1	2
		Other (Specify)……		

405	During pregnancies, would you tell me the danger signs that need referral or immediate help? (Multiple answers) ***Do not read responses*** ***ASK: Anything else?*** *Record all responses*	**Expected responses**	**Mentioned**	**Not Mentioned**
		Severe headache	1	2
		Visual disturbances	1	2
		Vaginal bleeding	1	2
		Abdominal pain associated with episodes of fainting	1	2
		Severe Vomiting	1	2
		Preterm rupture of membrane	1	2
		Offensive or irritating vaginal discharge	1	2
		Multi-foetal pregnancy	1	2
		Abnormal presentation	1	2
		Suspected oligo or poly hydraminos	1	2
		Intrauterine foetal death	1	2
		No foetal heart beat	1	2
		Low blood pressure	1	2
		Severe oedema	1	2
		Moderate to severe Anaemia	1	2
		Previous operative delivery	1	2
		Other (Specify)_____		
406	Have you made referral of pregnant women to health center or hospital during their prenatal period in the last six months	Yes..... No.....		
407	What are the reasons for the referral? (multiple answers) *Do not read responses.* *Ask: Anything else? Record all the responses.*	Severe headache	1	2
		Visual disturbances	1	2
		Vaginal bleeding	1	2
		Abdominal pain associated with episodes of fainting	1	2
		Severe Vomiting	1	2
		Preterm rupture of membrane	1	2

		Offensive or irritating vaginal discharge	1	2
		High fever	1	2
		Multi-foetal pregnancy	1	2
		Mal presentation	1	2
		Suspected oligo or poly hydraminos	1	2
		Intrauterine foetal death	1	2
		Other(Specify)_____ _		
410	Would you tell me the activities that you perform when assisting births?	…… …… ……		
411	What are the complications in a woman during childbirth needing medical treatment? ***Do not read responses*** ***ASK: Anything else?*** ***Record all responses***	**Expected responses**	**Mentioned**	**Not Mentioned**
		Excessive vaginal bleeding	1	2
		Foul-smelling discharge	1	2
		High fever	1	2
		Baby's hand or feet come first	1	2
		Baby's in abnormal position	1	2
		Prolonged labour (>12 hours)	1	2
		Retained placenta	1	2
		Ruptured uterus	1	2
		Prolapsed cord	1	2
		Cord around neck	1	2
		Convulsion	1	2
		Other, (specify) ……		

		…… …… ……..... …… …….
412	Have you assisted pregnant women to give a birth in the past six months?	Yes…….. No……
413	If yes, how many pregnant women did you assist for birth in the past six months? (Confirm by observing records)	

Thanks for your cooperation

ANNEXURE 8 ADAPTED QUESTIONNAIRE

(See Annexure 11 for the permission to adapt the Questionnaire and use in my study)

Questionnaire Number 1 (final version)

For Health extension Workers interview, Are Specially trained community health workers capable of preventing maternal and child deaths? Northern Ethiopia.

Consent

READ THE FOLLOWING CONSENT FORM

Hello. My name is _____. I am here to investigate the availability of facilities and competencies for HEWs to provide care to pregnant women. The findings of this investigation will assist the government and its partners in knowing more about HEWs in assisting births.

Now I will read a statement explaining the survey.

All kebeles including yours is selected purposefully for this study. I will be asking you some questions about the profile of the kebele, yourself, trainings you have received, availability of facilities and your interaction with skilled birth attendants at health center.

The information you provide us will be used by the RHB and organizations supporting services in your facility, for planning service improvements or further studies of services. The information you share may also be provided to researchers for analyses, however, any reports that use your data will only present information in aggregate form so that neither you nor your facility can be identified. We will also inform you regarding the survey results.

You may refuse to answer any question or choose to stop the interview at any time. Do you have any questions about the survey? Do I have your agreement to proceed?

Interviewer's signature _____ Date _____

Signature of interviewer indicates informed consent was provided.

Section 1: Identification			
Identification			
	Serial number (code)	[__|__|__|__|	
101	Area Identification	A. Woreda (District)_____ B. Kebelle/Tabia _____	
102	Settings (type of kebele)	Urban ……1 Rural ----------2	
104	How many HEWs are posted in the kebele?	[_____|_____|	
If there are no HEWs deployed in this kebele then collect the rest of the section 1 information from the kebele chairperson or any kebele cabinet members regarding the kebele: (if HEW present, then obtain the information from her after taking consent)			
T1	Time at beginning of interview	____:____	
104	Population of the kebele	[_____|_____| _____|	
105	Number of households	[_____|_____| _____|	
106	Number of subkebles /kushet	[_____|_____|	
107	What are the public health facilities present in this kebele?	Yes No Health post(HP) . . . . . 1 2 Health center (HC) . . . . . 1 2 Health station developing HC . . . . . 1 2 Hospital…….. . . . . 1 2	
108	If there is a health post, when did the health post start providing service?	[_____|_____| _____| _____| |YYYY	
109	Does the kebele have access to transportation?	Yes…….1 No…….2	

	1		
110	Does the kebele have access to safe water supply?	Yes ……1 No……..2	
111	Does the kebele have access to electricity?	Yes……..1 No…….2	
112	Does the kebele have a mobile net work connection? (Confirm by checking at the center of the kebele)	Yes, confirmed …….1 Yes, but not confirmed……..2 No…….3	

Section 2: Back ground of HEWs			
201	How old were you on your last birthday?	Age in years…….. [___|___]	
202	Are you currently married or living together with a man as if married?	Yes, currently married…… 1 Yes, living with a man . . . . . ….. 2 No, not in union 3	→204
203	Is your husband or partner happy for you working as a health extension worker?	Yes…….1 No…….2	
204	Do you have children?	Yes, I do have……..1 No I don´t have…….2	→206
205	How many children do you have?	[___|___]	
206	Are you currently pregnant?	Yes…….1 No…….2 I am not sure….3	
207	When did you start working here (in this kebele)?	Year [__|__|__|__] Don't Know Year….9998	
208	Currently where do you live?	In the kushet where the HP is located…….1 Outside the kushet where the HP is located..…..2	

Section 3: availability of facilities/ logistics at health posts or with HEWs			
301	Name of the kebele where the health post is located.	_____	
302	Which of the following facilities, supplies and materials are available at the health post? (confirm by observation)	Yes No a) Family health card, vaccination card or immunization diploma…….1 2 b) Latrine in the Health post ……..1 2 c) Water sink for hand washing in the latrine……1 2 d) Vaccine Carrier with at least 4 Ice packs ……..1 2 e) FP counseling card…….....1 2 f) Adequate syringes and needles……...1 2 g) Functional blood pressure measuring apparatus.1 2 h) Functional weighing scale ……...1 2 i) Functional Salter scale…… 1 2 j) Growth monitoring chart……1 2 k) Functional thermometer…….. 1 2 l) Delivery kit…….1 2 m) First-aid kit…….1 2 n) ORT corner (Measuring Jar, cup, Teaspoon, ORS).…1 2 o) Delivery couch …….1 2 p) Table and chair …….1 2 q)Antiseptics, alcohol and savlon …….1 2 r) Functional refrigerator ……1 2 s) Vaccines ……... 1 2 t) Cold box ……..….1 2 u) Parthograph ……..….1 2	

		v) functional fetoscope ……..….1	2	
		w) log (registration) book ……..….1	2	
		x) gloves ……..….1	2	
		y) anti malaria drugs (COARTEM) ……..….1	2	
		z) Pit latrine for solid waste in the health post ….…1	2	
		a2) Vitamin A ….…1	2	
		b2) Iron tablets ….…1	2	
		c2) Oxytocin ….…1	2	
		d2) Misopristol ….…1	2	
		e2) Reading books for ANC, Birth and PNC….…1	2	
		f2) Functional microphone for health education ….…1	2	
		g2) Stationary materials (pen, paper) ….…1	2	
		h2) educational materials (pamphlets, poster) ….…1	2	
		g2) Contraceptives(pills, depo) ….…1	2	
		h2) electricity ….…1	2	
		i2) Computer ….…1	2	
		j2) safe water supply ….…1	2	
		k2) fixed telephone ….…1	2	
		Other, specify_____		

303	Do you use protocols when providing care to pregnant mothers and children?	Yes……1 No…..2	 →305
304	What protocols do you use? (confirm by observing the protocols)	Yes No a) Antenatal protocol…….1 2 b)Birth protocol……..1 2 c) Postnatal protocol……1 2 d) IMCI protocol ……..1 2 e) Partograph…….....1 2 f) Diagnosing and treating malaria……..….1 2 g) Diagnosing and treating PIH……1 2 h) Diagnosing and treating hemorrhage……..1 2 i) Diagnosing and treating TB. ……..1 2 Other, specify_____	
305	Do you record all pregnant women in your kebele?	Yes all……1 Yes but not all…..2 Not at all….3	 →401 →401
306	Where do you record pregnant mothers? (confirm by observation)	Log book……..1 Exercise book……2	

Section 4: HEWs and use of mobile phones			
401	Do you have mobile phone?	Other (Specify) _____ Yes……1	
307	How many pregnant women were in the	No…..2 [_____|_____|_____|	→408
402	What type and model previous year? mobile phone do you		
308	Do you have a regular have? (Specify) registration of basic	Yes all……1	
403	Have you ever text a demographic data (vital message to someone registration births and using a mobile phone? deaths)	Yes……1 Yes but not all…..2 No…..2 Not at all….3	

404	How frequently do you send text messages in your daily life?	Always……1 Usually….2 often…..3 rarely…..4 Not at all….5	
405	What language do you usually use for texting a message?	English……..1 Tigrigna with English Alphabets…….2 Tigrigna with Tigrigna alphabets……3 Amharic with English Alphabet…….4 Amharic with Amharic Alphabet…….5 Other (specify)_____	
406	Have you ever used your mobile phones for facilitating work (referral)?	Yes……1 No…..2	
407	Did you ever give a voice call for skilled birth attendants seeking help?	Yes……1 No…..2	
408	Did you ever write a text message for skilled birth attendants seeking help?	Yes……1 No…..2	
409	Did you take basic computer skill training course?	Yes……1 No…..2	

Section 5: Competencies of HEWs on Antenatal care and assisting births			
501	When did you receive the pre-service training for HEWs? (year of graduation)	Year [__|__|__|__] Don't Know Year….9998	
502	Have you received any in-service training on antenatal care? (if more than one, tell us the recent one)	Yes, in the past one year……1 Yes, in the past 2 years. . . . . 2 Yes, in the past 3 years. . . . . 3 Yes, before 3 years. . . . . 4 I didn´t receive . . . . . 5 No response. 98	
503	What do you discuss with pregnant women during ANC visit? ***Do not read responses*** ***ASK: Anything else?*** ***Record all responses***	(M = mentioned, NM= not mentioned) *M* *NM* a)To get checked up during pregnancy…...1 2 b)To get TT vaccination .....1 2 c)Take Iron Folate tablet .....1 2 d)To take extra amount of food .....1 2 e)To take rest .....1 2 f)To avoid heavy work .....1 2 g)To seek care if there is a health problem...1 2 h)To save money for emergency .....1 2 i)To arrange for emergency transport …...1 2 j)To ensure a Trained Birth Attendant …1 2 k)Put the baby to breast immediately after delivery…..1 2 l)Give colostrums……..1 2 m)No pre-lacteals……..……1 2	

		n)Exclusive breastfeeding .....1 2 o)LAM.....1 2 p) Nothing to be applied to the umbilical stump……1 2 q)Delay bathing until after 24 hours…..1 2 r)For you, to sleep under a bed net…….1 2 s)Counsel and test for HIV…….1 2 t) importance of skilled birth attendant…….1 2 u)importance of institutional delivery …….1 2 v)ANC at least 4 visits …….1 2 w)expected date of delivery …….1 2 Other (specify)_____ _____ _____ _____ Don't remember…..……....9	
504	During ante natal care visit, what do you perform? ***Do not read responses*** ***ASK: Anything else?*** ***Record all responses***	(M = mentioned, NM= not mentioned)) M NM a) Measure Weight ……1 2 b) Measure Height ……..…..……1 2 c) Measure Blood pressure …… 1 2 d) Take Urine Sample ……..……..1 2 e) Blood Sample Given……1 2 f) Give drugs for Malaria……..1 2 g) provide Breastfeeding Information…….1 2 h) provide Family Planning Information…….1 2	

		i) Give Information about HIV/AIDS.. 1 2 j) Test for HIV/ STI……..…..……1 2 k) Maternal Nutrition Information……..….1 2 l) Give Iron/Folate Supplementation….1 2 m) tell about danger signs during pregnancy .1 2 n) counsel on birth preparedness……...1 2 o) counsel on neonatal care……..…….1 2 p) tell about neonatal complications…….1 2 q) estimation of gestation age…….1 2 r) looking for edema…….1 2 s) Measure fundal height …….1 2 t) Diagnosing Anemia…….1 2 u) registration …….1 2 v) examining the position of the fetus (abdominal examination).1 2 p) Hearing fetal heart beat (fetoscope)…….1 2 other (Specify) _____ _____ _____ _____ _____	
505	During pregnancies, would you tell me the danger signs that need referral or immediate help? ***Do not read responses*** ***ASK: Anything else?*** *Record all responses*	(M = mentioned, NM= not mentioned) *M* *NM* a)Sever headache ……1 2 b)visual disturbances .....1 2 c)Epigastric pain 1 2	

		d)Vaginal bleeding .....1 2 e)Abdominal pain associated with episodes of fainting .....1 2 f)Sever Vomiting .....1 2 g)Preterm rupture of membrane ...1 2 h)Fever .....1 2 i)Offensive or irritating vaginal discharge …...1 2 j)High fever …1 2 k)Multi-fetal pregnancy…..1 2 l)mal presentation ……..1 2 m)Suspected oligo or poly hydraminos……..……1 2 n)Intrauterine fetal death .....1 2 o)No fetal heart beat .....1 2 p)low blood pressure .....1 2 q)edema .....1 2 n)Anemia .....1 2 n)Malaria .....1 2 o) Previous operative delivery .....1 2 other (Specify)_____ _____ _____	
506	Have you made a referral of pregnant women to health center or hospital during the prenatal period of a pregnant women in the last six months	Yes to Health Center…….1 Yes to Hospital…….2 No…….2 I don´t remember …….8	 →508 →508

507	What were the reasons for referral? ***Do not read responses*** ***ASK: Anything else?*** *Record all responses*	(M = mentioned, NM= not mentioned) *M* *NM* a)Sever headache …...1 2 b)visual disturbances .....1 2 c)Epigastric pain .....1 2 d)Vaginal bleeding .....1 2 e)Abdominal pain associated with episodes of fainting .....1 2 f)Sever Vomiting .....1 2 g)Preterm rupture of membrane ...1 2 h)Fever .....1 2 i)Offensive or irritating vaginal discharge …...1 2 j)High fever …1 2 k)Multi-fetal pregnancy…..1 2 l)mal presentation ……..1 2 m)Suspected oligo or poly hydraminos……..……1 2 n)Intrauterine fetal death .....1 2 o)Other (Specify)_____ _____ _____ _____	
508	Have you received any in-service training on clean and safe delivery (birth)?	Yes, in the past one year……1 Yes, in the past 2 years. . . . . 2 Yes, in the past 3 years. 3	

	(if more than once would you please tell us the recent one?)	Yes, before 3 years. . . . . 4 I didn´t receive . . . . . 4 No response. 98	
509	Would you tell me the activities that you perform when assisting births?	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	
510	What are the complications in a woman during childbirth needing medical treatment? ***Do not read responses*** ***ASK: Anything else?*** ***Record all responses***	M = mentioned, NM= not mentioned) M NM a)Excessive vaginal bleeding……..…..1 2 b)Foul-smelling discharge……..……..…1 2 c) High fever..……..…1 2 c)Baby's hand or feet come first ……...1 2 d)Baby's in abnormal position…..……..…1 2 e)Prolonged labor (>12 hours)..……..…1 2 f)Retained placenta..……..…1 2 g)Rupture uterus..……..…1 2 h)Prolapsed cord…….……..…1 2 i)Cord around neck…….……..…1 2 j)Convulsions…..…….……..…1 2	

		Other, specify_____ _____ _____ _____ _____ _____	
511	Have you assisted pregnant women to give a birth in the past six months?	Yes…….1 No…….2	→514
512	How many pregnant women did you assist for birth in the past six months? (Confirm by observing records)	|__|__|	
513	Where did you assist the last birth you assist?	Health post …….1 At home…….2 By taking her to a health center or hospital…….3 Other place 4	
514	Have you ever made a referral of pregnant women to health center or hospital during labor or birth time of a pregnant woman in the past six months?	Yes to health center …….1 Yes to hospital……..2 No…….3 I don´t remember …….8	→517 →517
515	What were the reasons for referral? ***Do not read responses*** ***ASK: Anything else?*** *Record all responses*	M = mentioned, NM= not mentioned) M NM a)Excessive vaginal bleeding……..…..1 2 b)Foul-smelling discharge……..……..…1 2	

		c) High fever..……..…1 2 c)Baby's hand or feet come first ……...1 2 d)Baby's in abnormal position…..……..…1 2 e)Prolonged labor (>12 hours)..……..…1 2 f)Retained placenta..……..…1 2 g)Rupture uterus..……..…1 2 h)Prolapsed cord…….……..…1 2 i)Cord around neck…….……..…1 2 j)Convulsions…..…….……..…1 2 Other, specify_____ _____ _____ _____ _____ _____	
516	What was the transportation means used to transport the referred mother to health center or hospital?	On foot …….1 Bus …….2 Taxi…….3 Mules or Horse….4 Ambulance……..5 Other (specify)_____	
517	Have you received help or assistant related to ANC, birth and postnatal care from health professionals working in a health center or hospital in your district in the past six months?	Yes…….1 No…….2	→519

518	What was the type of professional of the health professional who gave you assistance in the past six months?	M = mentioned, NM= not mentioned) M NM a)Doctor (GP)……..…..1 2 b)Health officer……..……..…1 2 c) Midwife..……..…1 2 c)Nurse ……...1 2 d)Health extension worker supervisor…….1 2 e) Woreda health office manager..……..…1 2 f) Gynecologist or obstetrician ……1 2 Other (specify)_____ _____ _____	
519	Would you please tell us the barriers (problems) you have in provision of ANC and delivery service for pregnant women in your catchment area?		

Thank you so much!!!

ANNEXURE 9. HEALTH WORKER'S CONSENT FORM

KNOWLEDGE OF, AND CHALLENGES EXPERIENCED BY HEALTH WORKERS IN MANAGING MATERNITY PATIENTS IN PHC CLINICS OF YOBE STATE NIGERIA

I hereby confirm that I have been satisfactorily informed by the researcher, Abdullahi Ali Danchua, about the nature of his study entitled "*Knowledge of, and challenges experienced by health workers in managing maternity patients in PHC clinics of Yobe State Nigeria."*

I have received, read and understood the written information sheet regarding the study.

I am also aware that the results of the study, including personal details and my level of knowledge and opinions of the challenges in my working environment will be anonymously processed into a study report and all information will remain confidential and there will be no penalty or loss of benefits resulting from my responses or participation.

I may, at any stage, without prejudice, withdraw consent and participation in the study and there will be no penalty or loss of benefits to my withdrawal.

I have had sufficient opportunity to ask questions and, of my own free will, declare myself prepared to participate in the study.

Participant:

…… ……

Signature Date and time

ANNEXURE 10: FACILITY MANAGER'S CONSENT FORM

KNOWLEDGE OF, AND CHALLENGES EXPERIENCED BY HEALTH WORKERS IN MANAGING MATERNITY PATIENTS IN PRIMARY HEALTH CARE CLINICS OF YOBE STATE NIGERIA

I hereby confirm that I have been adequately informed by the researcher, Abdullahi Ali Danchua, about the nature of his study entitled *"Knowledge of, and challenges experienced by health workers in managing maternity patients in PHC clinics of Yobe State, Nigeria."*

I have received, read and understood the written information sheet regarding the study.

I am aware that the results of the study, including personal details and the answers I give regarding the resources at the clinic will be anonymously processed into a study report and all information will remain confidential and there will be no penalty or loss of benefits resulting from my responses or participation.

I may, at any stage, without prejudice, withdraw consent and participation in the study and there will be no penalty or loss of benefits to my withdrawal.

I have had sufficient opportunity to ask questions and, of my own free will, declare myself prepared to participate in the study.

Participant:

…… ……

Signature Date and time

Annexure 11: Request and permission letter to adapt instrument

Dear Abdullahi,

Good to hear from you and about your study. Enclosed you will find the questionnaire we used for our study. I hope you will find it helpful.

Best of luck with your study!

Recent Publications:
http://www.ncbi.nlm.nih.gov/pubmed/23171076

http://www.ncbi.nlm.nih.gov/pubmed/23043288

Araya A Medhanyie (B.Sc., MPH)

Lecturer : Department of Public Health Mekelle University, Ethiopia

PhD Candidate :University of Alcala de Henares, Madrid, Spain and
Maastricht University, Maastricht , The Netherlands
Alternative email: araya.medhanyie@gmail.com, Cell phone number 00251912420976

--- On **Thu, 4/25/13, Abdullahi Ali Danchua <*aadanchua@yahoo.com*>** wrote:

From: Abdullahi Ali Danchua <aadanchua@yahoo.com>
Subject: request for a validated tool
To: "arayaabrha@yahoo.com" <arayaabrha@yahoo.com>
Date: Thursday, April 25, 2013, 5:24 AM

Dear Araya Medhanyie;

I am Abdullahi Ali, a master's student with medical school of University of the Witwatersrand, Johannesburg, South Africa. I read your published research work on "knowledge and performance of the Ethiopian Health extension workers on antenatal and delivery care" This has a lot of things in common with my study (knowledge of, and

challenges experience by health workers managing maternity patients in PHC clinics of Yobe state, Nigeria).

Sir, I will be very glad if I could share my study with you by allowing me to have your instrument (questionnaire) which is relevant to my study.

Thank you in anticipation of your favourable response please.

Yours faithfully
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