SCHOOL OF MEDICINE

DEPARTMENT OF COMMUNITY MEDICINE

THE IMPACT OF USING A MODIFIED MINISTRY OF HEALTH TRADITIONAL BIRTH ATTENDANT TRAINING CURRICULUM ON THE INFECTION PREVENTION KNOWLEDGE, PRACTICE AND ATTITUDE OF TRAINED TRADITIONAL BIRTH ATTENDANTS IN CHONGWE DISTRICT OF ZAMBIA.

BY

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A Thesis Submitted to the University of Zambia in Partial Fulfillment of the requirements for the Degree of Doctor of Philosophy in Public Health

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DECLARATION

I, Dorothy Osigwe Chanda, declare that this Thesis represents my own work and that all the sources I have quoted have been indicated and acknowledged by means of complete references. I, further, declare that this Thesis has not been submitted for a Degree, Diploma or other qualifications at this or another University. It has been prepared in accordance with the guidelines for the degree of Doctor of Philosophy in Public Health of the University of Zambia.

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CERTIFICATE OF APPROVAL

The University of Zambia approves this Thesis on The Impact of A Modified Traditional Birth Attendant Training Curriculum on the Infection Prevention Knowledge, Practice and Attitude of Traditional Birth Attendants in Chongwe District in fulfillment for the requirement for the award of degree of Doctor of Philosophy in Public Health.

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DEDICATION

I dedicate this study to the Almighty God whose presence I felt throughout this hard journey from birth till now. As long as I continue, our Lord Jesus Christ is the moving spirit of my life and family

I, dedicate this study to my dear husband, Prof. Mutale William Chanda, the former Vice Chancellor of the University of Zambia, whose timely support has always been a source of inspiration.

To my late parents who shared my childhood experiences which formed the backbone of the burning passion for this study.

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ART	-	Anti-retroviral Therapy
CDC	-	Center for Disease Control
CDKs	-	Clean Delivery Kits
CHN	-	Community Health Nurse
CHWs	-	Community Health Workers
CIDRZ	-	Center for Infectious Diseases in Zambia
C/S	-	Caesarean Section
DHMT	-	District Health Management Team
EDD	-	Expected Date of Delivery
HMIS	-	Health Management Information System
HPV	-	Human Papiloma Virus
IEC	-	Information Education and communication
IMCI	-	Integrated Management of Childhood Illness
IP	-	Infection Prevention
IPT	-	Intermittent Presumptive Treatment
JHPIEGO	-	John Hopkins Information and Education on Ggynaecology and Obstetrics
MDGs	-	Milenium Development Goals
MoH	-	Ministry of Health
NFNC	-	National Food and Nutrition commission
NHC	-	Neighbourhood Health Committee
ORS	-	Oral Rehydration Solution
PAC	-	Post Abortal Care
PEP	-	Post Exposure Prophylaxis
PHC	-	Primary Health Care
PLWHA	-	People Living With HIV/AIDS
PMTCT	-	Prevention of Mother–to Child-Transmission (of HIV/AIDS virus).
PNC	-	Post Natal Clinic
PPE	-	Personal Protective Equipment
PPH	-	Post Partum Haemorrhage
PTB	-	Pulmonary Tuberculosis

SBA	-	Skilled Birth Attendants
SMAG	-	Safe Motherhood Action Group
STIs	-	Sexually Transmitted Infections
tTBAs	-	Trained Traditional Birth Attendants
UNFPA	-	United Nations Family Planning Agency
UNICEF	-	United Nations Information and Child Education Fund.
VCT	-	Voluntary Counseling and Testing
VVF	-	Vesico-Vaginal Fistula
WHO	-	World Health Organisation
WLSA	-	Women in Law, South Africa.
WVI	-	World Vision International
ZAMFOHR	-	Zambia Forum for Health Research
ZFPP	-	Zonal Focal Point Person
ZIHP	-	Zambia Integrated Health Programme

ABSTRACT

The Impact of Using a Modified Ministry of Health Traditional Birth Attendant Training Curriculum on the Infection Prevention Knowledge, Practice and Attitude of Trained Traditional Birth Attendants in Chongwe District of Zambia.

Introduction

Poor infection prevention practices have been reported among Traditional Birth Attendants (TBAs) in Lusaka province in Zambia. High maternal and infant infection rates of 20% and 27.3%, respectively, among deliveries by TBAs were reported in Chongwe. Meanwhile, in Mpanshya, maternal and infant infection rates were 21% and 27%, respectively. These infection rates can be reduced if TBAs are well-trained. The objectives of the study were to determine the impact of a modified Ministry of Health TBAs training curriculum on the infection prevention knowledge, practice and attitude of TBAs on the infant and maternal infection rates before and after the intervention in Chongwe District.

Material and Methods

The study design was a quasi-experimental study. Both qualitative and quantitative data were collected. Focus group discussions were used to collect qualitative data, while a semi- structured interview schedule was used to collect quantitative data. The study was conducted between 31st January 2008 and 6th March 2009. Data analyses included running frequencies, determining associations using the Pearson's Chi-square, and conducting a multivariate logistic regression analysis. The level of statistical significance was set at 5%.

Results

Totals of 238 study participants at baseline and 207 during the intervention phases were enrolled into the study. Results showed that approximately 98 (41.1%) of the study participants were aged 30-43 years. The study showed that 36 (30.3%) and 66 (55.5%) of the participants in Mpanshya and Chongwe, respectively, attained secondary education during baseline ($P<0.001$), while 33 (33%) in Chongwe compared to 19 (17.8%) in Mpanshya attained secondary education during the training phase ($p=0.032$).

At pre-course, a higher proportion of participants 38 (31.9%) in Chongwe had inadequate knowledge than 2 (1.7%) in Mpanshya ($p=0.001$). However, after the post course, a higher proportion of participants in Chongwe 76 (76.0%) had excellent (62-82 correct responses) infection prevention knowledge compared to 0 (0%) in Mpanshya ($p=0.001$).

At pre-course, a higher proportion of participants in Mpanshya had satisfactory practice than in Chongwe ($p=0.017$). However, after the post course, a higher proportion 32 (32%) of participants in Chongwe had significantly ($p=0.001$) excellent

practice (49-59 correct responses) more than the participants in Mpanshya where no participants had excellent practice.

At both pre and post course all the study participants had good attitudes (measured by scoring 4-8 correct responses) towards the care of the mothers and the babies and after the intervention only 1 (0.9%) of participants in Mpanshya had poor attitude while the rest in Mpanshya and all of them in Chongwe had good attitude.

During pre-intervention, 32 (26.7%) of the 120 babies in Mpanshya had infections compared to 18 (27.3%) of the 66 babies in Chongwe. However, during the monitoring and evaluation phase, 2 (1.5%) of the 131 babies in Mpanshya had infections ($p<0.001$), while no infections were recorded among 147 babies in Chongwe ($p<0.001$).

About 1 in 5 mothers in both sites had infections before the intervention 25 (20.8%) of 120 mothers in Mpanshya, and 13 (19.7%) of 66 mothers in Chongwe). However, during the monitoring and evaluation phase, the maternal infection rates reduced to 23 (17.5%) of 131 mothers in Mpanshya ($p=0.618$), and to 9 (6.1%) of 147 mothers in Chongwe ($p=0.006$).

Conclusion:

The increase in infection prevention knowledge, good practices and attitudes among the intervention TBAs may have been due to the impact of the training intervention. The infant infection rates reduced in both sites during the study. While no significant change in rates of maternal infection before and after the intervention was observed in Mpanshya, there was a significant reduction in maternal infection rate in Chongwe. This may have been due to the impact of training the intervention TBAs using the modified MoH TBA training curriculum. Although training the intervention TBAs using the modified MoH TBA training curriculum reduced maternal and infant morbidity rates in Chongwe district, it remains to be seen how it would perform in other settings.

CHAPTER ONE

1.0. BACKGROUND INFORMATION

1.1. Introduction

The chapter describes the issue of infections during pregnancy and subsequent child birth, in women delivered by traditional birth attendants, are very common occurrences in rural communities. They have profound negative impact in reproductive health and are associated with poor quality of life in extreme cases for both mothers and babies. The chapter gives an overview of Traditional Birth Attendants in Zambia, the statement of the problem of infection prevention and the factors that are associated with the problem under study. It also describes what has been done before. The chapter goes on to justify why the study needs to be undertaken. It also stipulates the objectives, hypothesis, the research question and the study variables. The researcher detailed what was done to solve the problem of infection prevention in pregnant women and infants in Chongwe District of Zambia.

1.1.1. The State of Maternal and Neonatal Mortality Rates in Zambia

Maternal and infant morbidity and mortality rates have been very high since Zambia's Independence in 1964. ZDHS, (2007) put the neonatal mortality rate at 34/1000 pregnancies thus showing a downward trend compared to ZDHS 1992 which put it at 43/1000 pregnancies. Ngoma et al,(2007) stated that the second largest burden of neonatal mortality is found in sub-Saharan Africa due to HIV/AIDS, extreme poverty and weak health systems. Maternal mortality ratio was 649/100,000 live births in 1996, 729/100,000 live births in 2001-2002 and 591/100,000 live births at the last survey, (ZDHS, 2007). Despite the reduction in maternal mortality ratio, pregnant women continue to be at risk due to medical, geographical and cultural factors. Therefore there is an urgent need to improve the maternal health services in rural settings

1.1.2. Government's Efforts to Improve Maternal Health Services in the Country.

The Government Republic of Zambia has been trying to tackle this problem through using the primary health care approach in-order to achieve the 4th and 5th millennium development goals. Unfortunately the impact of HIV/AIDS and malaria since 1984 has depleted the primary health care functionalities. The required amount of money needed for primary health care was diverted towards HIV/AIDS and malaria thus causing serious damage to health service delivery in Zambia. According to the National Health Strategic Plan of 2011, the human resource stands at 55 percent from 48 percent in 2010. This demonstrates a critical shortage of human resources in Zambia. The government has responded to this need by starting new medical colleges while opening other health institutions for training and increasing student intake. It is hoped that this effort will result in increased output of qualified nursing professionals with Registered Nursing and Midwifery Degree certificates.

Another attempt targeted the use of trained Traditional Birth Attendants (TBAs) within the Safe Motherhood Action Group (SMAG) in the provision of maternal health care services in medically and geographically disadvantaged and hard-to–reach rural communities. This problem is countrywide. Care was taken to collect information in areas around the city of Lusaka. Reports showed that Chongwe District was using trained Traditional Birth Attendants in the delivery of health services for reducing maternal and infant morbidity rates during pregnancy, labour and delivery and the puerperal period. This prompted the researcher to carry out this study in Chongwe because it was closer to Lusaka. Another reason was that the information needed for this study was very easy to obtain. In-order to sustain the service delivery, the TBAs were enrolled into the study and were trained to improve their infection and disease prevention knowledge, practices and attitude.

The TBA Training curriculum that was in use was written in Kabwe by a group of medical doctors from the Ministry of Health and Professor Kumar Sridutt . Baboo of the School of Medicine of the University of Zambia in 1977. This first curriculum was prepared to give the TBAs the minimum skills in conducting safe deliveries.

1.1.3. Effect of TBAs Poor Infection Prevention Knowledge and Practice

Currently, the main area of concern was in the application of infection prevention measures in the TBA practices. For many years now, the Traditional Birth Attendants inadequate infection and disease prevention knowledge and practice resulted in high infant and maternal morbidity rates. This showed that TBAS were inadequately prepared in infection prevention modalities. This scenario has been a source of public health concern in Zambia and the whole of Africa.

This concern prompted a preliminary visit to Chongwe in-order to check on the provision of safe motherhood initiatives. Chongwe has a diversity of developmental activities. Therefore, complementing these development efforts with a more effective better trained corps of TBAs in infection prevention measures would increase the overall human development indicators of the Chongwe community. This would help them conduct safe and clean deliveries, thus contributing to the achievement of the 4th and 5th Millennium Development Goals. Leedam, (1985) stated that there has been a controversy on the recognition, non-recognition, abolishing completely or continuing training of the traditional birth attendants in low-income countries. The TBA shares the same socio-cultural and traditional norms of her clients who hold her in high esteem. Her weakness lies in the indigenous practices which may infect her clients- the mother and the baby. Another controversial area is that she is unable to attend effectively to a haemorrhaging mother, a mother experiencing obstructed labour or eclampsia during the birthing process. To register the effectiveness of the TBA in these areas requires sound logistical support from the District Health Management Team and health care system as a whole. Between March and October, 2006, the maternal mortality rate was 200/100,000 in Chongwe district. This is surprisingly lower than the national rate of 591/100,000 live births (DHS, 2007).

This study focused on carrying out a quasi –experimental study during which the intervention TBAs were trained using the modified training curriculum and the control TBAs were trained using the old MoH TBA training curriculum. This study would find out if there are any reductions in the maternal and infant morbidity rates between the two groups of traditional birth attendants in Chongwe district.

1.1.4. Overview of Traditional Birth Attendants in Zambia

The Traditional Birth Attendants (TBAs) perform most deliveries in the rural and peri-urban Zambia due to the critical shortage of skilled attendants

WHO, (1992) stated that 60-80 percent of births which occur in developing countries are attended by untrained persons using unclean equipment and in unclean environment. Hence infections account for 30 percent of newborn deaths as Table 1.1 illustrates. Statistics show that in Zambia more than 50 percent of deliveries are conducted by the TBAs in rural and peri-urban settings of Zambia. (Maimbolwa, 1998).

1.1.5. Who is a TBA?

The Traditional Birth Attendant is a woman who assists in the delivery of midwifery services in our communities. They form the first contact with mothers who deliver in geographically disadvantaged villages. They deliver women in labour. Usually they are called upon in emergency situations like 'ba m-a-y-o, njitileniko bana chimbusa pantu, ifimo lyabuka'. ('Mother, please call me the traditional birth attendant because I'm going into labour now.'). The above statement shows that these TBAs work under crisis situations and so are unable to identify 'danger signs' in their clients before hand.

A TBA is held in high esteem. Her services are acceptable and accessible. She does not object being called upon at anytime and does not mind being paid in kind. She shares the same traditions, socio-cultural values and norms of the community with her clientele. Traditionally, conducting a delivery is an art, which is the responsibility of the woman regardless of her age, as long as her community chooses her. Most of the deliveries are conducted among family members. So it can be said that the TBA is a cultural phenomenon. However, this responsibility now extends beyond the family and village circles to incorporate the health care system. The mission statement of the ministry of Health is to 'provide cost-effective quality health care services as close to the family as possible in-order to ensure equity of access in health service delivery and contribute to the human and socio-economic development of the nation (Lusaka-Times, 2010). This incorporation requires that the Ministry of Health trains the TBAs using a modified training curriculum with infection prevention measures mainstreamed into it. This would ensure that the trained traditional birth attendants

conduct safe and clean deliveries without infecting their clients in rural settings. At the same time, this move would fit in with the Mission Statement of THPAZ which is to 'promote the operations of its members by encouraging specialization, research, training, information sharing and literacy, and will lobby the government to formulate suitable policies and legislation.' (Silupumbwe, 2006).

1.1.6. History of Training the TBAs in Zambia

The training of TBAs started in 1973 in Luapula province. The Classified Daily Employees who were cleaning the wards or health centers were chosen for this training. Luapula remains faithful to the utilisation of tTBAs. CBoH, (2002) stated that Luapula province uses the tTBAs most (12 percent in 2002 and rose to 20.2 percent by 2002) followed by Northern province with 11 percent and this number rose to 14.8 percent by 2002). Their training was made to suit local conditions. The training of TBAs was spread to the rest of the provinces in 1975. By 1981, 588 women had been trained in collaboration with United Nations International Children's Emergency Fund (UNICEF). This helped in bringing reproductive health services 'as close to the people as possible.' It was noted that they were not able to identify some obstetric emergencies, and delays in referring their clients to the next level of care. There was also poor supervision by the midwives in the health centers. There were no policy guidelines to guide their practice.

In 1976, the above scenario led to the suspension of the TBA Training programme so as to develop policy guidelines for their practice. There was need to develop criteria for selecting women to be trained as TBAs. This backing gave impetus to the TBAs to resume their practice in 1977. In the same year an evaluation by UNICEF showed that the tTBAs were neither supervised nor supported by the communities. The Third National Development Plan of 1976-1993 supported the idea of training the TBAs and so the TBA training was intensified.

In 1985, the TBA programme was transferred to the Maternal Child Health /Family Planning (MCH/FP) Unit. The author explained that the Unit organised and trained some TBAs though the unit did not keep the records of the numbers trained (Maimbolwa, 1998). The trained TBAs (tTBAs) were expected to go back and participate in the Community Safe Motherhood Services. The National plan left communities to decide on how to remunerate the TBAs (Maimbolwa, 1998).

In 1992 the MOH revamped the TBA training programme during the Health Reforms era in-order to strengthen the Community–based Safe Motherhood Services**.**

In 1996**,** UNICEF and the MCH/FP once again suspended the programme in-order to facilitate an evaluation. The evaluation revealed that in Zambia, more than half of Zambian women (53%) deliver at home, of these 5.4 percent are delivered by tTBAs, female relatives deliver 41 percent, while 6.6 percent deliver themselves (Maimbolwa, 1998).

The National Reproductive Health Policy (2004) noted that a few tTBAs remained active. This meant that untrained TBAs conducted the majority of the deliveries by trial and error. Hence it can be said that the practice of the TBAs has been marked with incompetence despite being trained using the old MoH TBA training curriculum. Further research is needed on the practice of TBAs after training. The impact of the training using the modified MoH TBA training curriculum on the infection prevention practices of the TBAs practice need to be assessed as they undertake their varied roles in reducing the transmission of HIV/AIDS and other blood-borne pathogens through counseling and giving of targeted health education messages to their clients in medically and geographically isolated rural settings.

1.1.7. The Role of TBAs

Infection prevention (IP) is a key intervention tool in any critical care procedures that TBAs undertake in their practices. Prevention of infections remains one of the biggest challenges especially during the current HIV/AIDS pandemic. Despite their roles in infection prevention, the TBAs also have several other roles to play as the women-folk rush down to them on suspicions of witchcraft during pregnancy, labour and delivery. The roles of the TBAs are stipulated below:

- They provide care to childbearing women during pregnancy, labour, post-natal and family planning periods
- They identify and refer their clients with obstetric emergencies to the next level of care.
- They keep community Registers of all their deliveries and their postnatal attendances post delivery.
- They give targeted health education to target groups on the importance of

good personal hygiene practices and maintenance of proper environmental sanitation, the importance of attending post natal care services and other safe motherhood practices.

- They counsel mothers on the Prevention of Mother to Child
- Transmission (PMTCT) services.
- They participate in the distribution of Oral Rehydration Salts (ORS) and condoms in communities.
- They keep community records of immunisation status of children of mothers they deliver.
- They refer mothers to Community-based Distributors for counselling on family Planning.
- They act as a link between the communities and the Health Centers

The Health Centers through support from the District Health Management Team (DHMT) should complement the impact of the tTBAs by providing them with transport and other incentives to facilitate timely referrals of mothers who experience emergency obstetric complications. This logistical support will strengthen their roles and so maintain quality health care provision in rural settings as well as facilitating their integration in the formal health care system. Sustaining the practice of trained TBAs depends on the proper organization of the health services at the community level from where the TBAs are picked for training using an infection prevention updated training curriculum. They need to work in a supportive environment at the community and home level. This needs the development and strengthening of the organization of health services at the community level if the TBA is to carry out her role in communities efficiently. The formation of the Safe Motherhood Action Groups (SMAGS) provide the proper organization of health services at the community level. SMAGS promote team spirit and unity in the community. The focus of this study is to see how the training provided to TBAs influences their infection prevention knowledge and practice and attitude.

1.2. Statement of the Problem

In the old MoH TBA training curriculum, the TBAs were inadequately trained due to omissions in infection prevention measures As a result, the TBAs were unable to

perform to the expectations of the MoH. This poor performance led to high infection rates among the neonates of 27 percent in both Chongwe and Mpanshya while maternal morbidity rates was 20 percent and 21 percent magnitude in Chongwe and Mpanshya respectively from the Inpatient Register, within 14 days of delivery by TBAs in Chongwe District between March – October, 2006. Yet the TBAs are major players in the health delivery system especially in medically and geographically disadvantaged rural communities (Maimbolwa, 2004). Between 2002 and 2003, there was a 2 percent increase in the number of TBA deliveries. This number rose to 10 percent in 2004, thus creating an 8 percent increase in the magnitude of TBA deliveries. WHO, (1999) put maternal deaths due to infections at 21 percent out of 80 percent of all causes of maternal deaths globally.

In Zambia, the under five-mortality rate is ranked the 13th in the world out of 193 countries (Mugala, N, and Mwiinga K., 2006).

Cause of the Problem

The TBA poor infection prevention practices were caused by inadequate knowledge and also influenced by harmful cultural and traditional beliefs and practices that were not addressed in the old curriculum. These malpractices promote the transmission of infections to their clients.

The infections that cause majority of these deaths are illustrated in table 1.1 below.

Table 1.1: Infections that cause Newborn Deaths

Infections Causing newborn deaths	Percentage
Sepsis/ pneumonia	20%
Tetanus	07%
Diarrhoea	03%
Total	30%

Sepsis/ pneumonia is the highest cause of newborn death globally.

Source Mugala, and Mwiinga (2006).

The ideal situation is that tTBAs are supposed to conduct safe and clean home deliveries with adequate supplies of equipment in their delivery kits in medically and

geographically disadvantaged rural geo-locations. They are expected to monitor the progress of the mother and baby to ensure they do not contract any infections or develop other complications post delivery. In-order to do this they are expected to recognize the signs and symptoms of umbilical sepsis and puerperal sepsis which were not addressed in the old curriculum. In the occurrence of any of these infections, they are expected to refer the clients to the next level of care.

But the real situation is that due to inadequate infection prevention content in the old curriculum on the care of women during pregnancy labour and delivery the TBAs carry out their role with little or no observation of infection prevention practices since these are missing in the old curriculum. The TBAs base their practice on detrimental traditional practices as described below.

During Pregnancy and labour: Some untrained TBAs and family members advise mothers to insert pounded slimy green, big-leafed vegetable 'delele' known as 'sope' in Soli language spoken in Chongwe and 'mukonde' among the Nyanja-speaking people who live in Chongwe, into the birth canal to dilate the cervix and hasten labour towards late pregnancy. These practices bruise the birth canal by creating portals of entry for micro-organisms thus predisposing them to infections.

Delivery: The TBAs conduct most deliveries in dirty environments. It is believed that delivery is a dirty process hence women are delivered on dirty floor, on top of charcoal bags and dirty old chitenges (wrappers). Most often, water and soap are not available for hand washing; Dirty foot is pushed between the perineum to aid the quick expulsion of the baby. After the delivery, the cord is left hanging and touching the floor. Ascending infections occur leading to puerperal sepsis due to the use of dirty pieces of 'chitenge' that are used as sanitary pads after delivery. The TBAs do not clean and wash the bruised perineum and this creates portals of entry for microorganisms leading to infections in the puerperal period.

Cutting of the cord after delivery: After delivery, the cords are cut with grass or any available rusty sharp instrument predisposing babies to tetanus infection.

Puerperal Period: The TBAs do not teach mothers on the importance of proper perineal care and personal hygiene during this period. They, also, do not emphasise on the importance of proper nutrition after delivery which would raise their immune status.

Care of the neonate: Most TBAs leave the babies exposed after delivery; this practice leads to hypothermia, pneumonia, upper respiratory tract infections and sepsis in general. When mothers and children get infected those who are able to access health facilities have to be hospitalised. The opportunity costs of hospitalizing mothers who stay unnecessarily longer days in the hospital, as inpatients are quite high both for the family members, the district and the nation. The National Health Policy states that neonatal deaths represent approximately half of the proportion of infants who die and this raises the country's concern of poor peri-natal care (MoH, National Health Strategic Plan, 2011-2015). The MoH has taken very active steps to address all the above issues. First, the decentralization of health care delivery meant that the Chongwe DHMT can identify, implement monitor and evaluate and modify Chongwe–specific Action Plans to address the inadequate training of the TBA as expressed in the Action plans of 2000, p 23; and 2005-2007.p15. The reason for the TBAs poor infection prevention practices could probably be due to inadequate training in infection prevention measures which were inadequately covered in the old MoH TBA training curriculum hence the need for mainstreaming infection prevention in the existing TBA training curriculum. The Ministry has also taken steps to improve the training given to the TBAs. This support has been demonstrated in the MoH Reproductive Health Policy (2004, p 12; 36) which supports the training of TBAs in our disadvantaged rural communities. It has introduced the distribution of Clean Delivery Kits (CDK) to the TBAs. These could also be sold at an agreed upon affordable prize to mothers. Despite these positive steps, the curriculum remained unchanged hence the need for mainstreaming infection prevention content into the curriculum in order to improve the knowledge and practices of TBAs and thus lower infant and maternal infection rates in the district.

1.3. Justification of the Study

This study aimed at determining the infection prevention knowledge, practices and attitudes of TBAs. In rural settings, most women are delivered by TBAs in unhygienic environments (Chulu, 2010). Most of these women get infected as most TBAs are not properly trained due to infection prevention omissions in the training curriculum. Certain omissions on infection prevention topics in the MoH TBA training curriculum created gaps which needed to be mainstreamed into the modified MoH TBA training

curriculum to be used for future TBA trainings. A study by Hazemba, (2003) identified the occurrence of fever (a sign of puerperal sepsis) among women delivered by tTBAs in Chongwe district. An evaluation study by Maimbolwa, (1998), mentioned that TBAs have inadequate knowledge and practice on boiling their instruments due to using a curriculum with inadequate infection prevention measures during training. The problem with the current curriculum is that it has serious omissions on current concepts on:

- Relevant infection and disease prevention measures
- Integrating harmless traditional and cultural issues in the birthing process.

This new innovative curriculum contains topics on personal hygiene practices, hand washing practices, maintenance of good environmental sanitation, disease prevention practices, avoiding using harmful traditional practices in caring for mothers during pregnancy, labour, delivery and the puerperal period, prevention of mother –to child-transmission of HIV and AIDS, policy issues against conducting vaginal examinations in-order to prevent infecting mothers during labour, prevention of infection while cutting the cord during delivery, cleaning of the umbilicus, and subsequent cord-care until it drops off, recognizing the signs and symptoms of an infected cord as well as puerperal sepsis and on modes of prevention. Most of these topics were not included in the previous curriculum.

As yet no studies have been done on the infection prevention practices of TBAs who provide a round the clock service to our mothers in hardest-to reach rural settings nor on the suitability of the training Curriculum used for the TBAs which should be country-specific in terms of mainstreaming infection prevention measures into the TBA training syllabus.

Some authorities have argued on why the health care system should spend money on training TBAs when the rest of the world is talking about training the skilled attendants. The fact is that the health care system is not going to meet the demands of having adequate skilled attendants in the very near future. As long as the dwindling economies of low-income countries continue failing to meet the humble demands of skilled attendants for a living wage to cater for decent education for school children, meeting their transportation, social needs and decent accommodation, the trained skilled attendants will continue to migrate to greener pastures. Hence, there is the

need for a transitional plan to meet the demand for care in safe motherhood initiative activities. This study hopes to provide this transitional plan.

In a District like Chongwe, where more women, in disadvantaged geo locations, are being delivered by TBAs, it is justifiable to look at interim measures to see how these unavoidable community-based deliveries can be conducted in clean and safer environments since most of the clients get infected due to poor infection prevention practices.

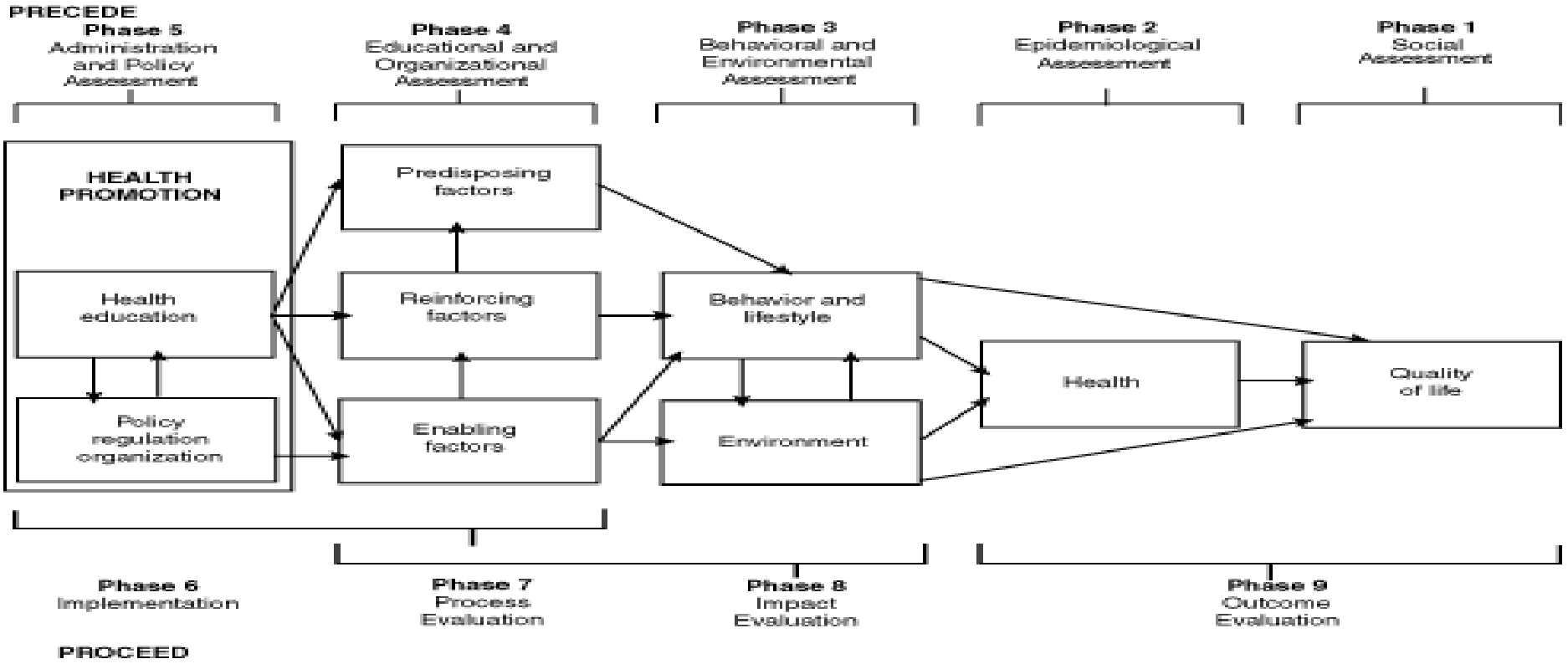
The health care system in Zambia is currently passing through a Human Resource Crisis. Under the present circumstances, this human resource crisis seriously affects the maternal and child health programmes that are contributing to the reduction of the Infant and Maternal morbidity and mortality rates. So, it is only imperative that we look at a cost-effective programme which will not only tackle the human resource crisis but also assist in the never-ending infant and maternal morbidity and mortality rates. The training of TBAs and provision of resources will not only build confidence among themselves but also will induce motivation for carrying out maternal and child health services with a new zeal as expressed in the enabling factors within the educational diagnosis of the precede- proceed model If the Government can train CHWs to prevent malaria and pneumonia, surely the TBAs can also be trained to produce similar results in reproductive health. This can be achieved by mainstreaming infection prevention measures whilst designing a new modified MOH TBA training Curriculum.

Also, the expanded scope of practice of the TBAs is not captured when we measure their contributions in the reduction of maternal and infant mortalities. Failure on our part to capture all these informations does not mean that they are not contributing to reducing maternal mortality rate. The gaps noted above justified the carrying out of this study in-order to come up with a new body of knowledge, which will fill in the identified gaps. The results will be used by the Chongwe District Community Development Mother and Child Health Health Management Board to improve the practice of TBAs in the District by using evidence-based information and replicated elsewhere.. It is hoped that the findings of this study would be adopted for use in improving the birthing practices of experienced TBAs not only in Zambia but also in other developing countries as well as in the setting up of a sustainable supervisory and monitoring system for trained TBAs as they participate in safe motherhood initiatives thus contributing towards the national achievement of the 4^{th} and 5th millennium

development goals by the year 2015. Therefore, this study is justified as it aims at training the TBAs to conduct safe and clean deliveries that will reduce maternal and infant morbidity rates. This will enhance provision of quality safe motherhood services to their clients in hard-to-reach rural settings.

1.4.0. PRECEDE-PROCEED THEORETICAL FRAME WORK

Figure 1.1: Diagram of Precede-Proceed Theoretical Frame Work.



1.4.1. Introduction:

The Precede- Proceed model.is a theoretical framework helps health care managers, policy–makers and monitoring and evaluation officers to conduct a needs assessment before embarking on a health programme. This assessment helps them to identify and understand the factors that surround the health needs of a community and thus design, plan implement, monitor and evaluate the programme and hence ensure the implementation of an effective and efficient health programme that has scientific evidence. The researcher was inspired by this model and hence applied it to this study. The noted health educator, Lawrence Green and his colleagues developed the PRECEDE model in the 1970s. The model believes in the active participation of the community in identifying its own health needs and subsequent health problems and thus participates voluntarily in finding solutions to its health problems.

In 1991, Center for Disease Control (1990) added 'PROCEED' (Policy, Regulatory and Organisational Constructs in Educational and Environmental Development) to the theoretical framework when it was recognized that health education would include policy, regulation, organisational and environmental factors in determining health and health behaviours. The proceed component is outcome–oriented. It looks at the process, output, outcome and the impact of training the TBAs. This model is very broad as it was founded and could be applied in various disciplines like administration, education, and epidemiology, social and behavioural sciences.

Thus the model has two components. The Precede component is the assessment phase while the Proceed component is the logical framework which has the monitoring and evaluation part embedded in it.

The Precede part is an educational diagnosis. It is an acronym for **P**redisposing, **R**einforcing **E**nabling Factors in **E**ducational **D**iagnosis and **E**valuation. PRECEDE is based on the premise that, just as a medical diagnosis precedes a treatment plan, an educational diagnosis of the problem is very essential before developing and implementing the plan to solve the community's health problems. The predisposing factors include knowledge, attitudes, beliefs, values and her personality and practices of the TBAs. These are termed the intrapersonal factors that may influence the TBAs practice. The reinforcing factors are interpersonal factors. They include issues that are related to the social support system of the TBAs. The PRECEDE component includes four (4) phases which are social, epidemiological, behavioural and

environmental diagnosis, educational and ecological diagnosis and administrative and policy diagnosis. The PROCEED component includes, monitoring and evaluating the process, output, outcome and impact indicators during the implementation of the health programme. The model has eight phases but the researcher condensed them into the five phases of this study. The researcher developed a new model that was adapted from the precede-proceed model. This new model guided the study. The model spun through the study like a thread and thus helped to situate the data into context and empirical framework.

Precede-proceed Model as Applied to the Study

Phase 1

Social Diagnosis considers the learners' quality of work. What are the major social problems of concern?

This is the first stage that deals with planning of the programme. It deals with identifying the social problems that impact on the quality of life of the population within the programme. In relation to this study, the researcher conducted a situation analysis to determine the TBAs quality of work. The situation analysis found high maternal and infant morbidity rates. It noted that the TBAs had poor infection prevention knowledge and practices. Most of their practices were based on harmful socio-cultural norms and traditional practices. It was also noted that in Chongwe, the TBAs are no longer supplied with CDKs. in addition mothers were unable to buy them due to their poor socio-economic status. The social diagnosis, in this phase of the study also showed that the poor socio-economic status affects their health-seeking behavior. Majority of the people are subsistence farmers. This phase also discovered that some of the inhabitants do not believe in immunizing their children based on their religious beliefs. The snowball-technique of the study design enrolled women who met the study criteria to participate in the study. Thus, they helped to identify the causes and contributed in solving their health problems. They also agreed to have specimens taken from their hands. The model stipulates the participation of the community in identifying and solving their health problems.

Phase 2.

Epidemiologic diagnosis: Identify how the social problem in phase 1 contributes to specific health problems. This phase determines and pays special attention on the specific health problems, their health-seeking behaviour and environmental factors that are related to the identified health problems among the population being studied in the community.

The model guided the study as the epidemiologic diagnosis in this phase of the study revealed that because the TBAs were not provided with CDKs and also their clients were unable to purchase them, this situation led to the TBAs improvising and hence compromising their delivery practice. This poor practice led to the specific health problems identified which are infections like puerperal sepsis, umbilical cord sepsis and septicaemia due to poor IP practices. These morbidities affect the mothers during pregnancy, labour, delivery and puerperal period while inadequate care of the umbilical cord affects the neonates leading to umbilical cord sepsis in the neonate.

The study conducted a literature search on what other countries have done to improve poor infection prevention practices. The search revealed that poor infection prevention practices among the student nurses have been the reason for introducing the course into the student nurse-training curriculum in Nigeria (Ofili and Sogbeson 2003). During this phase, the researcher conducted a desk review to see if the curriculum used for training of TBAs contains infection prevention measures. The results showed inadequate components of infection prevention measures. The study went further to search on the suitability of the curriculum for the trainers. The search revealed that Maimbolwa (1998) observed that the 'training syllabus appeared too technical for some of the trainers as most of them did not have midwifery background.' The desk review examined the curriculum for the suitability of the content of the syllabus in relation to the training and practice environments. The application of good cultural norms and traditional practices as the The qualification of the trainers in relation to infection prevention in midwifery practice and the knowledge-transfer modalities.

Phase 3: Behavioural and Environmental Diagnosis: Identification of behavioural and environmental risk factors. Identify the specific health–related behaviours that seem linked to the selected health problem.

In this phase, the researchers are supposed to identify specific areas that once modified are likely to change the behaviour and practices of the study population.
The study noted the poor infection prevention practices during pregnancy, labour, delivery, and puerperium. The dirty environment where the TBAs used to conduct their deliveries based on the traditional belief that delivery is a dirty process were noted and addressed during the training.
During this phase of the study, the researcher modified the MoH TBA training curriculum during which infection prevention measures were mainstreamed into the curriculum for example universal infection prevention measures like hand washing practices, wearing of gloves before conducting deliveries. The other topics that were included were preparation of the environment for conducting deliveries, boiling, storage and care of their equipment like scissors, care of the neonate and the umbilical cord, and identifying signs of umbilical and puerperal sepsis in infants and mothers respectively. The significant improvement in their practice levels has been documented.

Phase 4: Educational and Policy Diagnosis: This is the training phase that was informed by phase three. So the researcher had to incorporate phases 5 and 6 into this phase of the study. These phases are the implementation and the process evaluation phases of the precede–proceed model respectively. This phase focused on the administrative and organizational concerns that must be addressed prior to programme implementation. It involves the assessment of the resources, allocation of budget and looking at other organizational factors like considering how to the programme can work together with other stakeholders. It also assessed the policies and guidelines and any barriers or situations that could facilitate or hinder it from mainstreaming or co-ordinating the programme within the other departments of the organization as well as other stakeholders outside the organization.

Policy diagnosis requires the researchers to see how the research goals and objectives fit into the mission statements, and vision of the organization. This is very important

as it will dictate the implementation and sustainability of the programme once implemented.

In phase 4 of this study, the researcher conducted an educational and policy diagnosis and ensured that the training programme met the mission statements and the vision of the MoH as well as the policy guidelines that relate to training both professionals and non-professionals on infection prevention guidelines. The researcher then went further to categorise them into the following.

- **Predisposing Factors:** These include the knowledge, practices and attitudes of the TBAs.

This is the training phase of the study that aimed at improving the infection prevention knowledge, attitude and practice of the intervention TBAs during the training. The trainings were carried out among two groups of TBAs- the control TBAs in Mpanshya and the intervention TBAs in Chongwe. The control group was trained using the old MoH TBA training curriculum while the intervention group was trained using the modified MoH TBA training curriculum.

The TBAs poor infection prevention knowledge and practices were improved during the training. They were taught on how to conduct safe and clean deliveries by maintaining universal infection prevention measures. The appropriate use of the clean delivery kits was emphasized on. Also emphasized on was their willingness to attend refresher courses whenever they were called upon as these form the enabling factors in their practice. The TBAs were taught how to identify and refer their clients with complications to the next level of care.

- **Reinforcing Factors**

These include factors that encourage the TBAs to maintain their high quality of work like seeing the community members practicing what they were taught during health education sessions on disease prevention and health promotion activities due to good interpersonal relationships between them.

They also include issues that are related to the social support system of the TBAs based on the social support from the community during the planting and harvesting seasons, her peers, friends, partners who help her in changing some undesirable

social and traditional beliefs and practices. Inclusive are also the monetary rewards they get from her clients. These motivate the TBAs to work for their communities.

During this training phase, the midwives encouraged the TBAs who were members of the NHC to encourage the communities, through the Neighbourhood Health Committees to be offering some help to the TBAs during planting, harvesting seasons, funerals and family celebrations in-order to encourage them in their voluntary work.

Other reinforcing factors include feedback in terms of praise for good work being done.

Distance

The study also showed that distance proved a big challenge for the tTBAs in referring their clients as there are no ambulances for effective referrals. They were encouraged to refer any mothers with any complications to the health centers. They were taught to utilize the mothers' shelters for pregnant women in the last trimester of their pregnancies as this practice facilitates health facility deliveries. The TBAs who are part of the SMAG shared how SMAG helped them to utilize the combined efforts of the community to refer patients to the nearest health facility

Refresher courses are also arranged to update the TBAs in the latest trends in infection prevention practices so they can continue to conduct safe and clean deliveries.

- **Enabling Factors that may Encourage the TBAs.**

The enabling factors include the availability and accessibility of resources that create an environment which may have direct impact on her practice. These include the resources they need for their work like the CDKS, water for washing hands, sterile gloves, bicycles and etc that will help them carry out their work.

During the training, the TBAs were encouraged to establish rapport with their clients by escorting them to the health centers for proper examinations. They were also advised to keep a record of all their deliveries which should be submitted to the health center in charge. The health center in charge should praise them for work well done. The midwives who are the TBAs supervisors saw the need to be providing

them with the CDKs if they are to conduct safe and clean deliveries.

They were also taught on the policy that bars them from conducting vaginal examinations in-order to prevent infecting their clients. The researcher also carried out an activity during which she took specimens from the hands of the TBAs – just to convince them that hands carry micro-organisms that can infect their clients despite them looking clean.

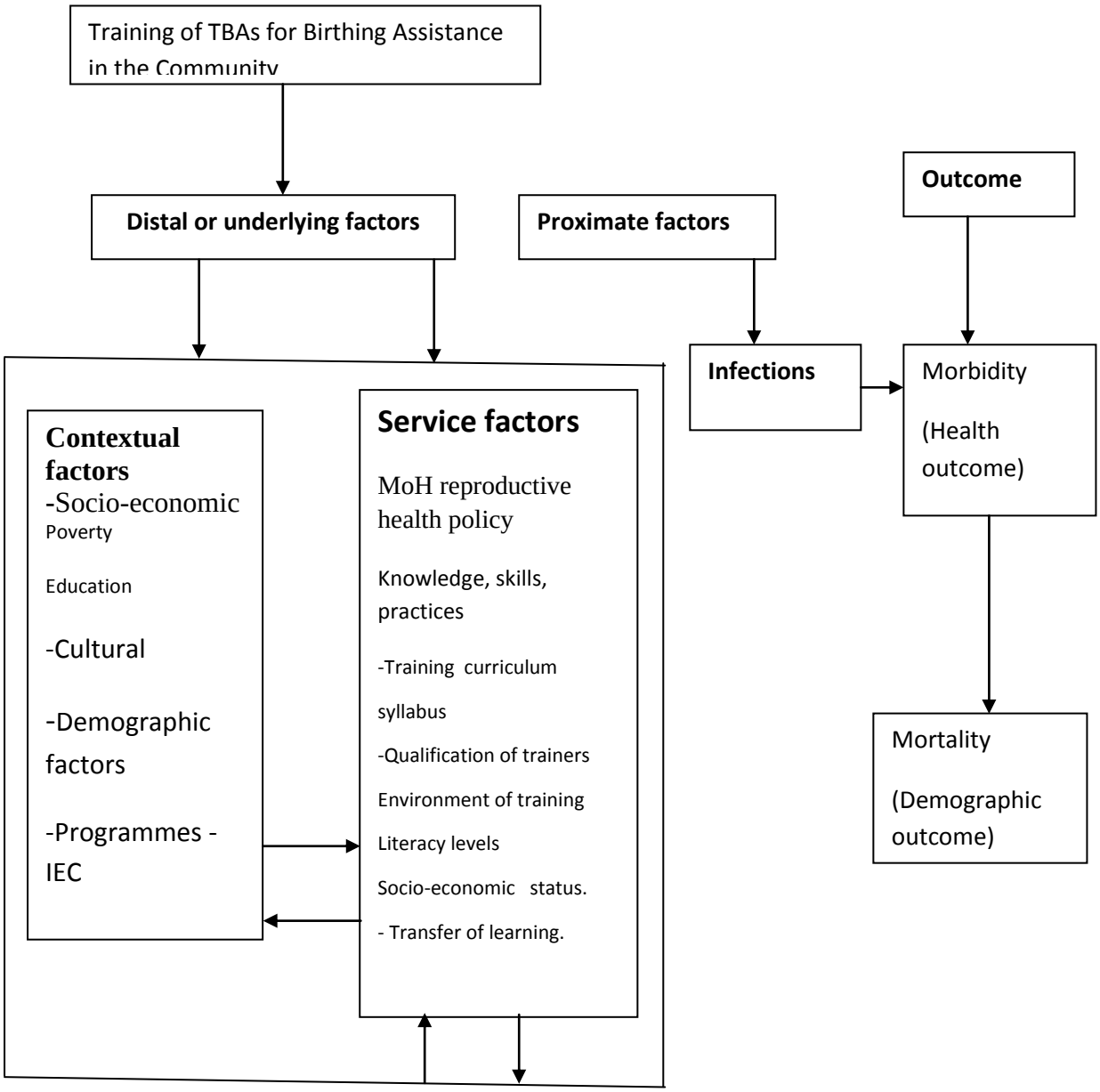
Phase 5: The Monitoring and Evaluation Phase

In this phase of the study, the researcher incorporated Phases 7 and 8 that constitute the impact and outcome evaluation processes into this phase because both fell under the monitoring and evaluation phase. The study ensured that the objectives of the study were met during the training. The outcome of the training was also assessed following the theoretical model. The Out Patient's records showed reduced infection rates among the mothers and the babies delivered by the TBAs. The study noted that the topics on infection prevention practices have been shown to have added value to their practices which was illustrated by reduced maternal and infant morbidity rates.

Rationale for Choosing of the Model:

The researcher chose this model because it is participatory in nature. The study is on studying the impact of using a modified TBA training curriculum on the infection prevention knowledge, practice and attitude of TBAs in Chongwe district of Zambia. The model responds to all the objectives of the study hence the researcher applied all the phases of the model to this study. Also it is a very broad model as it constitutes other models like the Health belief Model in-order to produce a theoretical framework that is all embracing. The researcher noted that this study requires cost effectiveness, moral accountability for reasonableness and legalistic considerations to be made for both the proponents and opponents of the training of the TBAs in the Health Care System. The researcher recommends its use in-order to create a successful community health promotion and other public health interventions.

Fig 1.2: New Theoretical Framework for TBA Training Using the Modified curriculum based on the Precede-Proceed Model.



This researcher developed concepts from the theoretical framework. These concepts were used to develop the instruments that the researcher used in the study. The theoretical framework helped the researcher to focus the study and to develop the methodology. The theoretical model for Training of TBAs for Birthing Assistance was adapted from the precede-proceed model. The process of developing the model involved the use of several approaches which include induction, deduction and derivation of concepts from the original precede-proceed model (Ngoma, 2012).

1.5 RESEARCH OBJECTIVES

1.5.1 General Objective

The general objective of the study was to determine the impact of training using a MoH modified TBA training curriculum on the infection prevention knowledge, practices and attitude of TBAs.

1.5.2. Specific Objectives

- To compare the infection prevention knowledge levels between the control TBAs in Mpanshya and the intervention TBAs in Chongwe district of Zambia.
- To compare the infection prevention practice levels between the control TBAs in Mpanshya and the intervention TBAs in Chongwe District of Zambia
- To compare the attitudes of the control TBAs in Mpanshya and the intervention TBAs towards their clients in Chongwe district.
- To compare the infant and maternal infection rates between the control TBAs in Mpanshya and the intervention TBAs in Chongwe district of Zambia.
- To develop, test and implement the use of the modified MoH TBA Training curriculum.
- To produce a monitoring tool for TBA supervisors.
- To make observations and recommend further research.

1.6. Hypothesis

The null hypothesis for the proposed study is:

- There is no difference in infection rates among mothers and infants delivered by the control TBAs trained using the old MoH TBA training curriculum and the intervention TBAs trained using the modified MoH TBA training curriculum

1.7. Research Questions

- Would the training of the TBAs using the modified MoH TBA training curriculum improve the infection prevention knowledge, practice and attitude of TBAs and thus reduce the maternal and infant morbidity rates due to poor infection prevention practices in Chongwe District?

- To what extent are age and education levels factors in the infection prevention knowledge, attitude and practice of TBAs in Chongwe District?

1.8.0 Variables

1.8.1. Dependent Variable

In this study, the dependent variable is the impact of training TBAs using the modified MoH TBA training curriculum.

This will be measured during the evaluation by any reduction in the infant and maternal morbidity rates in the intervention location in Chongwe district.

1.8.2. Independent Variables

In this study, the independent variables are the knowledge, practice and the attitude of TBAs.

Table 1. 2: Variables, Indicators and Cut-off points

Variables	Values/ cut-off points	Indicators	Question number
Knowledge	High level knowledge	When the respondent has good knowledge on how to apply universal infection prevention measures while conducting deliveries. Respondent knows the harmful cultural practices that may lead to infections in the mother and baby during pregnancy, labour, delivery and post partum period and how they can be prevented. When the respondent is able to demonstrate an excellent knowledge on the functions of the bag of waters and how to care for the mother based on her knowledge of the dangers associated with breaking of the bag of waters, bleeding and the signs of infection when the waters break as well as puerperal infections. When the study participant knows the modes of infection, signs and care of the newborn with infected umbilicus. When the respondent is able to score 62-82 correct responses on knowledge questions	23-67
	Medium level	When the respondent is able to score 41-61 correct responses on knowledge questions as	

	knowledge	stated above.	
	Satisfactory level of knowledge	When the respondent scores 20-40 correct responses on knowledge questions	
	Inadequate level of knowledge	When the respondent scores below 19 correct responses on knowledge questions	
Practice	Excellent practice	When the respondent practices and maintains good hygienic practices while conducting deliveries. When the respondent's practices aim at preventing infections in the mother and baby after delivery. The respondent is able to score 49-59 correct responses on practice questions	68 – 99
	Good practice	When the respondent is able to score 38-48 correct responses on practice questions	
	Satisfactory practice	When the respondent scores 27-37correct responses on practice questions	
	Unacceptable practice	When the respondent scores below 26 correct responses on practice questions	
Attitude	Good attitude	When the respondent does not mind being called out in emergency situations as well as visiting her clients daily after delivery and also carries panadol with her during her post natal visits. The respondent believes that they can lower infection rates by improving their practice through acquiring more and better knowledge. The respondents also intend to develop better attitude towards their clients by being more sympathetic. The respondent gets five to eight (5-8) attitudinal questions correctly.	100 –107
	Poor attitude	When the respondent scores below four (4) questions correctly on attitudinal questions.	

CHAPTER TWO

2.0. LITERATURE REVIEW

2.1. Introduction

Infection prevention programmes have hit the limelight in health care delivery in recent years. There is the need for TBAs to be conscious of the consequences of infections in the mother during pregnancy, labour, delivery and during the puerperal period. This study reported on the importance of using modified curriculum in training TBAs on infection prevention measures as they perform their varied functions in communities. They have the potential to transmit or acquire blood-borne pathogens to and from their clients as they perform invasive procedures like the cutting of the cord

2.1.2. Global Perspective

Literature on Infection Prevention Practices of TBAs

Globally, more than 7 million infants die annually between birth and 12 months of age. Lewin et al, (2003), 2/3 rule stated that of the infants who die during the first year, nearly 2/3 die in the first month, of those who die in the first month, 2/3 die in the first week and of those who die in the first week 2/3 die in the first 24 hours. In addition, globally, 4 million newborn children die during the first 28 days of life. 98% of these deaths occur in developing countries where majority of the deliveries occur in homes. Newborn deaths account for 40% of all under five deaths. Most of these deaths could be due to sepsis. Four million are stillborn.

WHO, (1992) stated that 60-80% of births which occur in developing countries are attended by untrained persons using unclean equipment and in unclean environment. This means that the TBAs need a clean and harmonious environment for their practice. Not surprisingly that infections account for 30% of newborn deaths as Table 1 illustrates.

Literature on Training TBAs.

In response to the above literatures, many countries worldwide (low resource countries inclusive) embarked on official TBA training programmes in early fifties. Low-income countries, communities struggle to train TBAs to augment the critical

shortage of trained midwives by following the PHC strategies. In 1972, the WHO began a systematic training of TBAs.

Pigg, (1973), stated that the PHC strategies support the programs for the training of indigenous people who would act as health auxiliaries in own communities especially in resource-limited countries. This plan would serve as an interim measure to provide human resource for countries that experience inadequate skilled personnel. Following the Precede – Proceed theoretical framework, the members of the communities participated in planning the training programme.

Pigg's, (1973) experience during training of TBAs in Nepal, showed that communities do not participate in structuring most of their training programmes. He stated that it is important to incorporate unharmful socio-cultural traditions, customs and norms into the training syllabus as well as enlisting community participation in the formulation of the training syllabus. Participation of the communities was important in promoting training of the TBAs and promoted understanding in the learning environment. This required that communities follow a criteria to choose those to be trained.

He noted that identifying and training TBAs in Nepal can be quite difficult as, most often, the wrong women were picked.

Literature on Attitude of TBAs picked for Training

Pigg's 1973 cautioned against choosing TBAs haphazardly. This may result in choosing trainees with the wrong attitudes as they may just want to be seen as important since they are participating in an important government developmental activity as well as the allowances they get from attending the training. These are the trainees who eventually drop out from practising citing lack of remunerations as reasons for non-practising.

The Norwegian Refugee Council a group known as the Pamir Ruction Bureau and the Norwegian Church Aid which is a thematic group that has been involved in the provision of basic social services in Afghanistan. They trained TBAs in order to build women's capacity, social status, recognition, and secures them economic independence at the village level It was noted that the services provided by the TBAs contributed in decreasing the morbidity and mortality rates throughout the country.

Salleh et al (1973) showed that 17.5% out of 790 women in a study in Malaysia who preferred to be delivered by TBAs were less educated and were in the lower income group.

In Brazil, Galba (1975) followed the recommendation of Pigg's in 1973, set up a co-operative programme with a rural community of Gualuba, south of Fortaleza. They then embarked on training TBAs on safe motherhood practices after noting their dedication to duty and their humanity to their clients**.** After three years, an evaluation was carried out during which it was noted that the incidence of neo-natal tetanus and puerperal infections among mothers had drastically reduced. The formal health sector ended up adopting vertical position for delivering as well as breast-feeding the infant immediately after delivery from the TBAs. The following lessons were learned from his study:

- Popular beliefs and local culture should be taken into account if one aimed at bringing populations closer to the formal health care system
- TBAs are important in their communities and some of their practices are worth incorporating into the health care system. There should be an alliance between the TBAs and the health system since their proximity is greater to the populations.
- When properly trained and supervised, the TBAs will abandon potentially harmful practices and accept the basic principles of scientific medicine.
- When properly organised, oriented and backed by the formal health care system, the TBAs and other traditional health care providers will alleviate the scarcity of health services, decrease the morbidity and mortality of mothers and children and strengthen the development of the community.
- Galba's study promoted the two-way communication system during the training of the TBAs.

Wood's (1985) confirmed that the two-way communication system promotes understanding in the learning environment. She concludes that 'one-way flow of information may be harmful to us all.'

When the policy of PHC was adopted **in 1978,** the WHO urged all member countries to integrate the TBAs into the PHC programme. From then on, the training of TBAs

has continued worldwide. This training integrates both western obstetrics and traditional midwifery.

Lefeber, et al (1994), stated that since most TBAs were not trained they were unable to prevent infections occurring in their clients. This led to an increasing recognition that trained TBAs have the potential to prevent and control the transmission of sexually transmitted infections (STIs)/HIV and AIDS in their practice areas.

This led to the development of HIV and AIDS infection prevention programmes in Africa. It was hoped that this would help the TBAs to improve on safe and clean deliveries (Green, 1999). The trainers' criteria for selecting the TBAs for training are that:

- They should be selected through a fair and democratic system in their communities.
- Those selected should be held in high esteem and respected in the community
- They should be involved in HIV/AIDS education for their clients eg. Fidelity for married couples and abstinence for the youth.

Asghar (1999), study in Pakistan reiterated the above sentiments while emphasising the importance and urgency of improving the capacity of rural folks to serve them. The TBAs constitute a large segment of that potential. She concluded by saying that the TBAs could be a big asset in decreasing the high rate of obstetric complications in the developing countries. To be effective, they need to be trained and respected by their medical colleagues. Availability of transport and the accessibility of specialised medical care is an important part of this integrated approach. The community, public health and hospitals have to be linked together in a standing relationship to decrease the high maternal mortality in the low-income countries. Isolated efforts to strengthen one part and not the others may not be very effective.

In Bangladesh, Goodburn et al (2000) study on training of TBAs concluded that trained TBAs are more likely to practice hygienic delivery than the untrained TBAs. (45.0 % vs 19.3%). The study confirmed that training TBAs 'to wash their hands' as contained in our National training curriculum is not an effective strategy to prevent maternal post partum infection. More rigorous evaluation is needed, not only of TBA

training programmes as a whole, but also of the effectiveness of the individual components of the training.

Butlerys, (2002), focused on infection prevention of blood-borne pathogens like the HIV and AIDS. He stated that worldwide, more than one million women infected with HIV deliver babies without professional help each year. Most of these deliveries occur in rural areas in low-income countries. It, then, makes sense to extend the benefits of the recent advances in perinatal HIV research to these women who live in these hard-to-reach rural areas. This exercise presents quite some challenges, as it requires the proper training of TBAs using the modified MoH TBA training Curriculum. He noted that it is possible to expand the role of TBAs so they can implement effective infection prevention interventions in poor rural settings.

In Bangladesh, Fronczak et al (2007) reported that "untrained TBAs with more experience were more likely to use potentially-harmful birthing practices which increased the risk of post partum morbidity among women with births at home". This gives impetus to the training of TBAs in-order to improve their knowledge and practices.

Gill et al (2011) concluded that among 3497 deliveries with reliable information, mortality at day 28 after birth was 45% lower among live born infants delivered by intervention birth attendants than control birth attendants (rate ratio 0.55, 95% confidence interval 0.33 to 0.90). The greatest reductions in mortality were in the first 24 hours after birth: 7.8 deaths per 1000 live births for infants delivered by intervention birth attendants compared with 19.9 per 1000 for infants delivered by control birth attendants (0.40, CI 0.19 to 0.83). Deaths due to birth asphyxia were reduced by 63% among infants delivered by intervention birth attendants (0.37, CI 0.17 to 0.81) and by 81% within the first two days after birth (0.19, CI 0.07 to 0.52). the study concluded that training traditional birth attendants to manage common perinatal conditions significantly reduced neonatal mortality in a rural African setting. This approach has high potential to be applied to similar settings with dispersed rural populations. The above literatures emphasized on the importance of training Tbas using an infection prevention modified curriculum.

Literature on Infection Prevention Knowledge of TBAs

Libetwa, (1997) stated that people tend to under-estimate health hazards despite having sufficient infection prevention knowledge. She made this observation in her study of health workers HIV knowledge, ignorance and behaviour during which he

reported that health workers agreed to not using gloves while exposing themselves to blood while rendering care. If health care workers can ignore observing universal infection prevention measures, what do we expect from non health professionals like TBAs. hence the urgent need to train, monitor and evaluate their practices.

Tsing, (1999), reports that in North America, deliveries that are not attended by qualified professionals are regarded as 'suspect' and the women are accused of negligence. This is based on their inadequate knowledge in infection prevention measures.

2.1.3. Regional Perspective

Literature on Training TBAs.

In Tanzania, the early missionaries branded TBAs as 'heathens and primitive people' who base their practice on 'magic and mysticism (Swai, 2005), Glinami, (2005) stated that TBAs deliver over 60% of births in rural Tanzania, 30%-40% in South Africa, 70% in Ghana. The above literature illustrates the need to train TBAs using a curriculum with infection prevention modalities.

Family Health International, (1998) justified TBA training because they attend to a large proportion of deliveries in rural areas where access to health care providers is limited. Their study was to determine the impact of training TBAs on maternal morbidity and mortality. The study concluded that training TBAs has an effect on process indicators like hygiene which reduces infections in their clients. The study, however, did not support the hypothesis that training TBAs result in better health outcomes for mothers since it did not impact on the referral systems and excessive bleeding.

In South Africa, TBAs delivered about 30-40 % of births in rural South Africa. The people demanded for equity, affordable accessible and sustainable health care provision in rural communities in the face of critical health needs, limited resources and culturally–relevant health services.. The study showed that a majority of them would like to be trained in Infection Prevention in STIs/HIV and AIDS. (Baez and Manzana 2002, and Onjoro 2001), conducted a study among the Luo of Migori district in Kenya. The purpose of the study was to improve the practice of the TBAs. It aimed to find out how the TBAs integrated both western and indigenous knowledge. The study isolated factors that influence the use of each method in

training TBAs. The methods used in the study were participant observation, structured and semi structured interview tools (mixed method). This ethnographic study revealed that the health practice of the TBAs and the health seeking behaviour of the Luo community are influenced by cultural beliefs and social reality than by the presence of and access to scientific knowledge about disease.

Sibley and Sipe, (2004) noted that TBA training was associated with a 6% decrease in peri natal mortality and an 11% decrease in mortality from birth asphyxia. Based on their finding, the authors argued that due to the current unavailability of skilled care in many developing countries, there is a need for effective community-based strategies including those which involve training of TBAs, particularly in areas with high infant and maternal mortality. They also emphasised that the training should be properly monitored and evaluated in-order to develop a strong evidence-base needed for effective policy and programming.

Sambo, (2005) the Afro Regional Director for WHO supports Walraven advice on conducting social research when he directed the regions to "mobilise effective multisectoral action which would help to provide counseling and support to the communities, develop prevention programmes targeted at vulnerable groups, intensify social research in the region and use the findings of the research for local and regional action. He further directed the region to 'prepare training programmes for TBAs in traditional obstetric procedures to ensure safe practices and minimum exposure to blood. He emphasized on designing and implementing culturally appropriate HIV prevention interventions. This training is very important as evidenced in women in Chad who have 1 in 11 chance of dying during pregnancy or in childbirth in villages where mothers must rely on untrained TBAs who may do more harm than good.

So it becomes important to integrate both western and indigenous knowledge in training of the TBAs. This is very important as most women in Nigeria, shun deliveries in health care institutions because of the absence of the 'ceremonial bathing' which only TBAs can provide. (Wallace and Giri, 1999, 238)

Literature on Infection Prevention Knowledge of TBAs

Walraven, (2002), based on his studies in Gambia, included infection prevention in TBA training since he noted that their inadequate infection prevention knowledge and practice was based on their use of harmful traditional practices. He also suggested

carrying out a study, which will help us to understand which women opt to use the TBAS and which do not use them and to identify the reasons for their choices. Like Butlerys, he also emphasised on the importance of continued education, refresher courses and supervision.

Balogun and Odeyemi (2010) showed that as few as 8.3% of respondents had good level of knowledge about HIV and PMTCT. This study showed that the care that the TBAs provided were marred by their inadequate infection prevention knowledge coupled with the TBAs use of cultural and traditional practices. The study also noted that the TBAs had poor knowledge on how to prevent HIV. The study also noted that the TBAs neglect using universal precautions during deliveries probably due to lack of knowledge of the standard precautions. This lack of knowledge can predispose both the TBAs and their clients to acquiring infections as they care for their clients. This literature emphasizes on the need to train TBAs using a modified curriculum with infection prevention measures. The study also recommends for closer supervision of TBAs practices.

Literature on Infection Prevention Practices of TBAs

Akutse (2004), study on 'The risks of HIV/AIDS transmission by TBAs practices in Villages,' showed that untrained TBAs in all aspects of safe motherhood practices, conducted deliveries without protective clothing in isolated villages where there were few health centers in Lome, Togo. This resulted in increased infections, high maternal mortality orphans and vulnerable children.

The country decided to reverse the above trend. It embarked on a capacity building program of training TBAs in PMTCT, training of peer educators to train TBAs, and provision of equipment (TBA kits). The country also carried out a sensitisation programme on this scenario. An Association of TBAs was formed to support the tTBAs and also to offer medical, nutritional, psychological care for women, young girls and pregnant women in the villages. The project recommended that other regions of the world should replicate this project as it had been found very beneficial in Lome, Togo.

Day, (2004), from Community Development Awareness Forum confirmed Akutse's concern during their work in 31 villages in Volta Region Ghana where 70% of the deliveries have conducted by TBAs. It was found that fewer than 20% of these

women wore gloves during deliveries. The study gave an insight into the functioning of TBAs who are farming or doing other chores when they receive word of a woman going into labour. They must drop everything and run to deliver the baby. Because of the manual labour they perform in the fields, TBAs may have cuts and abrasions on their hands. When they arrive at the mothers' side, they often do not think about protecting themselves against the transmission of HIV/AIDS. These trainings have transformed how births occur in these 31 villages. The study stated that lack of education, training and literacy and misunderstandings about HIV/AIDS are common in rural communities. The study targeted 51 TBAs who were identified as one of the populations most likely to transmit HIV/AIDS and most susceptible to blood and body fluid transmissions.

In Tanzania, Swai (2005), informed his readership that during the pre-colonial era, the missionaries branded the TBAs work as 'heathens and primitive,' due to their high illiteracy levels and are mostly old women. The study described the TBAs as people who base their practice on magic and mysticism. The study showed that the TBAs practice is regarded as cultural and highly revered by Chagga women in Tanzania. The study showed the various rituals and traditions that go with child birth. It also showed the various medicinal and healing prescriptions that attend such procedures among the Chagga women of Tanzania. He confirmed that the practice of TBAs are very important in providing health care in Tanzania The author stated that although their work is not very well documented, their contribution cannot be ignored in rural Tanzania where TBAs deliver about 60% of the women. He said that during the pre-colonial era, the only health system available to the people was traditional medicine so their services remain significant even during this modern period and are still required in rural Tanzania. The author stated that the custodians and the organisers of this system are usually the traditional surgeons, medicine men and women. They use their indigenous knowledge systems and material technology, cultural values and symbols in building their trade, which remain reciprocal, classless and efficacious as deaths are minimal. Every village in Tanzania has its fair share of TBAs. It is estimated that there is 1 TBA to every 200 women in Tanzania.

2.1.4. National Perspective

Literature on TBA Training Programme.

Maimbolwa, (1998) conducted an evaluation that stated that in some areas, Health workers choose the TBAs to be trained as TBAs. This is against the training guidelines set by the MCH/FP unit, which stipulates that communities are mandated to choose suitable women to be trained as TBAs. In such cases, it has been noted, that the communities distance themselves from using the TBAs that are imposed on them. (Maimbolwa, 1998).

The Training Syllabus.

The course content is too technical for the TBA trainers who are not midwives. Some TBAs were trained in lesser periods than others. This led to a lot of inconsistencies in the training, understanding, knowledge acquisition and the practice of the TBAs. Usually, the tTBAs were abandoned after training with no refresher courses or supervisory visits from the health center staff or their trainers. Supervisory visits would enable the trainers to identify areas to be improved on during the next training sessions (Maimbolwa,1998). The tTBAs complained that they needed to be taught skills, which would help them

- Improve their skills in conducting deliveries.
- Care of the Clean Delivery Kits (CDKs)
- Know when to cut the cord
- Improve their skills on twin delivery,
- Know how to remove the retained placenta,
- Know how to handle mothers with prolapsed cord,
- Identify the presenting part
- In suturing of episiotomies
- In Caring for premature babies
- In resuscitating the baby who does not cry after delivery,
- In delivering breech presentations
- In handling of transverse lie
- In the management of a woman bleeding after delivery
- In checking of mothers during the antenatal and postnatal periods

- In caring for the woman in Labour. It was noted that TBAs do not feed the women in labour.
- To improve on the traditional birthing methods, customs and norms of handling mothers during pregnancy, delivery and the postnatal period, which are often ignored.

In 2006, HOPE responded to the Lome initiative in Kabwe. It organised eleven (11) untrained TBAs and trained them in health and hygiene, prevention of childhood diseases, referral systems and infection prevention and control which includes HIV and AIDs. The TBAs came from Kafulamase, Makululu, Mukobeko, Bwacha, Mahatma Ghandi, Pollen and Chowa. This filled in the gap suggested by Hazemba, (2003), when she noted that 'training of TBAs should be part of a broader strategy,' of each district with hard to reach communities and that 'this training should be supported by a functioning referral system, backup professional support, improved supervision and supplies as well as arranged remunerations. This means that the TBAs in Chongwe could also be trained in infection prevention practices

Nationally, Chanda, (2002), Hazeemba, (2003,) Maimbolwa, (2004) and (1998) studies showed that our traditional norms and practices all point to the need to train TBAs using the modified TBA training curriculum. The training of TBAs remains a thorny issue but the Lufwanyama study located in the Copperbelt region of Zambia proved the effectiveness of TBA training (Gill, et al, 2011). The study showed that neonatal mortality was 45% lower among babies delivered by intervention TBAs than the control TBAs (95% CI 0.33-0.90). The result meant that 7.8 /1000 neonatal deaths occurred among the intervention TBAs compared to 19.9/1000 neonatal deaths among the control TBAs (0.40, CI0.19-0.83). Deaths due to birth asphyxia was reduced by 63% among babies delivered by intervention TBAs (0.37, 0.17-0.81) and by 81% within the first two days after birth (0.19, CI 0.07-0.52). Stillbirths and deaths from serious infections occurred at similar rates among both the intervention and control TBAs. The training concluded that trained TBAs can reduce perinatal deaths. This study means that there is need to take up the challenge to train TBAs in infection prevention measures especially in Chongwe the study location.

Literature on Infection Prevention Practices of TBAs.

The communities in Chongwe have their own beliefs, traditional norms and practices which make them unique. Unfortunately some of these practices could predispose women to acquiring infections during pregnancy, labour and delivery especially among the untrained TBAs who do not observe infection prevention measures as they conduct deliveries. These practices include inserting herbs into the vagina during pregnancy and labour, the practice of secluding women after delivery stops them from utilizing post natal services ((Center of Health and Population Research, 2000**,** Chanda, 2002). The TBAs have to teach the 'Alangizes' (the traditional and cultural educators) about the dangers of these cultural practices. It is generally assumed that the TBAs do not maintain proper infection prevention practices and so cannot conduct safe and clean deliveries in their dirty environments (Chanda, 2002). Culturally, the rural folks assumed that the art of delivery is dirty so the TBAS believe that the environment of delivery should not be clean hence they used to deliver mothers on dirty charcoal bags (Chanda, 2002. Krusk et al, 2004, WHO,1992).

Non-availability of Clean Delivery Kits

Most tTBAs do not have clean delivery Kits in rural communities hence the TBAs improvise when conducting deliveries thus compromising their practices. This contributes to their poor infection prevention practices.

In Zambia, the TBAs should be trained on applying infection prevention measures like washing hands and wearing gloves when conducting deliveries since majority of deliveries are conducted in the homes (Kufuna et al, 1993, DHS 1996, Maimbolwa, !998) as demonstrated in the table below.

Critical Shortage of Skilled Birth Attendants

In Zambia, there is currently a critical shortage of human resource, especially of trained midwives in the Health Sector. The present health care system is working at 48% man power. Therefore, it is obvious that this shortage has affected the maternal neonatal and child health sector very severely. As a result, most health centers are manned by unqualified personnel with poor infection prevention practices. These end up infecting their clients (MoH). The table below illustrates the increased deliveries by TBAs in the provinces.

Table 2.1: Provincial Percentages of Deliveries in health care institutions in comparison with deliveries conducted by tTBAs in Zambia from 2000-2002

	Institutional deliveries			Deliveries by tTBAs		
Province	2000	2001	2002	2000	2001	2002
Central	31.7	23.0	22.7	06.8	09.2	08.9
Copperbelt	48.9	48.5	52.7	04.6	06.5	07.5
Eastern	21.1	31.2	27.1	09.4	14.0	17.9
Luapula	27.9	28.9	29.1	12.0	18.2	20.2
Lusaka	44.9	38.0	47.1	0.0.7	0.0.8	01.3
Northern	24.3	22.8	25.7	12.1	13.7	14.8
North-western	38.4	38.1	38.8	11.4	13.1	17.6
Southern	26.1	23.0	28.7	10.3	12.8	16.9
Western	30.0	29.1	37.6	08.0	09.6	11.9
Zambia	33.2	32.0	35.1	07.9	10.2	12.2

.**Source:** Adapted from CBOH, 2002

Table 2.1 compares the deliveries at health care institutions to those delivered by the tTBAs. The table shows an increased percentage (4.3%) of deliveries conducted by tTBAs from 2000 to 2002. Table 2.1 shows that Luapula province where TBA training started has the highest number of deliveries conducted by tTBAs (20.2%) in 2002 followed by North western province with 17.2% by the year 2002.

Most of these deliveries are conducted by relatives because some of the TBAs are very old while some could be too young and according to custom the young ladies are not supposed to see the older women giving birth. Another reason is that the tTBAs ask them to prepare a baby's layette, which is against the culture, and some clients want to follow the custom in child birthing (Kufuna et al, 1993, DHS 1996, Maimbolwa, !998).

Below are findings from an evaluation of the TBA training programme in Zambia (Maimbolwa, 1998):

Poor Practice of TBAs due to poor Communication System.

Usually, the relatives are sent to call the TBA on foot when her services are required.

When she does come and needs to refer the client, there are no ambulances to transport the client who needs to be referred. Communities are very far from each other and this may account for the low usage of tTBAs (Maimbolwa, 1998).

Unqualified Personnel man the Health Centers.

She stated that the health centers in rural areas offer midwifery services. It was noted that most trained midwives are reluctant to work in these rural health centers. As a result, general nurse–trained staff or Environmental Health Technicians run these health centers.. In such areas the TBAs, mostly untrained, fill in the gap by providing midwifery services to the rural communities (Maimbolwa, 1998).

Maimbolwa, (1998), noted that the tTBAs were only called to help out in deliveries in the presence of complications as relatives conduct most of the deliveries. She narrated that in Zambia, most deliveries which occurred in the home were assisted by relatives and elderly women in rural communities. These women provided the social support systems for women in labour. This situation still persists in most rural areas in Zambia like in Chongwe district due to disadvantaged geo-locations despite the advent of maternity units in most health institutions. Most mothers are discharged home early within 24 hours of delivery without proper referral letters to the tTBAs to care for the mothers. This is a very detrimental practice as most of the literature reviewed showed that most maternal complications and infections occur within 24 hours post partum.

The demands for remunerating the TBAs also stop the mothers from using them since they could not afford to pay them. Hazemba, (2003) confirmed that tTBAs were under-utilised in communities because they avoided using TBAs selected by the health care workers as well as those accused of 'killing babies,' Maimbolwa, (2004:43). This is evidenced by TBAs delivering only about 5% of deliveries in communities.

Conducting Deliveries

Chanda, (2002) described how the TBAs conducted deliveries either at their own homes or at the homes of their clients. The TBAs make their clients lie on empty

90kg charcoal bags with a dirty chitenge or rag because they believe that the products of conception are unclean. Their methods of delivery can promote the transmission of infection to both mother and baby as they support the perineum with their dirty foot or hand to aid expulsion of the baby. This is followed immediately by pressing very strongly on the abdomen for the placenta to come out and then the cord is tied with any piece of chitenge material or a cotton string to tie the cord

In cases of retained placenta, the TBA did the following to push out the placenta

- Pushed a 'mtiko' (cooking stick) into the clients mouth to induce vomiting
- Asked the client to blow into an empty bottle
- Inserted cigarettes into the clients nostrils so she can sneeze or cough
- Made the client to kneel down and start coughing
- Maimbolwa, (2004:43) quoting Chintu et al,(1976), Adamson, (1965) and Daham, (1972) stated the dangers that are associated with leaving the baby uncovered when they stated that when the baby is born and left on the cold floor without cutting the cord until the cord is also delivered. The baby could develop hypothermia and that the newborn baby's temperature could fall by 3-4 degrees centigrade within the first few minutes of birth by convection radiation, conduction and evaporation.

- Maimbolwa, (1998) and Chanda, (2002), described the process that the TBAs used in delivering the placenta. The cord was not cut because the TBAs feared that once the cord was cut, the part still attached to the placenta would go back inside.
- The TBA told the client to go on her knees, and then the TBA sat on the client's back and slided slowly down from the client's back. As she slided down the placenta came out. She tied the cord and cut it with a razor blade. The TBA bathed the baby and wrapped the baby immediately. If premature, the baby was wrapped in a banana leaf, then covered in a blanket or any available chitenge.
- After delivery, the placenta was either buried or thrown down the pit latrine.
- Usually there was no soap so the hands were washed without soap.
- The TBAs bathed mother and baby for a week to ensure their good health. Some advised their clients to go to the health center after delivery.

- Ihe TBA advised mother to bath in cold water three times a day until healing occurred

The TBAs poor infection prevention practices became common knowledge so non–governmental organizations took steps to redress the situation. Helping Other People Everywhere (HOPE), is a Zambian non-governmental organisation in the city of Kabwe. HOPE is a project aided by the Development Aid from People to People (DAPP) in Zambia.

Chongwe's Perspective on the Practice of TBAs

Chongwe's Action Plan showed an increasing number of TBAs deliveries as the table below shows.

Table 2.2: Deliveries by both TBAs and Skilled trained staff in Chongwe

Year	Deliveries by tTBAs	Deliveries by trained staff	Population of Expected deliveries	No of Registered midwives	No of Enrolled trained midwives
2002	4%	21%	8339	4	39
2003	6%	19%	8690	4	39
2004	10%	21%	9055	4	39

Adapted from Chongwe Action Plan 2000

The above Table 2.2 shows that there was a 2% increase between 2002- 2003. This rose to 10 % in 2004 thus creating a 6% increase in magnitude between 2002 -2004. This means that in Chongwe, more women opted to be delivered by tTBAs while the numbers of women delivered by the trained midwives remain almost stagnant.

The analysis also showed high infant and maternal morbidity rates according to the statement of the problem. This problem was attributed to:

- Inadequately–trained TBAs
- Low number of trained TBAs due to inadequate funds for training of TBAs
- Low coverage rate of deliveries by skilled birth attendants due to geographically disadvantaged communities.
- Non-functional Neighbourhood Health Committees.

- Low number of trained community health care workers due to inadequate funds. Only twenty-eight (28) have been trained out of a demand of two-hundred and one (201) (Chongwe District Health Board Action Plan 2000).

Hazemba, (2003), noted that the tTBAs had inadequate HIV/AIDS Infection Prevention knowledge and so could not conduct safe and clean deliveries' This means that they could transmit blood-borne pathogens to their clients during delivery due to poor infection prevention practices. TBAs used unsterile equipment, harmful traditional and archaic methods during deliveries (Chanda, 2004).

This is the context in which the maternal mortality ratio of 200/100,000 occurs in Chongwe District compared to the National maternal mortality ratio of 592/100,000.

In conclusion, the literature reviewed have some shown some strengths and weaknesses.

Strengths of the literature Review.

Literatures reviewed have shown that training TBAs on barely washing hands before delivery is not enough to reduce infections in mothers and babies. This means that it is important to mainstream the relevant infection prevention measures that apply to their practice into the training curriculum. Creative and innovative models have to be devised for TBA training.

It also recognized the importance of all the enabling and reinforcing factors in TBA training illustrated in the Precede-proceed model. These should include supportive referral systems. Literature reviewed also concluded that researchers should incorporate HIV and AIDS prevention topics while training TBAs in infection prevention practices as they form two sides of a coin.

The review also recognized the importance of involving women from the communities during the selection of women to be trained as TBAs.

It also stressed the importance of recognizing this very important community resource.

Weaknesses of the Literature Review.

Literature reviewed did not recognize the role of community participation through SMAG in effecting a community referral system. Also, there is very little or no literature on the monitoring and evaluation of the TBA training programme as well as

the impact of particular components of the training. This would help in the documentation of the impact of TBAs in Safe Motherhood Initiatives.

Conclusion

In conclusion, the chapter has reviewed global, regional and national literatures on the topic. It has also highlighted the strengths and weaknesses of the literatures reviewed. Therefore, a transitional plan with a sound infection prevention monitoring and evaluation tool needs to be put in place in the interim period to facilitate the documentation of the tTBAs contributions in Safe Motherhood Initiatives. So the literature reviewed informed the inclusion of topics related to the socio-cultural, traditional and service-related factors in the monitoring and evaluation tool. The researcher noted that the literature reviewed had all the components of the Precede-Proceed model embedded in it as it guided the study.

CHAPTER THREE

3.0: RESEARCH METHODOLOGY

3.1. Introduction

The main purpose of this study is to conduct a comparative analysis of the pre and post course assessments from the study respondents in Chongwe and Mpanshya. The researcher applied the precede-proceed theoretical model in the study methodology

3.1.2. Study Design

The Precede- Proceed theoretical framework was an inspiration to the overall research methodology. The quasi experimental study design was as elaborated in phase 4b of the study.

The study had five phases that were applied to the two groups studied.

- **Phase 1**

This phase consisted of the situation analysis. This phase had two components the record analysis and the base line assessment.

The first component was the record analysis. In this component, data was collected on the maternal and neonatal infection rates from the Inpatient's Register. The findings from the record review made the researcher to conduct the needs assessment.

The second component of the situation analysis is the needs assessment. The research assistants interviewed 238 TBAs in their home environments thus involving them in identifying their health needs according to the precede-proceed theoretical framework. This component provided information on the poor infection prevention knowledge, practice and attitudes of the TBAs.

- **Phase 2**
  - Desk Review
  - Activity of taking specimens from razorblades in clean delivery kits (CDKs)

Phase 2 was on the Desk Review of the TBA training curricula by the different stakeholders that include World Vision International, Nangoma Mission Hospital Zambia Integrated Health Programme (ZIHP), MoH and WHO TBA training guidelines. The researcher identified that important infection prevention measures and

current concepts were omitted in the curricula. These were mainstreamed into the MoH curriculum in phase 3 of the study.

Activity of Taking Specimens from Razor Blades in CDKs.

During this phase also, the researcher carried out an activity of taking six (6) specimens from razor blades from the clean delivery kits to ensure their sterility.

- **Phase 3**

In this phase, the researcher modified the MoH TBA training curriculum by mainstreaming the omissions identified in phase 2 of the study

- **Phase 4**

This phase comprised three sub-units namely- phases 4a, 4b and 4c.

- **Phase 4a** saw the training of the intervention group in Chongwe using the modified TBA training curriculum while the control group in Mpanshya were trained using the old MoH TBA training curriculum. The TBAs agreed to be interviewed face to face as well as to the subsequent training that was offered.
- **Phase 4b** was the Comparative analysis of the knowledge, the skills and attitudes during the pre and post course trainings.

  Phase 4 used a quasi-experimental study design. This research design is also known as controlled trials without randomization in medical research (Polit and Beck, 2012). In this study, it formed the dominant study design in phases 1 and 4 of the study. The dominant study approach is the one that is best suited to addressing the study objectives.

  This quantitative approach used the semi-structured interview schedule to collect analyse and quantify the data. The results were compared between the two groups.

In this design, the researcher collected data that were later quantified in numerical values and percentages. Burns and Grove, (2009) noted that this facilitates measuring their statistical differences by using a questionnaire. The research assistants were trained to administer the semi-structured interview schedule professionally.

The researcher reviewed the counterfactuals in this study. The counterfactuals are the conditions that exist before the intervention (Polit and Beck, 2012).

Phase 4c used the Qualitative Research Technique (FGD method).

Qualitative Research design is defined as studies in which the researchers are 'continually examining, and interpreting data and making decisions about how to proceed based on what has already been discovered' (Polit and Beck 2012). In this study, the qualitative data provided useful supplementary data source (Polit and Beck, 2012). Achola, (1988) advocates for the use of mixed method approach in research studies as it potentiates the quality of data collection. It also helps to reduce the biases in the study.

The qualitative research design uses many methods to obtain data. These methods include observations, interviews, analysis of documents and focus group discussions. This study used the FGD method. It aimed at finding out how mothers delivered by TBAs feel about the services they receive from the TBAs. It also aimed at finding out the actual role of the TBAs and the difficulties they encounter as they render their services to their clients in rural settings.

Focus Group discussion method was chosen as it allowed the study participants to exchange ideas, discuss, agree or disagree on certain concepts, experiences and challenges that they encounter while volunteering their services. The method facilitated validation of the actual roles of the TBAs. This method helped the researcher to innovate ways of not stifling the voices of the quiet ones within the group.

Five focus group discussions were held that included 28 TBAs, 1 neighbourhood health committee member, 4 mothers, 2 supervising midwives, and 2 nurses thus totaling to 37 participants. The FGDs provided in-depth information on their roles in their rural environments. The participants volunteered and consented verbally to participate in the FGD sessions.

- The group sessions were led by the researcher who tape-recorded the discussions. The assistants also took some notes during the discussions
- The tapes and notes were subsequently transcribed verbatim and analyzed from the FGD recordings and notes taken during the discussions.

- **Phase 5 – The Monitoring and Evaluation Phase**

This is the monitoring and evaluation phase. The researcher monitored and evaluated the impact of training the TBAs using the modified MoH TBA training curriculum on the infection prevention knowledge, practice and attitudes of TBAs in Chongwe district. The researcher also followed the precede–proceed theoretical framework and so evaluated the outcome of the training on the tTBAs clients.

3.1.3. Research Setting

The study took place in the district of Chongwe.

The study settings were at two locations. These are the Chongwe Rural Health Center and the Mpanshya Hospital Affiliated Health Center. These two communities were chosen by convenience. The settings have a built-in mechanism of referral, and conducting quarterly supervisory visits. The same literature review showed that some countries like Brazil, Columbia and Pakistan have incorporated TBAs in their referral system. Hence these two locations were chosen because they offer these requirements. (File://A;RH376L21.htm, 2006). The researcher gives a detailed information under Chongwe profile below.

Chongwe Profile

Chongwe is one of the three districts in Lusaka province. The district is situated 48 km east of Lusaka. It occupies 10,500 square kilometers of land area with 92% lying on a plateau while 8% lies in the valley. The population is 189,059. Most of the people live around the center of Chongwe and in areas closest to the city of Lusaka. It has a vast savannah type of vegetation. The largest river is the Luangwa River, followed by the Lusenfwa River. The two rivers are situated on the eastern side thus creating boundaries with Nyimba district on the north and Mkushi district on the northeast. Some other rivers include the Chongwe, Rufunsa, and Chalimbana rivers. Chongwe district shares boundaries with Lusaka urban district on the West, Kafue district on the south, Chibombo district on the north and Luangwa, Nyimba and Mkushi districts on the east and north–east. The population had a growth rate of 4.2% (Source National Population Census & Housing, 2000).

Socio-economic Status

The socio-economic status of the people is very low and this affects their affordability and accessibility of health care services. The major occupation of people is subsistence farming (88%), while only 5% are commercial farmers, another 5% are civil servants and 2% are traders. The people who live in the valleys do the subsistence farming, while those who live along the rivers concentrate on fishing.

Some cultural and religious beliefs and customs and rituals hinder the population from utilizing the health care services e.g. the Zionists do not believe in immunizing their children. The people who live in the valleys do the subsistence farming, while those who live along the rivers concentrate on fishing.

The district has 45 primary schools, 15 basic schools, 4 secondary schools and 6 Colleges. There are 10 community Schools supported by UNICEF and one orphanage run by the Church of God in Mpanshya area.

Geographical Features of Chongwe

Chongwe is graced with undulating hills and mountains, rivers, streams and Savannah vegetation. The area has a tropical type of climate with temperatures ranging between 14-33 degrees Celsius. The mountains are concentrated on the far east off the Coast of Luangwa River. They form part of the Muchinga Escarpment. The hills include Lupande, Nakaponda and Kito hills. The whole plateau region is covered with Savannah grassland, while the forests are found in mountains and in Luano valley.

Shikabeta clinic is located on the Southern part of the Luano Valley while Mpanshya is located on the northern part. Chongwe is a high rainfall area with the average rainfall ranging between 300-500m per annum. The heavy rainfall makes the roads impassable so the communication is cut off. Even the Shikabeta health center cannot be accessed during the rainy season but the Rufunsa and Lukwipa health centers can be accessed during the heavy rainfalls.

Table 3.1: Health Facilities/Neighbourhood Health Committees

Type of facility	**Government**		**Mission**		**Others specify**	
	No	**Beds**	**No**	**Beds**	**No**	**Beds**
Hospital/ beds	0	0	1	88	0	0
Stage 1 health centers	15	117	0	0	5	30
Stage 2 health centers	3	47	0	0	0	0
Health Posts	3		0		0	
CHW/PHC Post	40		0		0	
Health center committee	24		1			
NHCs	109		4			

Sources: Safe Motherhood Register, Chongwe Referral Rural Health Center, 2005 – 2007. Chongwe District Health Management Board medium Term Expenditure Framework (MTEF) Action Plan and Budget for 2005-2007.

Table 3.1 shows that the Government is the leading provider of health care services in Chongwe. Currently, only four health centers offer a 24-hour service and these are Chongwe, Mpanshya Mission Hospital, Ngwerere and Chalimbana health centers. Men man most of the health centers. There is, therefore, the need to increase the reproductive health services. The age characteristics also show that 20% of the population comprises of children under five years of age while 4% is children below one year of age.

There were only four (4) Registered Midwives and thirty-nine (39) Enrolled Midwives manning twenty-four (24) health centers and four (4) health posts in Waterfalls, Kasenga, Ngwerere and Chikumbi making a total of twenty-eight health facilities in Chongwe district with 3.3% fertility rate.

Lungu (2006) stated ‘‘that there were 56 TBAs in the whole district, seven (7) service the Mpanshya community. This number was inadequate as most women shun to deliver at the health center due to reasons of distance. The health center saw the need to train family birth attendants to decrease the occurrence of complications during delivery. Most people would like to be delivered by trusted family members than any other person. Hazemba (2003), states that some TBAs present their reports to the in-charge every month. Table 3.6 below shows the referrals in the District, with prolonged first stage being the most common reason for referral.

Safe Motherhood Register from 2001-2006 showed that the commonest obstetric emergency referral was due to prolonged labour (Safe Motherhood Register, Chongwe Referral Rural Health Center, 2005 -2007). Due to poor record keeping at Chongwe, there are no updated records on maternal mortality in Chongwe. The Maternal Mortality Ratio (MMR) for Chongwe for the year 2000 is estimated at 200/100,000 compared to the national figure of 729/100,000**.**

Chongwe Referral Rural Health Center

Chongwe Rural Health Center is located at a distance of 45 kms from Lusaka. It is a referral health center. All the other health centers in the district refer their cases to this health centre. It has a laboratory facility. An X-ray facility is still under construction. One medical doctor is stationed permanently there now. The population stands at 19,311

Chongwe Rural Health Center was chosen because it is easily accessible. Furthermore, it is the biggest health center in the district. It receives all the referred cases from other health centers in Chongwe.

Table 3.2: Population Distribution in the Chongwe Rural Health Center Catchment Area.

Population	Number	Percentage
Total population	19,311	100%
Children under one year	772	4%
Expected pregnancies (inclusive of abortions)	1043	5.4%
Women of child bearing age	4248	22%
Expected deliveries	1004	5.2%

Source: Chongwe District Action Plan 2005-2007.

Table 3.2 illustrated the population distribution in the Chongwe Rural Health center catchment area.

Mpanshya Profile

Mpanshya Hospital Affiliated Health Center

Mpanshya is surrounded by three feeder health facilities namely- Lukwipa, Shikabeta and Rufunsa. Mpanshya Hospital Affiliated Health Center(HAHC) is situated within the grounds of St. Luke's Mission Hospital. The Mission hospital is the only 1st Referral Hospital in the district. They are located some 140 kms from the Chongwe District and 180kms from Lusaka. It had a total bed capacity of 37 beds that were funded by the Government. The bed capacity then was 68. Currently, total bed capacity is 106 of which 42 is government-funded. A visiting doctor from the district used to visit every Wednesday.

Shipeketi is an outreach post under Lukwipa Rural Health Center. It is a rural feeder health facility for St. Luke's Mission Hospital. It is another hard- to- reach area during rainy season. It is also a typical Game Reserve area as well. Shipeketi is about 22 kilometers from Lukwipa health center which is the nearest health facility. It is impassable during the rainy season and there are not enough transport facilities to facilitate referrals.

Shikabeta area is 39 kilometers from Mpanshya Mission Hospital which is the first Referral Hospital. It is 118 kilometres from the District Health Office Chongwe so most mothers are referred to UTH.

Therefore, giving the high maternal and infant morbidity rates due to poor infection prevention practices coupled with the disadvantaged medical and geographical geolocations necessitated the mainstreaming of infection prevention measures into their training curriculum. It is hoped that this study would improve the knowledge and practices of trained traditional birth attendants in conducting safe and clean deliveries and thus reduce maternal and infant morbidity rates in the District.

3.1.4. Study Population

In this study, the population were all the TBAs both trained and untrained in the two communities namely the Chongwe Referral rural health center and Mpanshya Hospital- affiliated health center catchment areas. The research findings would be generalised to this study population. The study population comprised of all women in their reproductive age with one woman as the study unit

Inclusion Criteria

- Any married woman who had delivered another woman in labour either at the client's home or in their own homes within the last six months.
- Any woman who had their own biological children with good reputation, and was chosen to train as a TBA by her community and aged more than 20 years old.
- Any trained TBA in Mpanshya and Chongwe Rural health centers in Chongwe district.
- Any woman who had been elected by the community members and was serving the community as TBA and was a member of the Neighbourhood Health Committee in Chongwe District.

Exclusion criteria

- Any single and childless woman
- Any woman aged less than 20 years old.
- Any woman who had never delivered another woman at home in the last six months

- Any inexperienced nurse with less than three months nursing experience since qualification.

3.1.5. Sample Selection

The research assistants identified some TBAs in the health centers who referred them to other TBAs within the catchment area who offer their services in the two communities in Chongwe District using the 'Snowballing Technique.' This technique enabled the researcher to consider the populations for the possible number of women who may assist in delivering another woman, any woman married with own biological children and aged 20 years and above. All participants were requested to take part in the study

3.1.6. Sample Size

The study had four samples with different sizes. This helped in identifying, complementing comparing and finding associations between the variables in the study.

Sample size 1a consisted of 238 TBAs selected using the snowballing technique during the needs assessment phase.

Sample 1b consisted of 207 participants selected using the Pocock's formula.

The Pocock's formula was used to determine the sample size in sample 1 in phase 4 of the study.

When the sample size was considered, the study put the estimate of the current situation of infections among the postnatal mothers and the impact after the intervention at 5% significance level. The estimate was based on the average maternal morbidity rate due to infections, which was calculated at 20% on the average in both study communities.

The proportion reference stood at 20%

q is a complement of P

q is equal to 100 – P

P1 = This was the proportion of the TBAs practising Infection prevention before the intervention.

P2 = This is the proportion of the TBAs practising Infection prevention after the intervention.

$$N = \frac{P1q1 + p2q2}{(p1 - p2)\,2} * 7.85$$

$$n = \frac{1600 + 2400}{400} * 7.85$$

$$= \frac{4000}{400} * 7.85$$

$$= 78.5$$

= Approximately 79

The required sample size between the untrained TBA in each group was **79.** These untrained TBAs were randomly allocated to either of the groups. The sample size was obtained using a proportion reference of adherence of 20% in the control group and 40% in the intervention group at a significance level of 5% and power of 80%. The statistical power is the ability of the study to detect the existence of a true statistically significant difference.

From the 56 trained TBAs, 28 TBAs in Chongwe were allocated to the intervention group and another 28 in Mpanshya were allocated to the control group using convenience sampling (non-probability) method.

Therefore in total, the study had 107 TBAs in the control group and another 107 in the intervention group. The study then adjusted upwards by 90%. This means that the study recruited 119 TBAs per group. But few dropped out before the commencement of the training due to various social problems.

In total two hundred and seven **(**207) TBAs were in the two study groups. One hundred and seven (107) TBAs formed the control group (comparison group) who were trained using the old TBA training curriculum while one hundred TBAs (100) formed the intervention group who were trained using the modified MoH TBA training curriculum.

Sample 1c consisted of thirty-seven (37) TBAs in phase 4c of the study. Altogether there were 28 tTBAs, 4 mothers, 2 midwivws, 2 nurses and 1 village leader.

These participated in the focus group discussion. This size was chosen based on the TBAs that were willing and available to participate in the FGD**.**

Sample 1d consisted of 78 TBAs whose right hands were swabbed for samples for laboratory analysis. This was done as activity 1 of phase 4a in the study

3.1.7. Data Collection Tool

The researcher used two types of study instruments to collect data. These are the focus group discussion guide and the interviews using the semi-structured interview schedule.

- **The Focus Group Discussion Guide**

The FGD guide contained questions that elicited the TBAs actual roles from themselves as well as how they integrate positive cultural norms and traditional beliefs in their practices. Therefore, the FGD guide covered all the roles within their scope of practice. The guide also had questions on how the TBAs clients view the services they receive from the TBAs.

- **The semi-structured Interview Questionnaires**

A semi-structured Interview schedule questionnaires for both untrained and trained TBAs was used to conduct the Needs Assessment. The tools comprised open-ended and closed–ended questions. The questions were based on determining the infection prevention knowledge, practice and attitude of TBAs (Predisposing factors of the model) both during the needs assessment and intervention phases so as to make the application of the theoretical framework evident in the study tool. In this way, the researcher ensured that the model forms part of the tool. The questions were uniform for every study respondent. This uniformity helped the study to attribute any differences in responses as being true differences among the respondents.

3.1.8. Data Collection Technique

The study used two types of techniques for data collection namely:

- **3.1.8a** The interviews.
- **3.1.8b** The focus group discussion method

3.1.8a Data Collection Technique For The Interviews In Phases 1 and 4b.

Phases 1 and 4b of the study used the semi-structured interview schedule to collect data over 3 months. This required that interviews to be held using a semi-structured interview schedule that consisted of both open and closed-ended questions. The interview schedule consisted of the interviewees' demographic data and questions on each study variable and instructions to be followed thus directing the research assistant on how to proceed.

Being a quasi –experimental study design, the interviews commenced with the TBAs found at the health center, then from the health center, they proceeded to the villages where they were introduced to TBAs and other women who conduct deliveries in the villages. This was the snowballing technique that was applied during this data collection. The interviews were conducted at the health center initially and subsequently in the villages. The research assistants identified and interviewed the respondent, after introducing themselves and explaining the purpose of the interview. The interviews were conducted privately, one TBA at a time. Confidentiality and anonymity were strictly maintained as no names but numbers were allocated to each sheet in use. The interviews were conducted up to 16.00 hours daily and each interview took some 40- 45 minutes. The research assistant conducted 4-5 interviews per day. Each interview sheet contained 107 questions.

The Research Assistants were trained on how to conduct the interviews (oral questioning) with the study participants professionally. The research assistants knew how to collect and store the data after collection.

The research assistants were trained to conduct the interviews in a conducive atmosphere to avoid distractions. She/he went through the instructions on the semi-structured interview schedule sheets.

The research assistants followed the interviewing technique that are described below.

- Before commencing the interview, the researcher introduced her self to the study respondent.
- Assured the study respondent of strict maintenance of confidentiality and was assured of getting the feedback of the study through the midwife at the DHMT.
- The research assistants collected and recorded the data in a systematic manner.

- All relevant details were noted and recorded pre-course and during the intervention phases of the study.
- The DHMT staff and health center staff were required to maintain a high level of integrity between the two groups to ensure that only the intervention group received the training using the MoH modified TBA training curriculum.
- The research assistant checked for consistency in the responses as well as ensuring that all the questions were answered.
- After the interview, the research assistant asked if the study respondent had any comments to make regarding the study
- Lastly, the study respondent was thanked for her time.

The semi-structured interview schedule also gave the TBAs the chance to demonstrate their knowledge and practice on how they conducted deliveries. They also showed their attitudes which endeared them to their clients. The interview schedules contained closed-ended questions on their socio-democratic characteristics, knowledge practices and attitudes . The open-ended questions were categorized and used in discussions.
The techniques used in each phase of the study is described below.

3.1.8.1: Data Collection Technique for phase 1 of the study:

In this phase, the data collection technique necessitated the carrying out of the Situation analysis. This is a broad term that includes both the base line assessment, and record analysis.

- **3.1.8.1a: Record Analysis**

Data was collected from three registers namely - the Safe Motherhood Register and the Community Health Register and the Inpatient Register. The Safe Motherhood Register includes all the deliveries that the tTBAs conducted at the health centers within the District and the other is the Community Health Register where all the deliveries that the tTBAs conducted in the communities were recorded. The Inpatient Registers in both study locations were used to collect data on the mothers and infants who got infections within 14 days of delivery by the TBAS between March – October of 2006. The findings from the record review prompted the researcher to conduct the needs assessment.

- **3.1.8.1b: Data Collection Technique for the Needs Assessment:**

The precede-proceed theoretical framework requires that researchers conduct a needs-assessment before embarking on a health programme. This theoretical framework guided the researcher to design, plan, implement, monitor and evaluate the training programme for evidence-based outcomes.

According to the theoretical framework, an educational diagnosis should be carried out under the needs assessment to obtain the baseline data from the two communities.

The research assistants identified the TBAs in the health center who conduct deliveries in the communities. These TBAs led them to other TBAs thus using the 'Snowballing Technique (non-probability) to identify the possible number of women who conduct deliveries and who were willing and available to participate in the study. There was no randomization. The research assistants interviewed 238 TBAs in their home environments thus involving them in identifying their health needs. They then translated the data into numeric forms or codes (Polit and Beck 2012). The numerical codes were assigned to the close-ended questions. The open-ended questions were categorized after reading them over several times for familiarization

This facilitated data entry and the analysis on the computer. The codes were then analysed using the SPSS software computer package as in phase 4 of the study.

The needs assessment allowed the researcher to assess and determine that the TBAs in Mpanshya and those in Chongwe had similar poor infection prevention knowledge and practices at pre-course before the study intervention (training) was implemented. The precede- proceed model also guided the researcher to identify the predisposing, reinforcing and enabling factors that influenced the practice of the TBAs both at pre-course and post course phases of the study.

- **3.1.8.2: Data Collection Technique for Phase 2.**

This phase consists of two techniques

- Desk Review of existing curricula used for TBA trainings in the country.
- Swabbing of razor blades found in found in the CDKs to determine whether they are sterile or not.

3.1.8.2a: Desk Review

The findings from the needs assessment and the record review led the researcher to conduct the desk review of existing TBA training curricula in-order to identify any omissions on infection prevention topics.

The researcher reviewed the WHO TBA Training Module and Guidelines, Zambia Integrated Health Programme (ZIHP)/World Vision International, CBOH and Nangoma TBA Training Modules that were used for TBA training. This review was done in-order to identify the gaps in Infection Prevention. These gaps were used to modify the MoH curriculum. The researcher identified the infection prevention omissions and current concepts in the curricula. These were mainstreamed into the old MoH TBA training Curriculum during the next phase of the study.

3.1.8.2b: Swabbing of the Razor Blades

During this phase also, the researcher took six (6) specimens from razor blades from the clean delivery kits. Each specimen was put in the transport media (jelly-like substance) within each mounted swab container. The transport media safeguarded the viability of any micro-organisms. The containers were then put in a bio hazard plastic bag and transported immediately to the Microbiology Laboratory at UTH in Lusaka within thirty minutes. The qualified laboratory scientists received the specimens and conducted laboratory analysis of the specimens.

3.1.8.3: Data Collection Technique for Phase 3 -The Modification of the old MoH TBA Training Curriculum.

This phase saw the modification of the old MoH TBA training curriculum by mainstreaming infection prevention topics into it. The researcher modified the MoH TBA training curriculum by following the academic principles of curriculum development. These included collecting information on who this cadre was and at what level of the health care delivery system she was working at. This was followed by looking at the job description and the competencies expected from this cadre. The researcher also collected data on the different roles the TBA perform. Information was collected on the three main areas within the TBAs scope of practice and these were documented below:

- Applying Infection prevention measures while caring for mothers during pregnancy, labour, delivery and the puerperal period

- Health education.
- Counseling the youth and families.

The areas that fell under the TBAs scope of practice were listed down from the analysis of the pre-course questionnaire. All the topics hinging on infection prevention were mainstreamed into the existing curriculum.

The topics included were:

- Universal /Standard Infection Prevention and its relevance in the TBA practice emphasizing on hand washing practices.
- Timing the Boiling and care of equipment used for delivery.
- Micro-organisms (germs) that can cause infections in mother and baby.
- Identifying the harmful traditional and cultural beliefs and practices during pregnancy, labour, delivery, puerperal period.
- Immediate care of the baby after delivery.
- Care of the baby's cord and baby bathing practices. Also other topics whose omissions may lead to infections in the mother and baby were mainstreamed into the Modified Curriculum Also health education topics on personal hygiene, maintenance of environmental sanitation, healthy life-style practices during pregnancy, labour, delivery, and the puerperium, preparation for the delivery environment, boiling and storing of water that the TBA used during delivery, modes of transmission of the HIV virus in TBA practice, prevention of Mother to Child Transmission, Hand washing practices, putting on gloves for infection prevention, TBAs community waste management , identifying aand referral of mothers with danger signs during pregnancy, labour and delivery were all mainstreamed into the modified curriculum.

During the modification, some current concepts were added as per indicated below:

- Communication
- Male and the female reproductive system,
- Educating families on harmful traditional and cultural practices
- Health education on Prevention of Communicable Diseases: This topic brought out all the concerns on Infection prevention issues regarding the communities' concepts of health.
- Care of the Birthing Environment both before and after the delivery in terms of cleaning the environment of delivery both before and after the birthing process.

- Care for the TBAs and handling burnout.
- Integrated Management of Childhood Illnesses (IMCI),

  The tTBAs are expected to be health educating mothers on care of babies as advocated in Integrated Management of Childhood Illnesses (IMCI), e.g. the use of zinc supplement once severe dehydration has been corrected in the treatment of children suffering from severe diarrhoea, infant resuscitation practices, referring HIV positive pregnant women to clinics.
- Psychosocial counseling.
- Male circumcision and prevention of Cancer of the cervix
- Infection prevention against the acquisition of blood-borne pathogens like hepatitis B. C, HIV/AIDS viruses.
- Nutrition during pregnancy
- Malaria during pregnancy

The researcher followed the completion of the modified curriculum with the training programme as shown below.

3.1.8.4: Data Collection Techniques used in Phase 4 of the study

This phase has three components indicated as a, b, and c.

3.1.8.4a: Phase 4a: The Intervention Phase or the (Training) of the TBAs.)

Phase 4a consists of two techniques.

- The training of the TBAs
- Swabbing the right hands of 78 TBAs.

- Training of the TBAs

This phase saw the training of the TBAs. The TBAs in phase 4a of the study agreed to the training that was offered. Thus they participated in finding solutions which helped in reducing the high infection rates in their clients being guided by the precede-proceed theoretical framework**.** The Mpanshya TBAs were selected conveniently as the control group while the Chongwe TBAs were selected as the intervention group. Mpanshya is further than Chongwe and is expected to reduce the contamination effect.

- Swabbing the Hands of the 78 TBAs

This activity took place during phase 4a of the study. The researcher collected data on the micro-organisms that could be found on the hands by swabbing the right hands of

78 TBAs. The right hands were chosen as they are the most active. The TBAs were chosen by simple random selection during the training of the intervention groups. Each specimen was put in the transport media (jelly-like substance) within each mounted swab container. The transport media ensured the viability of the micro-organisms. The containers were then put in a bio hazard plastic bag and transported immediately to the Microbiology Laboratory at UTH in Lusaka within thirty minutes. The qualified laboratory scientists received the specimens and conducted laboratory analysis of the specimens.

3.1.8.4b: Technique for Data Collection in Phase 4b

During this phase, the researcher conducted the comparative analysis of the pre and post courses using the semi-structured interview schedules after training both the control and intervention in Chongwe and Mpanshya respectively. **(Refer to Data collection techniques under 3.1.7a)**.

3.1.8.4c: Data Collection Technique for phase 4c which comprised of five FGDs.

- **Data Collection Technique for the FGDs**

This phase consisted of 37 participants who took part in five (5) Focus group discussions. These groups were selected according to their willingness and convenience to take part in the discussion. The participants volunteered and consented verbally to participate (Shaha, 2011, Grover et al, 2007). The women consented to the FGDs on any Wednesday at the Referral Health Center at the Chongwe District Health Offices.

The researcher conducted five FGDs in phase 4c of the study. The FGD provided in-depth information on the topic to be discussed, (Shaha, 2011), Webb and Kevern, 2001). The dates, settings and the composition of the FGDs are stipulated below.

1st FGD was held on 5/02/2009 at Kasisi Rural Health Center and consisted of one nurse, six tTBAs, one Neighbourhood Health Committee member, one mother delivered by tTBAs totaling eight.

2nd FGD was held, on 13/06/09 and consisted of the Health Center in Charge of the Kanakantapa Health Center and six tTBAs and one mother totaling eight.

3rd FGD was held at Chinyunyu Rural Health Center on 13/06/09 had about 6 tTBAs, and the Health Center In-Charge totaling seven.

4th FGD was held at Chongwe Rural Health Center and consisted of two mothers delivered by the tTBAs, four tTBAs and one midwife totaling seven on 26/ 08/ 09.

5th group was held at the Referral Health Center in Chongwe Rural Health center again on the 6th of April 2011. The group consisted of six tTBAs and a midwife totaling seven. Altogether they were 28 tTBAs, 4 mothers, 2 midwives, 2 nurses and 1 village leader.

The investigator ensured a noiseless, conducive environment. The principal investigator, as the moderator, welcomed the discussants and encouraged them to feel free to speak and not to feel intimidated. Strict confidentiality of all discussants was assured. Focus Group discussion method was chosen as it allowed the study participants to exchange ideas, discuss, agree or disagree on certain concepts, experiences, challenges that they encounter while volunteering their services. (Shaha, 2011, Kitzinger,1994, Kevern and Webb, 2001, Curtis and Redmond, (2007), and Parahoo, (2007).

The Principal Investigator used the FGD guide to discuss the work that the TBAs do in their villages, the infection prevention measures that relate to the cultural norms and traditional practices that relate to the care of the woman during pregnancy, labour, delivery, puerperal period and the care of the neonate. They also discussed on their supervision, the difficulties they encounter in their work. Discussions also centered on how the clients were cared for during pregnancy, labour, delivery and the puerperal period.

Five focus group discussions were held including the tTBAs, their supervising midwives, and women delivered by the TBAs. The TBAs had participated in a 6 week training program (2 weeks theory and 4 weeks practicum in the various health centers in Chongwe district). The supervising midwives conducted the trainings in collaboration with the researcher. The focus groups were conducted between 2 weeks -6 months after the end of the training.

Including the TBAs and their clients in the same focus groups allowed opportunities to clarify differences in perspectives about the TBAs roles that were reported by

TBAs and by their clients. The number of focus groups was determined by theoretical sampling, as groups were continued until no new themes emerged. Each interview took between 60- 90 minutes. The original goal was to include 6 TBAs and 6 mothers in each group; however, the difficulty to recruit mothers became apparent as their child care, household duties, etc. made it difficult to attend the group sessions. Therefore, it was decided to attempt to recruit, at least, 6 TBAs, 3 mothers, and 1 midwife-TBA supervisor for each group. It was recognized that having fewer mothers than TBAs in the groups may have made the mothers hesitant to share their feelings, however, all mothers participated actively in the groups. It is also acknowledged that having the midwife supervisors in the group sessions may have influenced the information shared by the TBAs, and this is subsequently acknowledged as a potential limitation of this study. The supervising midwives recruited the trained TBAs and the mothers for each group. On two occasions it was not possible to recruit mothers to participate, and on one occasion only two mothers were recruited. One group also included a village leader who requested permission to sit in on the meetings, and one group also included a nurse who was interested in participating. The method facilitated validation of the actual roles of the TBAs, (Barbour, 2005, Burns and Grove, 2005, Morgan and Krueger, 1998). This study design helped the researcher to innovate ways of not stifling the voices of the quiet ones within the group. (Kidd and Parshall, 2000, Owen, 2001). This ensured full participation of all the participants.

3.1.8.5. Data Collection Technique for Phase 5 (Monitoring and Evaluation Phase) of the Study:

Phase 5 is the Monitoring and Evaluation Phase of the study. The researcher measured the effectiveness of the teaching and learning techniques of the TBAs and how they apply what they learnt to practice. Gronlund, (1981) noted that measurement and evaluation are integral components of teaching and learning. This phase encompasses cognitive, psychomotor and affective domains (Gronlund, 1981). During this phase, the researcher monitored and evaluated the impact of using the MoH TBA modified curriculum on the infection prevention knowledge, practice and attitudes of the TBAs after the training intervention. The researcher visited and monitored the practices of TBAs who were found conducting deliveries at the seven health centers visited. These health centers were Chainda Rural Health Center, Kanakantapa Rural Health

Center, Nangwena Rural Health Center, Chinyunyu Rural Health Center, Chitemalesa Health Post and Palabana Rural Health Centers and Chongwe Health Center. Responses were obtained from twenty-five (25) tTBAs from Chinyunyu, Chishiko, Chitemalesa, Kakubo, Kanakantapa- A, K, F, H and B villages, Kapuka, Lubuko, Ndongo, Njobvu and Nkomesha villages. The TBAs were working at the health centers during the researcher's monitoring and evaluation tour.

The researcher, during this phase, monitored the use of the CDKs that TBAs use to conduct safe and clean deliveries. The researcher also monitored the areas within the TBAs scope of practice. This helped the researcher to determine and clarify the key areas to be evaluated and the intended outcomes and was aware of the strengths and limitations of the TBAs.

- The practice of the TBAs was monitored by observing infection prevention practices in the health centers mentioned above.
- Attitudes
- Resources

Practice

- **Monitoring During Pregnancy:** The researcher monitored whether the TBAs health-educated their clients against harmful cultural practices during pregnancy.e.g. the traditional belief of not telling people about the pregnancy when it is still small for fear of the pregnancy being bewitched. So the researcher ensured that the TBAs health-educated the mothers on the importance of early booking for Antenatal care.

-Monitoring During Labour

The researcher monitored whether the TBAs health educated their clients against using traditional herbs (akaselele) to hasten labour. These could cause infections in mothers

- **Monitoring During Delivery**

The researcher also monitored that the TBAs health educated mothers on the causes of post partum hemorrhage as culturally the mothers believe that unfaithfulness causes excessive bleeding during delivery.

- **Monitoring During Postnatal period**

  The researcher also observed on promotion of breast feeding against negative breast feeding cultural beliefs e.g mothers should apply locally- prepared herbs on the breasts before mothers are allowed to breast feed the infant. These herbs can cause breast infections in the mother. They can also infect the neonates.

- **Monitoring the TBAs Attitudes**

  The researcher also monitored the attitudes of the TBAs by:

  - Watching how they communicate with their clients.
  - Observing whether they demand for gifts for the services they provide?
  - Visiting the mothers after 6 hours, 6 days and 6 weeks and how long they stay during each visit.
  - Observing the difficulties and hindrances they encounter as they carry out their roles.

  The seven Rural Health Center In-Charges provided information on the resources available for the TBAs use and the supervision and performance assessments of the TBAs.

The researcher also collected data on the outcome of the training on the recipients of the tTBAs' care from the Out Patient's Register by documenting the number of mothers and infants who got infections within 14 – 28 days after delivery. This phase was guided by the proceed component of the theoretical model.

Developing the Monitoring and Evaluation Tool

During this phase, the information obtained from the above monitoring activities informed the development of the monitoring and evaluation tool.

The mothers that were delivered by the TBAs shared their experiences with the researcher and these were also documented.

In addition, the researcher also compiled all the critical issues that were derived from the literatures reviewed. These also informed the designing and development of the monitoring and evaluation tool.

These issues focused on relevant infection prevention measures as well as the socio-cultural-traditional norms and beliefs. These beliefs affect the infection prevention practices of the tTBAs. Most of these impact either positively or negatively on the health-seeking behavior and practices of women in their reproductive ages as well as

the teenagers. Some of these socio-cultural and traditional beliefs have been included in the monitoring tool as they are of Public Health concern.

The researcher considered the why, what, how, who, when and where issues necessary for designing and formulating the monitoring and evaluation tool.

The researcher also ensured that the areas to be evaluated related to the training objectives and the tTBAs learning experiences. The tool was designed to document the tTBAs learning outcomes. This was done after sampling the relevant areas to be evaluated which took into consideration the socio-economic and cultural challenges that the tTBAs encounter while carrying out their roles. The study ensured that the tools covered the knowledge (cognitive) and the skill (psycho-motor) domains of the tTBA performances as well as the system capability to provide the necessary resources to support the tTBAs' roles in the medically and geographically isolated rural settings according to the theoretical model that guided the study. The researcher also devised a marking key to grade the performance of the tTBAs after the evaluation. The tool also devised the indicators to be monitored and evaluated.

The monitoring and evaluation tool focused on ten main areas detailed below.

- The supervision on the infection prevention practices of the tTBAs during pregnancy, labour, delivery and the puerperal period.
- Health educating the community on maintenance of personal hygiene practices and environmental sanitation.
- Health care waste management
- Working with SMAG in the catchment area.
- Counseling the youth and adults in rural settings
- Integration of positive socio-cultural norms and traditional practices
- The availability of resources like the CDKs
- Their health education and counseling roles.
- Referral roles
- Record keeping practices

During this phase, the researcher also documented the outcome of the evaluation in terms of the number of mothers and neonates who were infected within 14 – 28 days of the delivery.

3.2 Pre Test

Bassvanthappa, (2007) stated that a pilot study is a small preliminary investigation among respondents with similar characteristics as in the major study. It is designed to highlight problems that may surface in the major study and so correct them before undertaking the main study. A pilot study related to this study was conducted in Chibombo District Health Management Board Catchment area which has the same characteristics as the two study locations. The researcher interviewed 12 TBAs in the district. The objectives of the pilot study were the following:

- To ascertain the validity and reliability of the study instruments in-order to correct them before embarking on the main study.
- To detect any errors in the questionnaire
- To determine the appropriateness of the questions.
- To determine the length of time it would take to interview one TBA
- To see if the TBAs understood the questions easily.

The pre Test helped in identifying any errors in the semi-structured questionnaire. After the pre test, changes were made on the questionnaire. This helped to ensure the validity and reliability of the study instruments

3.3. Data Analysis

. The main aim for the analysis was to derive meaning and interpret the study findings from the collected data. The semi-structured questionnaire was used to collect the quantitative data. The collected data was sorted out, checked for completeness, internal consistency and accuracy before data entry was done using the Statistical Package for Social Sciences (SPSS, Grad Pack 17.0).

Data analysis included running frequencies, determining associations between the study variables of knowledge, practice and attitude using the Pearson's Chi-square, and conducting a multivariate logistic regression analysis. The level of statistical significance was set at 5%. Fisher's exact two-tailed probability tests were used in circumstances where the cell count was below 5 in each cell and the cell count is more than 20%. Continuous variable of age was compared using the Student's t test. The statistical significance was set at $P<0.05$ or less. The study used the logistic regression to do comparable analysis between knowledge and site thereby adjusting for age and education.

The researcher developed a scoring system that was used to analyse and evaluate the level of knowledge of each TBA. There were forty-four (44) knowledge questions that attracted eighty-two (82) responses. A point was given to each correct response. Those who scored less than 50% (20-40) correct responses were classified as having poor knowledge, those who scored 50% - 75% (41-61 correct responses) were classified as having good knowledge while those who scored 76% and over were classified as having excellent knowledge.

The same process was used to analyse and evaluate the practice levels. A total of thirty-one practice questions attracted fifty-nine (59) responses. Those who scored less than 50% (< 26) correct responses were classified as having unsatisfactory /poor practice, those who scored 27-37 correct responses were classified as having satisfactory practice, those who scored over 54% (38-48) correct responses were classified as having good practice while those who scored over 83% (49-59) were classified as having excellent practice.

The researcher applied the same process in analyzing and evaluating the attitude scores. Those who scored less than 50% (<4) correct responses were classified as having poor attitude while those who scored over 50% were classified as having good attitude.

Qualitative Content Analysis for the FGD

Responses from the Focus Group discussions were used to collect data for the qualitative component of the study.
The study used Graineham, and Lundman (2004) process of conducting content analysis due to the trustworthiness of the process of qualitative content analysis.

- The unit of analysis in this study is the interview text on what the TBAs do in their rural settings. This FGD focused on the interpretation from the 'manifest content'. The manifest content described the visible and obvious aspects of the texts from the discussions (Downe- Wamboldt,1992, Kondracki et al., 2002, Graneheim et al, 2004).
- The Principle Investigator identified and noted the underlying meanings from the manifest content.

- The researcher went through the texts from the discussions over and over again, forwards and backwards through the text for familiarisation.
- The researcher then teased out and extracted their experiences that relate to their actual roles during which they applied their disease and infection prevention measures.
- The researcher derived concepts from the characteristics of the responses in the interview texts. The interview texts were then grouped into meaning units that link to each other, drew together and compared the discussions which were similar in nature in each meaning unit.
- These meaning units were condensed and coded.
- The codes were later grouped together according to their differences and similarities.
- The main themes were identified and grouped into categories, sub-categories and codes.

In this study, the process of analysis of the FGD necessitated the researcher going through the texts from the interviews over and over again for familiarization. The data were analysed using the qualitative content analysis method. The study used the process of conducting content analysis recommended by Graineham, and Lundman (2004).

The unit of analysis in this study was the interview text on what the TBAs do in their rural settings. This FGD focused on the interpretation from the 'manifest content'. The manifest content described the visible and obvious aspects of the texts from the discussions (Downe- Wamboldt,1992, Kondracki et al., 2002, Graneheim et al, 2004). The Principal Investigator identified and noted the underlying meanings from the manifest content. The researcher then teased out and extracted the experiences that relate to the TBAs' actual roles during which they applied disease and infection prevention measures.

The researcher derived concepts from the characteristics of the responses in the interview texts. The interview texts were then grouped into meaning units that linked to each other, and compared the discussions which were similar in nature in each meaning unit.

These meaning units were condensed and coded. The codes were later grouped together according to their differences and similarities. The main theme was identified and grouped into subthemes, categories, sub-categories.

Table 3.3: Themes, sub-themes and categories for the FGD.

Main theme	Sub-Themes	Categories
Providing Community Social Support	**1.** Providing Safe Motherhood Initiatives	Ia. Care during Prenatal period. Care during Prenatal period. -.-Health education on Early booking at Antenatal clinics. -Good nutrition - Infection prevention during pregnancy - Infection Prevention Practice - Personal Hygiene Practices - Maintenance of environmental sanitation. Avoiding harmful traditional practices during pregnancy, labour delivery and the post partum period
		Ib. Observing Infection prevention Measures during the Intrapartum Period -Care During the labour and the Intra-partum Period by conducting the deliveries and caring for the women during the birthing process. - Avoiding harmful traditional practices during labour.
		Ic. Postpartum care 1ci: Integrating Traditional Practices With Modern Medicine in the Disposal of the Placenta After Delivery and Avoiding Harmful Traditional Practices During the Post Partum Period 1cii:Care of the Vaginal and Perineal wounds.. 1ciii: Baby bathing.after Delivery 1civ:-Care of the Cord. 1cv: Handling of complications like bleeding from the cord. 1cvi: Infant Feeding practices -Breast feeding practices. 1cvii: Prevention of Mother–to-Child- Transmission of HIV Virus 1cviii: Family Planning 1cix: Post Natal Health Education Messages on Clean Environment
	2. Psycho-Social Counseling	2a. Male Involvement/Support for the Family. 2b. Counseling to Prevent Infections due to Abortions, Save Lives and improve parent-daughter relationships. 2c. Couple counseling for HIV testing 2d. Teamwork

Table 3.3 depicts the main theme, subthemes, categories and sub-categories.

3.4. Validity

Ensuring Validity

In this study, the researcher ensured validity by doing the following:

The Researcher searched global, regional and national literature before formulating the questionnaire. The questionnaire contained questions on all the important variables by asking questions in relation to the objectives \of the study. The flow of the questions was logical, sequential, simple, clear and so easy to follow by the study respondents. Besides, instructions and explanations on how to answer them were given in the questionnaires.

A pre test was conducted before the main study. The questionnaire included open-ended questions which brought out the true feelings of the study respondents. The respondents in the pilot study were located very far from the respondents in the main study and so were not included in the main study.

My two renowned supervisors checked and approved the semi-structured interview schedule before they were used for data collection.

Validity was also ensured by avoiding biases in selecting the study respondents.

The Research and Ethics Committee of the School of Medicine checked and approved the Research proposal which included the research questionnaires following presentations to the Post Graduate Research Presentation Committee of the School of Medicine as well as to the Research and Post Graduate Forum of the University of Zambia.

The data was analysed, interpreted accurately according to the study findings and the researcher finally came up with the main study findings which added new bodies of knowledge to the study.

3.5 Reliability: This is the ability of the research instrument to measure the attributes it is designed to measure consistently each time it is used. (Polit and Hungler,1995). Reliability was assured by conducting the training in their natural environments of practice. The researcher based the study instrument on issues that surfaced during global, regional and national literature reviews. In-order to ensure reliability of the study instruments, the principle investigator and the research assistants checked and confirmed the completeness of the data collected using the study tools. This was done in-order to ensure that future researchers using this tool for pre and post training of TBAs will obtain the same results whenever and wherever

the tools are used. The questionnaire was used to ask the study participants the questions sequentially only once. A pre test was done and the necessary corrections were made on the questionnaire. My supervisors and experts in this field reviewed the questionnaire. The pilot study was done in an environment with similar characteristics as Chongwe. Also, the principle investigator ensured reliability by applying various triangulation methods in the data collection, analysis and interpretation of the data as advocated by Polit & Hungler, 1997). These are the application of the mixed method approach known as method triangulation, the use of the precede–proceed model which also encompasses other theories to interpret the data known as theory triangulation Also the researcher used several people like the Surveillance Officer, the trained midwives to collect relevant data – Investigator triangulation (Polit & Hungler 1997).

3.6. Ethical and Cultural Considerations

The research proposal was approved by the Research and Ethics Committee of the School of Medicine at the University of Zambia. This committee considered all ethical and cultural issues involving human subjects. Since the study dealt with human beings, therefore, research ethics was maintained. The researcher submitted a study proposal to the Research and Ethics Committee for clearance and approval. The researcher also conducted an open presentation of the study proposal to the Post Graduate Board members and the School of Medicine faculty for academic soundness. Informed consent was obtained from the TBAs for the study. A written permission for the study was obtained from the District Director of Health in Chongwe to conduct the study in the district. This ensured that all the protocols were observed and so no hindrances to the study were encountered. The names of the study participants did not appear on the interview schedules. Each interview schedule was assigned a number to identify the respondent The research assistants treated all data collected with utmost respect and confidence thereby maintaining confidentiality and anonymity. Triangulation was also employed to ensure reliability of the study instruments.

3.7 Dissemination of the Findings and Knowledge Management

This entails informing all the stakeholders of the findings from the study. A special dissemination workshop will be held at the Chongwe and Chibombo DHMT offices so that all the mothers and the TBAs who took part in both the pilot and main studies will be informed of the study findings. It is hoped that this will encourage proper monitoring and supervision of the TBAs, better working relationships between the DHMT staff, the health center staff, the Neighbourhood Health Committee membership and the community members as a whole.

In this study, the stakeholders are the Reproductive Health Policy makers in the Ministry of Health, the University of Zambia Management, the School of Medicine Faculty, all the co-operating partners who funded this study, the Reproductive Health Staff of the Ministry of Health, the Maternal and Child Health Co-ordinators of all the District Health Management Boards in the country, the NHCs and the Traditional Healers Association of Zambia leadership in Chongwe and Chibombo Districts.

The copies of the thesis will be sent to the Policy Analyst Unit of the Ministry of Health for implementation purposes. A copy will be deposited at the National Achieves where it can serve as reference materials for the public, the main library of the University of Zambia, as well as the Department of Community Medicine and the Medical School Library for reference materials and other research purposes. Copies will also be left at the DHMB offices in all the Districts in the country where they will be used as reference materials.

In summary, it is hoped that the TBAs varied roles and contributions would add value to an effective and efficient Safe Motherhood Initiatives in rural geo-locations.

CHAPTER 4

4.0 DATA PRESENTATION OF RESULTS

4.1. Introduction

The researcher discussed the presentation of the study findings in this chapter. This study determined the degree of impact of the MoH TBA training curriculum on the infection prevention knowledge, practice and attitude of TBAs in Chongwe district.

There were 238 study participants during the needs assessment and 207 from this number were available for the training phase of the study. Mpanshya which was the control site had 107 study participants while Chongwe which was the intervention site had 100 study participants.

4. 1.1. Data Presentations

The findings of the research have been presented logically and sequentially according to the five phases of the study as illustrated under the study methodology

The study findings of each phase have been presented in the form of tables, graphs and pie charts where applicable for better understanding and examining of the relationships between the collected data.

The findings in the five phases are detailed below.

4.1.1. Phase 1: Situation Analysis

This phase consists of the record review and the needs assessment.

- **Data Presentation on the Record Review in Chongwe.**

During March- October, 2006, the record review was conducted in Chongwe district within the province of Lusaka. The records in the Out patient's Register revealed that 20% of the mothers developed puerperal infections while 27.3% of the babies developed infections within 14 days of delivery. The mothers were 24.9 years on the average with a parity of two (2) children each aged 14.6 days old**.**

- **Data Presentation on the Record Review in Mpanshya.**

During March- October, 2006, the record review was conducted in Mpanshya within the then Chongwe district within the province of Lusaka. The records in the Out patient's Register revealed that 21% of the mothers developed puerperal infections while 27.% of the babies developed infections within 14 days of delivery. The mothers were 27.6 years on the average with a parity of three (3) children each aged 21 .5 days old**.** Tables 4.1 and 4.2 illustrate the above findings.

Table 4.1: Data Presentation on Infections in Babies Delivered by both rained and Untrained TBAs in Chongwe District from March- October, 2006.

Chongwe			**Mpanshya**		
Total number of babies	Babies with infections	% of babies with infections	Total number of babies	Babies with infections	% of babies with infections
66	18	27.3%	120	32	27%

Table 4.1 shows that the infant morbidity to be at 27% at both Chongwe and Mpanshya study locations.

Table 4.2: Data Presentation on Infections in Mothers Delivered by both Trained and Untrained TBAs in Chongwe District From March- October, 2006.

Chongwe			**Mpanshya**		
Total number of mothers	Mothers with infections	% of mothers with infections	Total number of mothers	Mothers with infections	% of mothers with infections
66	13	20%	120	25	21%

Table 4.2 shows that 20% of mothers had puerperal infections in Chongwe and 21% in Mpanshya**.**

This phase was guided by phase 1 of the precede-proceed theoretical framework. The phase revealed high infant and maternal morbidity rates in Chongwe district demonstrating the TBAs poor quality of work. The situation analysis showed an infant morbidity rate of 27% out of 66 deliveries in Chongwe and 27% out of 120 deliveries in Mpanshya. The data from tables 4.1 and 4.2 showed that infections occurred in these babies during their neonatal periods in both Chongwe and

Mpanshya. According to WHO, (2011), 'the neonatal period commences from birth and ends 28 completed days after birth'.

Data Presentation on the Needs Assessment

The needs assessment component showed poor findings on the knowledge and practice levels of all the TBAs.

4.2. Data Presentation on Phase 2. Desk Review

Findings were presented under two components

- Findings from the Desk review.
- Findings from the bacterial analysis from the razor blades found in the CDKs.

Findings from the Desk Review

The researcher summarized the findings summarized the observations made from all the curricula used by the key stake holders. Major observations made on the WHO TBA Training guidelines are detailed below followed by a summary of all the observations made during the Desk Review. In addition, the results of bacteriological samples taken from razor blades found in CDKs are also presented.

Major Observations on the WHO TBA Training Guidelines.

- The WHO TBA Training Guide is not country - specific
- The syllabus did not address contextual health issues in our environment in-order to make the syllabus country–specific so the NHCs and the health center staff are omitted during the TBA training

Summary of the Observations Made From all the Curricula used by the Four Key Stakeholders.

Unstandardised Training Period

The desk review showed that two key stakeholders ZIHP/WVI) spent an average time of 2 hours to cover Introduction to the TBA training course

All the stakeholders spent an average of nine to ten (9-10) hours on covering each of the following topics Harmful traditional practices, care during pregnancy, management of normal labour and complications during labour and delivery. Nangoma Mission Hospital, Zambia Integrated Health Programme (ZIHP) and World

Vision International (WVI) spent an average time of six (6) hours to cover the topics on common illnesses in childhood while Ministry of Health and Nangoma Mission Hospital spent an average of two-two and a half hours($2\text{-}2^{1/2}$) to cover each of the topics on Counseling, Male and Female Reproductive organs, Infection prevention, Post natal care, family planning, Breech delivery, record keeping, sexually-transmitted infections and HIV. The ZIHP, WVI and Ministry of Health spent four hours on the average to cover each of the topics on preparation for delivery, referrals, breast feeding diarrhea, dehydration and oral rehydration solutions while Nangoma Mission Hospital spent the same number of hours on care of the new born. All the other stake holders except Nangoma Mission Hospital spent four hours to cover the topic on post abortion care.

The researcher noted that ZHIP and WVI spent approximately 21 days while MoH and Nangoma Mission Hospital spent 8 days (2 weeks approximately) on theory during the TBA training.

Infection Prevention

- There was emphasis on hand washing by the two key stakeholders (ZIHP/WVI).
- There was no scientific evidence of the presence of micro-organisms on hands
- There was no emphasis on the application of Universal Precautions

Gloving

- There is no discussion on gloving. The TBAs were not taught how to put on the gloves.

Decontamination

- There is no mention of decontamination using the jik 0.5% (1-6) solution, though boiling of equipment is mentioned. The technique is not complete as the number of minutes was not indicated for boiling of equipment. The antiseptic used was said to be savlon or dettol

Protective Clothing

- One of the key stake holders did not indicate whether the TBAs are provided with protective clothing or not.

Hand Washing

Scrubbing of hands was taught. The TBAs should not scrub their hands vigorously as they could abrase their skin thus predisposing themselves to acquiring HIV and other blood-borne pathogens.

HIV/AIDS

This was taught under sexually transmitted infections, Prevention of HIV/AIDS from the client to the TBA is indicated in the Training Manual. However, preventive measures are not indicated. The curriculum did not discuss clients' referral when found to be HIV positive.

Availability of Clean Delivery kits (CDKs).

The curricula did not indicate whether the TBAs are provided with CDKs.

The desk review showed lack of uniformity in the TBA training programme in the country and so went on to identify key omissions noted from the desk review.

Gaps/Omissions in the Syllabus

The study noted some gaps that included some relevant topics and current concepts that would enhance the infection prevention knowledge and practices of the TBAs. All these omissions have been included in the Modified curriculum and these are:

- The aims of the course, and the study expectations from the learners before, the course and expected competencies at the end of each topic.
    - What is infection prevention?
    - Why is it important in the TBA practice?
    - Timing the boiling and care of the equipment used for conducting deliveries
    - Micro-organisms (germs) that can cause infections in mother and baby
    - Identifying the harmful traditional and cultural beliefs and practices during pregnancy, labour, delivery, puerperal period.
    - Signs and symptoms of puerperal sepsis
    - Care of the baby after delivery
    - Cutting and care of the cord after delivery,
    - Recognizing the signs and symptoms of an infected cord
    - Referral of the client with the danger signs

- The practice of universal infection prevention measures. Health education on Infection prevention practices during pregnancy, labour, delivery, and the puerperium
- TBAs Preparation for the delivery environment
- Boiling and storing of water that the TBA uses during delivery.
- Modes of transmission of the HIV virus in TBA practice.
- Impact of HIV/AIDS on TBAs Practice.
- Prevention of Mother to Child Transmission

New Topics and Current Concepts Included in the Curriculum

In addition, the curriculum was further strengthened by including the following topics stated below:

- Application of infection prevention practices in relation to harmful traditional and cultural practices
- Health education on prevention of communicable diseases: This topic brought out all the concerns on Infection prevention issues regarding the communities' concepts of health.
- Care of the birthing environment both before and after the delivery in terms of cleaning the environment of delivery both before and after the birthing process.
- Hand washing practices
- Putting on gloves for infection prevention
- TBAs waste management
- Caring for the TBAs and handling burnout.
- Integrated Management Childhood Illnesses (IMCI),

  The tTBAs are expected to be health educating mothers on care of babies as advocated in Integrated Management Childhood Illnesses (IMCI), e.g. the use of zinc supplement once severe dehydration has been corrected in the treatment of children suffering from severe diarrhoea, infant resuscitation practices, referring HIV positive pregnant women to clinics.
- Prevention of Mother-to Child Transmission (PMTCT) of the HIV virus,
- Male circumcision and prevention of cancer of the cervix
- Infection prevention against the acquisition of blood-borne pathogens like hepatitis B. C and HIV/AIDS viruses.

Specimens taken during Phase 2 of the study.

Bacterial analysis of Razor blades found in CDKs

Table 4.3: Results of Bacteriological screening of Ordinary Razor Blades used in the TBAs Kits on 26/09/07 and 02/10/07.

Type of razor blade	Colour	Date of specimen	Culture Result after 48 hours
Gillette	Silver blue 1	26/09/07	No growth
Gillette	Silver Blue 11	26/09/07	No growth
Laser super	Stainless 1	26/09/07	No growth
Laser super	Stainless 11	26/09/07	No growth
Vit gut super max	Stainless	02/10/07	No growth
Topaz	Stainless	02/10/07	No growth

Table 4.3 shows that there was no growth on all the blade specimens after 48 hours incubation

The results from Table 4.3 showed that there was no growth on all the blade specimens after 48 hours incubation. This laboratory analysis provided scientific evidence of the sterility of the blades found in the CDKs. The above findings prompted the development of the Modified MoH TBA Training Curriculum during the next phase below.

4.3. Data Presentation on Phase 3:

The Development of the Modified MoH TBA Training Curriculum.

The researcher developed the modified MoH TBA Training curriculum during the phase three of the study after conducting the desk review in phase 2 above. The contents of the developed curriculum were derived from the gaps identified in the desk review (phase 2) above which included the omissions, and current concepts in infection prevention.

Rationale for all the inclusions

The inclusions of all the current concepts in infection prevention in the curriculum ensured that the tTBAs conducted safe and clean deliveries and so 'provide cost-effective quality care as close to their clients in geographically and medically–disadvantaged rural areas in Chongwe district as possible' since half a loaf is better than no bread at all'. This service- provision would also fulfill the Mission statement of the MoH.

It is hoped that the modified TBA Training Curriculum will facilitate effective 'task shifting and knowledge-transfer from the midwives to TBAs in rural communities, promote supportive supervision through the use of the monitoring tool in phase five of the study in accordance with the precede theoretical model which guided the study.

After the development of the curriculum, the next phase saw the intervention (training) of the TBAs in-order to improve their infection prevention knowledge and practices. This intervention thus fulfilled the predisposing factors in the precede-proceed theoretical model that guided the study.

4.4. Presentation of findings in Phase 4 of the study:

Phase four has three (3) components namely phases 4a, 4b, and 4c

Phase 4a has two components namely:

- The Training(intervention) component
- Taking specimens from the hands of 79 TBAs for laboratory analysis.

Phase 4b is the comparative analysis of the pre course and post course quantitative data.

Phase 4c is the FGD

Data Presentation on Phase 4a: The Training of the TBAs Component

This phase consisted of training of two groups of TBAs the control group of one hundred and seven (107) TBAs in Mpanshya and intervention group of one hundred (100) TBAs in Chongwe. In addition, activity 1 of phase 4a consists of results from swabs taken from the hands of 78 TBAs during the training

Table 4.4a: The Control Group

Group	No of TBAs trained	Date of training	Training location
1	25	31/01 – 13/02/2008	St Luke's Mission Hospital
2	32	31/01 – 13/02/2008	St Luke's Mission Hospital
3	25	25/02 -05/03/2008	St Luke's Mission Hospital
4	25	22/02 – 06/03/2009	Chongwe District Guest house
Total	107		

Table 4.4a shows that four control group of trainings were conducted. The first two groups of training took place at St Luke's Mission Hospital from 31/01-13/02 /2008. The first and second groups consisted of 25 TBAs while the second group consisted of 32 TBAs making a total of 57 TBAs. The third group of 25 TBAs was trained from the 25/02/2008 – 05/03/2008. The fourth group of 25 TBAs was trained from 22/02/2009 -06/03/2009 in Chongwe District Guest House due to lack of accommodation in Mpanshya. The number of control TBAs trained totaled 107.

Table 4.4b: The Intervention Groups

Group	No of TBAs trained	Date of training	Training location
1	25	25/05 - 07/06/2008	Chongwe District Guest house
2	25	30/06 – 11/07/2008	Chongwe District Guest house
3	25	15/09 – 26/09/2008	Chongwe District Guest house
4	25	02/02 – 13/02/2009	Chongwe District Guest house
Total	100		

Table 4.4b illustrates that four intervention group of trainings were conducted in Chongwe Rest House. The first group of twenty-five (25) TBAs training took place from 25/05- 07/06 /2008. The second group which consisted of 25 TBAs was trained from 30/06/2008 -11/07/2008. The third group of 25 TBAs was trained from 15/09/2008 -26/09/2008 while the fourth group of 25 TBAS was trained from 02/02/2009 – 13/02/2009. The number of the intervention TBAs trained totaled 100.

Laboratory Analysis of specimens taken from the hands of 78 TBAs in phase 4a.

This activity consisted of samples taken from the right hands of seventy-eight (78) study participants chosen by simple random selection. These were sent for laboratory analysis.

Table 4.5: The micro-organisms isolated from the right hands of each group of the 78 TBAs who underwent the hand swabbing exercise in descending order of magnitude.

Micro-organism isolated	Total no of 36 isolates from 22TBAs	Total no of 20 isolates from 14 TBAs	Total no of 29 isolates from 20TBAs	Total no of 22 isolates from 22 TBAs	Total = 107 Isolates from 78 TBAs
Coagulase negative staph	15	8	15	0	33 (30.8%)
Staph aureus	4	2	3	8	16 (14.9%)
Strep spp	5	1	2	1	7 (6.5%)
Enterobacter species	3	1	2	0	6 (5.6%)
Pseudomonas aeruginosa	0	0	0	5	5 (4.7%)
Micrococci	2	2	0	0	4 (3.7%)
E. Coli	2	2	0	0	4 (3.7%)
Proteus mirabilis	0	0	0	3	3 (2.8%)
Enterococcus	0	0	3	0	3 (2.8%)
Bacillus species	0	0	3	0	3 (2.8%)
Klebsiela	1	1	0	0	2 (1.9%)
Acinetobacter	1	1	0	0	2 (1.9%)
Burkhoderia	1	1	0	0	2 (1.9%)
Diphtheroids	1	1	0	0	2 ((1.9%)
Klebsiela pneumonia	0	0	0	1	1 (0.9%)
Strep Pneumoniae	0	0	0	1	1 (0.9%)
No growth	1	0	0	3	1 (0.9%)
Citrobacter species	0	0	1	0	1 (0.9%)
No of TBA Cohorts	22	14	20	22	78

Tables 4.5 shows that a total of 107 isolates were cultured from the hands of 78 TBAs

The summary of all the isolates is shown in Table 4.5

Table 4.5 shows that most (33) 30.8% of the 107 isolates was Coagulase negative staph, (16) 14.9% was staph aureus, (7) 6.5% was Strepp species,(6) 5.6% was Enterobacter spp.(,5) 4.7% was Pseudomonas aeruginosa

(4) 3.7% was Micrococci and E Coli respectively; (3) 2.8% was enterococcus spp, Bacillus and Klebsiela spp.respectively.

4.5. Data Presentation on Phase 4b: Comparative Analysis of the Pre and Post Quantitative Data.

Introduction

This Phase was on the comparative analysis of the pre and post course interview schedules.

A total number of 238 TBAs were enrolled by the health centre staff on behalf of the researcher at the base line and these included 119 respondents from both Mpanshya and Chongwe. At the intervention stage, the study enrolled 207 participants – representing an approximate 87% response rate. One hundred and seven (107) from Mpanshya constituted the control group while 100 from Chongwe constituted the intervention group. The study used a semi-structured interview schedule to collect data from all the respondents.

The presentation and analysis are from a quasi- experimental study of the TBAs in Mpanshya and Chongwe which was carried out between 2007 -2009. All TBAs were volunteers and signed a written informed consent statement prior to taking part in the study. The findings were presented in the form of tables and graphs in-order to give clear and vivid illustrations of the study findings and thus avoid monotonous narrations of the study findings. The tables give a clear summary of the findings while the cross tabulations bring out the associations between the study variables. All the tables and graphs in each section have been labeled, numbered and summarized below. The findings have been presented in sections as described below.

Section A

The graphs, and tables in this section deal with socio-demographic variables of the study participants.

Section B

The tables in this section show the respondents infection prevention knowledge levels at both pre-and post course.

Section C

The tables in this section show the respondents infection prevention practices at both pre-and post course stages of the study.

Section D

The tables in this section show the respondents infection prevention attitudes at both pre-and post course

Section A

The graphs, and tables in this section deal with socio-demographic variables of the study participants.

Table 4.6a: Socio Demographic Characteristics

Pre-course				Post-course		
Factor	Site 1 Mpansh ya	Site 2 Chongw e	P-Value	Site 1 Mpansh ya N%	site 2 Chong we n%	P-Value
Marital status						
Yes	110 (92.4%)	77 (64.7%)	<001	84(78.5 %)	77(77%)	0.795
No	9 (7.6%)	42(35%)		23(21.5 %)	23(23%)	
Total	119 (100%)	119(100 %		107(100 %)	100(100 %)	
No of children						
5 children	34(28.6 %)	27(22.7 %)	0.553	45(42.1 %)	40(40%)	0.835
7 children	39(32.7 %)	40(33.6 %)		38(35.5 %)	34(34%)	
>8children	46(38.7 %	52(43.7 %)		24(22.4 %)	26(26%)	
Total	119(100 %)	119(100 %)		107(100 %)	100(100 %)	
Jobs besides delivering babies						
Teaching	7(5.9%)	2(1.7%)	0.224	14(13.1 %)	14(14.3 %)	0.182
Farming/Business/Ho usewife	97(81.5 %)	103(86. 6%)		85(79.4 %)	69(70.4 %)	
Leaders in V. committees	15(12.6 %	14(11.8 %)		8(7.5%)	15(15.3 %)	
Total	119(100 %)	119(100 %)		107(100 %)	98(100 %)	
Husband's support						
Yes	76(63.9 %)	52(43.7 %)	0.002	86(81.1 %)	76(79.2 %)	0.726
No	43(36.1 %)	67(56.3 %)		20(18.9 %)	20(20.8 %)	
Total	119(100 %)	119(100 %)		106(100 %)	96(100 %)	
Age			Total			Total

22-31	4(3.4%)	0(0%)	4(1.7%)	5(4.7%)	5(5%)	10(4.8 %)
32-41	48(40.3 %)	29(24.4 %)	77(32.4 %)	36(33.6 %)	17(17%)	53(25.6 %)
42-51	56(47.1 %)	69(58%) .	125(52. 5%)	44(41.1 %)	46(46%)	90(43.5 %)
52-61	11(9.2 %)	19(16%)	30(12.6 %)	21(19.6 %)	26(26%).	47(22.7 %)
62-71	-	1(0.8%)	1(0.4%)	1(0.9%)	6(6%)	7(3.4%)
72-81	-	1(0.8%)	1(0.4%)	-	-	-
Total	119(100 %)	119(100 %)	238(100 %)	107(100 %)	100(100 %)	207(100 %)
Grand Total	445 (100%)					

Table 4.6b Pre-course Number of Deliveries

		Weekly		Monthly		Yearly	
Age Group of TBAs	#of TBAs	Mup	Cho	Mup	Cho	Mup	Cho
22-31 Years	M4,C0	7	0	25	0	85	0
32-41 Years	M48,C29	82	62	270	228	1220	1323
42-51 Years	M56,C69	122	150	378	614	2680	3273
52-61 Years	M11,C19	26	40	102	156	835	924
62-71 Years	M0,C1	0	1	0	60	0	100
72-81 Years	M0,C1	0	3	0	14	0	62
Total	**M/C119**	**237**	**256**	**775**	**1072**	**4820**	**5682**
Average deliveries		**2**	**2**	**7**	**9**	**41**	**47**

Table 4.6b showed that at pre-course the average number of deliveries per week total was 2, 7-9 monthly and 41-47 yearly per TBA between Mpanshya and Chongwe.

Table 4.6c Post-course number of deliveries by trained TBAs (tTBAs)

		Weekly		Monthly		Yearly	
Age Group of TBAs	#of TBAs	Mpan	Cho	Mpan	Cho	Mpa n	Cho
22-31 Years		4	2	16	5	37	30
32-41 Years		26	35	86	124	323	521
42-51 Years		27	42	106	140	372	649
52-61 Years		12	22	47	72	166	362
62-71 Years		1	7	3	16	5	41
72-81 Years		0	0	0	0	0	0
Total	**M107,C100**	**70**	**108**	**255**	**357**	**903**	**1603**
Average deliveries		**1**	**1**	**3**	**4**	**8**	**16**

Table 4.6c indicated that at post-course the average number of deliveries per week total was 1, 3-4 monthly and 8-16 yearly per TBA between Mpanshya and Chongwe.

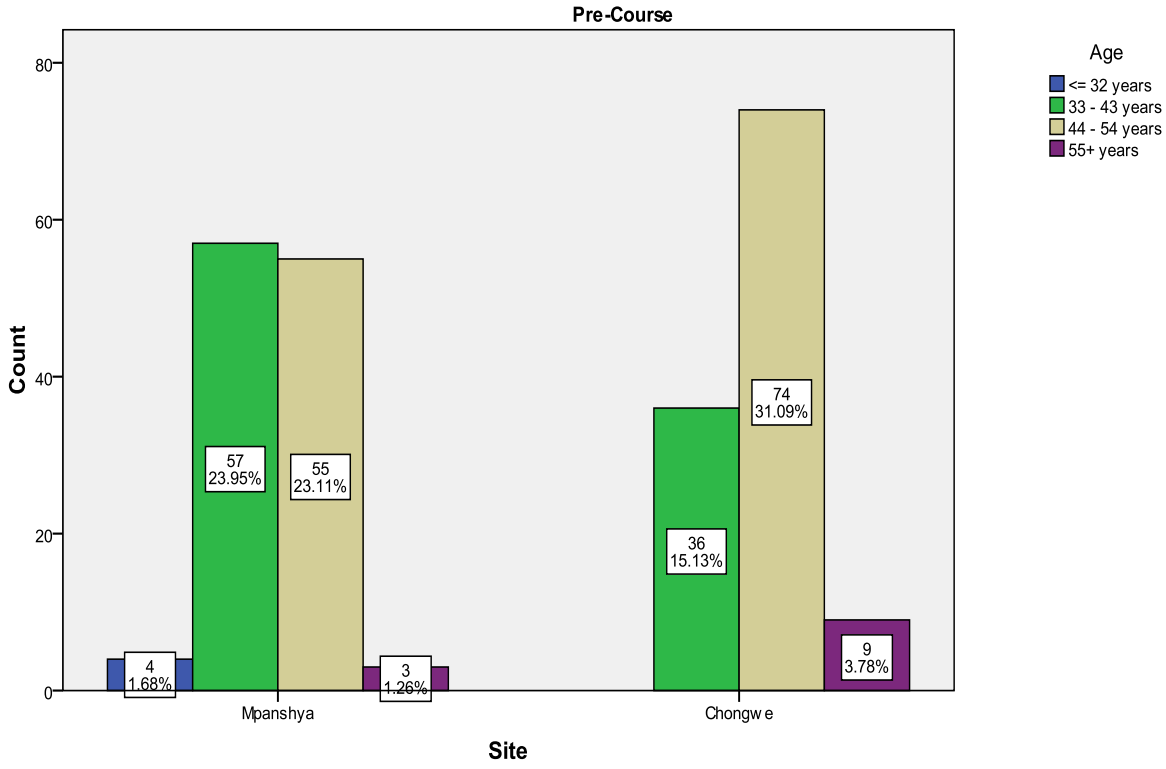
Table 4.6a shows that generally, the TBAs were not significantly similar in the two settings - during the baseline and the post course stages of the study on many demographic characteristics. The majority of the TBAs were married and there were significant differences within the two sites at baseline (P<0.001) whereas at the post course, there were no significant differences ((P=0.795).

All the TBAs under study had children and the mean was 4. However, there were no significant differences in the number of children within the two sites at the baseline (P=0.553) and during the post course (P=0.835). The TBAs were involved in a number of other community activities including teaching, farming, business, tending the home. They were also leaders in various committees. (However, these roles were not significantly different in the two sites at baseline ((P=0.224) and at intervention (P=0.182) stages of the study.

Table 4.6b showed that at pre-course the average number of deliveries per week total was 2, 7-9 monthly and 41-47 yearly per TBA

Table 4.6c indicated that at post-course the average number of deliveries per week total was 1, 3-4 monthly and 8-16 yearly per TBA

Figure 4. 1a: Age at Pre course



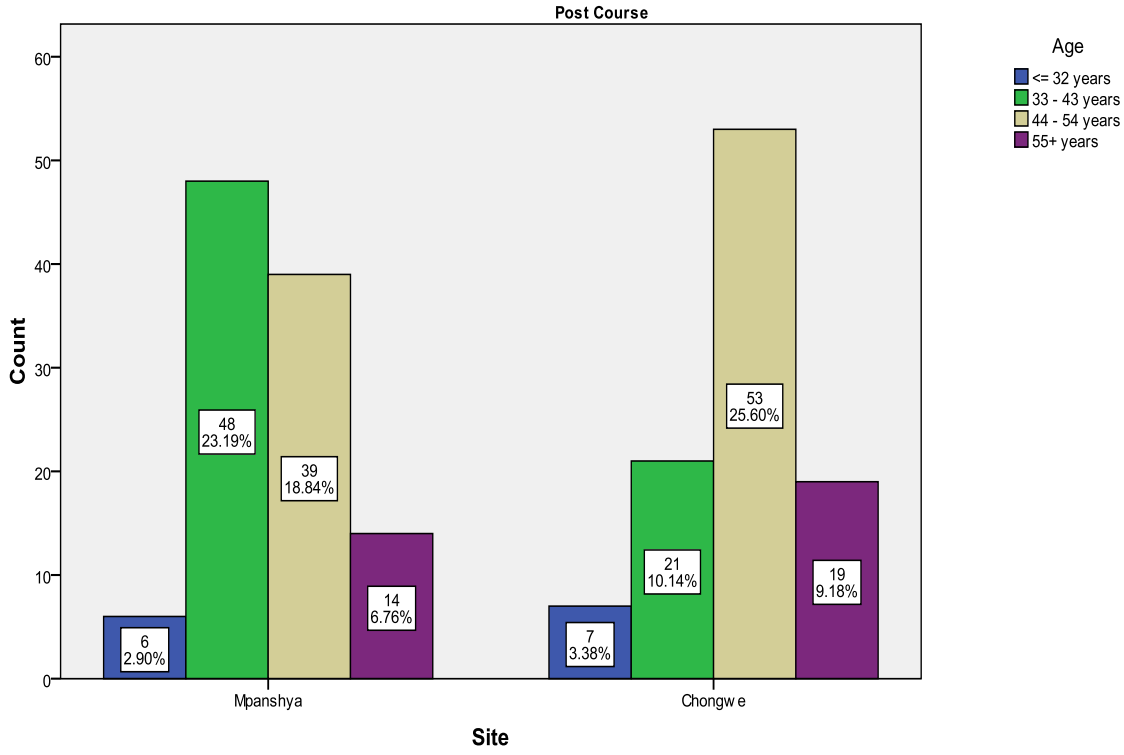


Figure 4.1b: Age at post course

Fig 4.1a and 4.1b show the age distributions at pre and post course.

At pre-course the majority 74 (31.09%) of the study participants were aged between 44 and 54 years in Chongwe while in Mpanshya, 55 (23.11) fell in the same age group. This shows that the majority of the participants in that age group were in Chongwe.

At pre-course, respondents aged 30 – 43 years in Mpanshya stood at 31 (26%), while in Chongwe respondents aged 30 – 43 stood at 18 (14.9%). Therefore, participants aged 30 – 43 years at both sites stood at 98 (41.1%) at pre-course.

At post course, respondents aged 30 – 43 years in Mpanshya stood at 26%, while in Chongwe participants of the same age group stood at 14% totaling 40% of participants aged between 30 and 43 years of age at both sites.

Figure 4.1c : Mean Age and associated standard deviation at Pre-Course (Student's T-test)

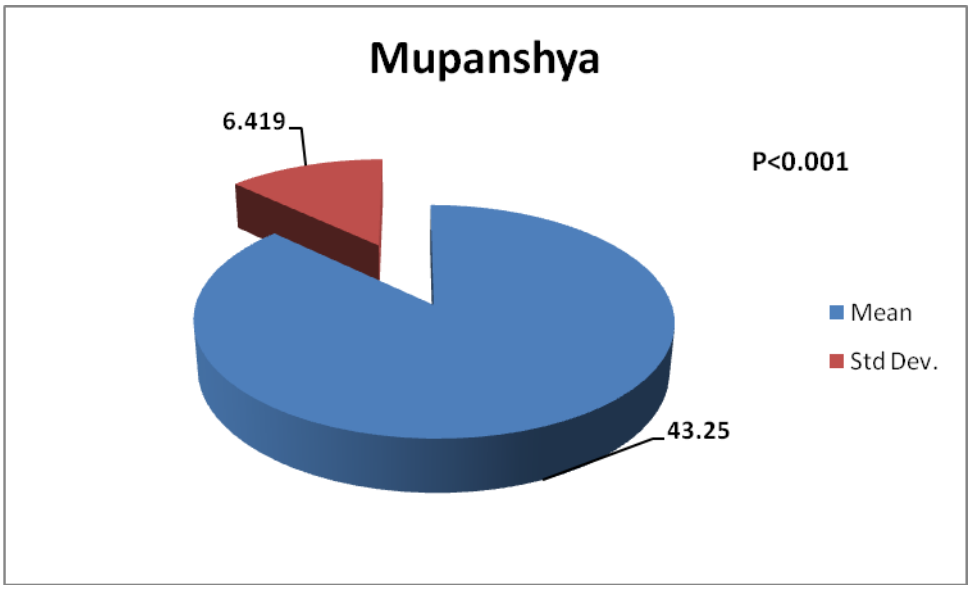


Figure 4.1 D: Mean Age and associated standard deviation at Pre-Course (Student's T-test)

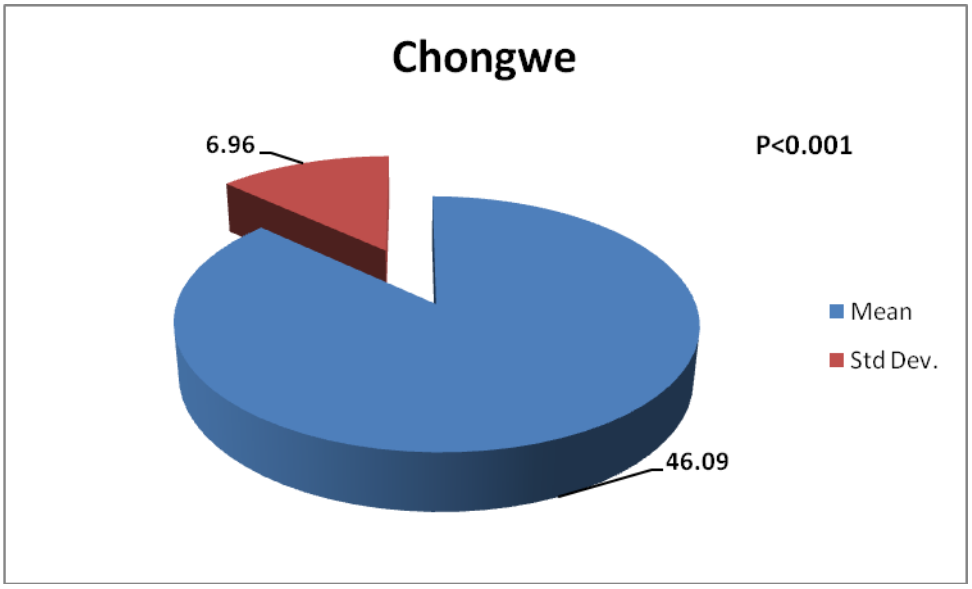


Figure 4.1 E: Mean Age and associated standard deviation at Post-Course (Student's T-test)

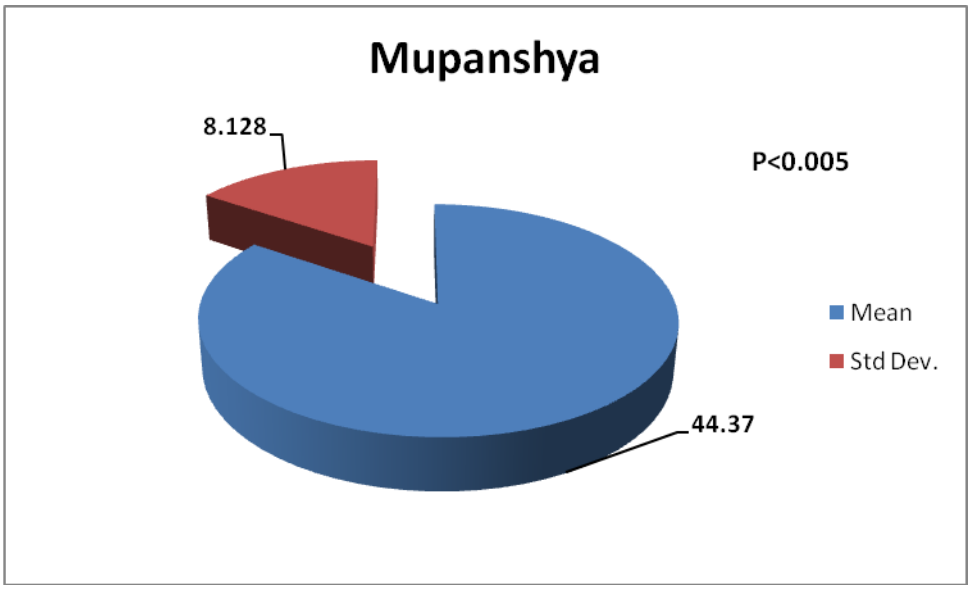
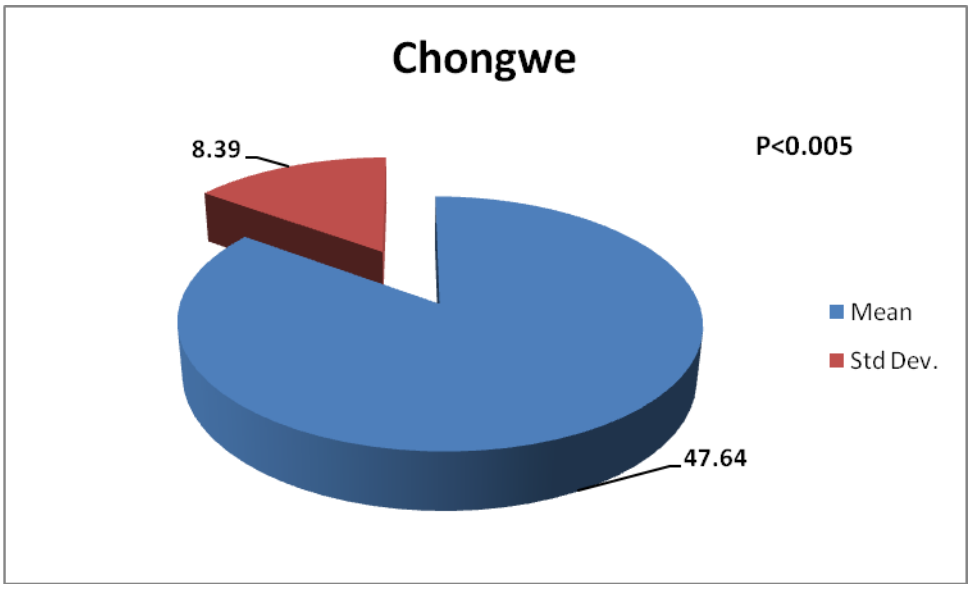


Figure 4.1 F: Mean Age and associated standard deviation at Post-Course (Student's T-test)



Figures 4.1c - 4.1f show that at Pre-Course, there was a significant difference (in the mean ages of the TBAs between those in Mpanshya (mean = 43.25; SD = 6.419) and Chongwe (mean = 46.1; SD = 6.96). At the Post-Course, the mean ages of the TBAs remained significantly different (P=0.005) between those in Mpanshya (44.37 years; SD 8.128) and those in Chongwe (mean = 47.64; SD = 8.390). It is evident that the TBAs from Chongwe were older at both baseline and post course.

Figure 4.2a: Education level at Pre-Course

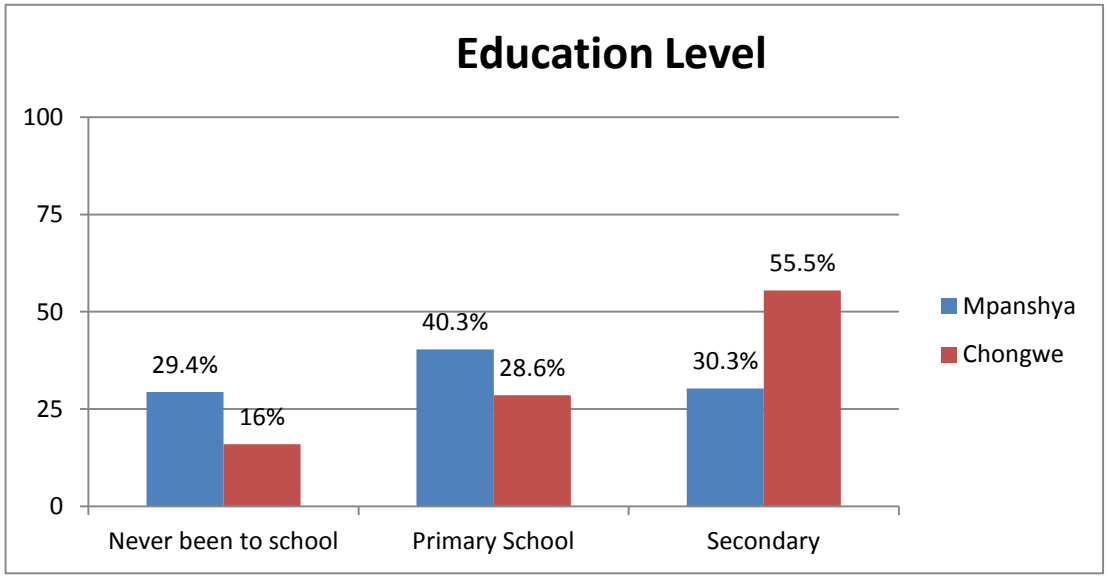
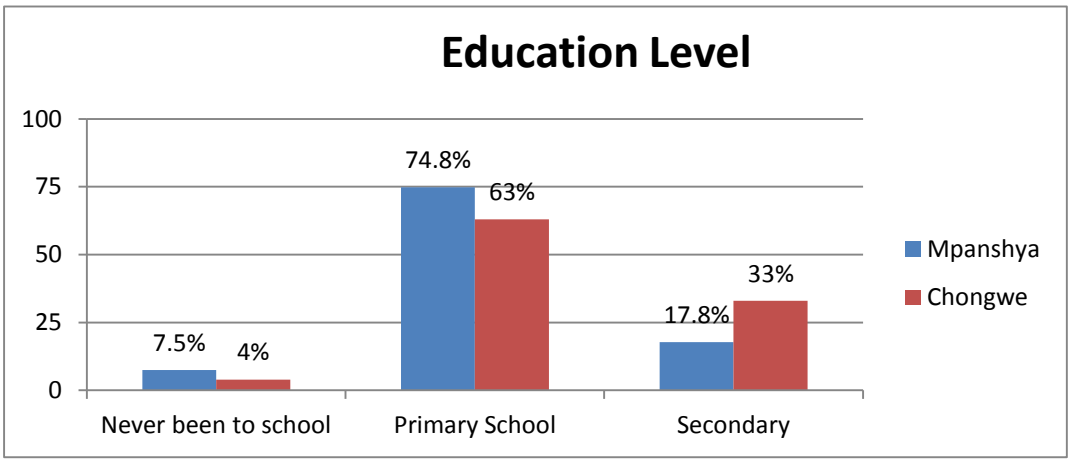


Fig 4.2a shows the education level at pre course

Figure 4.2b: Education level at Post Course



Figures 4. 2a & 2b shows that during the pre-course the study found that there was a significant difference (P<0.001) between the Mpanshya (36) 30.3% and the Chongwe (66) 55.5% groups in terms of their education (30.3%, 55.5% respectively) but after the post course, there was some significant (P=0.032) improvements in terms of educational levels in the intervention group 33(33%) who attained secondary education compared to that of the control group(19) 17.8%.

This means that the tTBAs in Chongwe were more educated than those in Mpanshya as figures 2a and 2 b illustrate.

Section B

The tables in this section show the respondents infection prevention knowledge levels at both pre-and post course.

Infection Prevention Knowledge Questions

Table 4.7: Reasons for boiling equipment when conducting deliveries. (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n=105 at Mpanshya and 83 in Chongwe at post course due to missing information).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q24. Why do you boil the equipment you use when delivering a woman in labour?						
To kill germs	10 (8.4)	2 (1.7)	**0.018**	76 (72.4)	81 (97.6)	**<0.001**
Make the equipment warm (doesn't know)	109 (91.6)	117 (98.3)		29 (27.6)	2 (2.4)	
Total	**119 (100)**	**119 (100)**		**105 (100)**	**83 (100)**	

Table 4.7 shows that there was significant difference (P=0.018). on knowledge on why they boil instruments when delivering between Mpanshya ((10) 8.4% and Chongwe (2) 1.7%. (After the training, the knowledge levels increased in both sites with the participants in Chongwe (81) 97.6% who were trained using the modified TBA training curriculum having significantly (P<0.001) more knowledge compared to those in Mpanshya (76) 72.4%.

Table 4.8: Knowledge on how long the equipment should be boiled

(n=107 at Mpanshya and 94 in Chongwe at post course due to missing information in Chongwe).

(n = 119 at both Mpanshya and Chongwe respectively at pre course).

(n=107 at Mpanshya and 94 in Chongwe at post course due to missing information).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpansh ya n (%)	Chongwe n (%)	
Q 26. For how long should the equipment be boiled?						
20 minutes	1 (0.8)	0 (0)	**1.000**	18 (16.8)	92 (97.9)	**<0.001**
< 20 minutes	118 (99.2)	119 (100)		89 (83.2)	2 (2.1)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**94 (100)**	

Table 4.8 shows that at pre course, there was no significant difference (P=1.000) between Mpanshya (1) 0.8% and Chongwe (0) 0% in knowing how long it takes to boil the equipment used for delivery. However, after the intervention the knowledge level in the intervention group (92) 97.9% was significantly higher (P<0.001) than in the control group (18) 16.8%

Table 4.9: Knowledge on the Care of Boiled Equipment.

(n = 119 at both Mpanshya and Chongwe respectively at pre course).

(n=106 at Mpanshya and 93 in Chongwe at post course due to missing information).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q27. Describe how the equipment should be cared for after boiling.						
Dry and store in a covered dish and boil again before use (does not know).						
Yes	3 (2.5)	0 (0)	**0.247**	66 (62.3)	91 (97.8)	**<0.001**
No	116 (97.5)	119 (100)		40 (37.7)	2 (2.2)	
Total	**119 (100)**	**119 (100)**		**106 (100)**	**93 (100)**	

Table 4.9 shows that at pre-course there was no significant difference (P=0.247) between the Mpanshya (3)2.5% and Chongwe (0) 0.0%- as both groups did not know that the equipment should be stored dry and covered dish and should be boiled again before use.. But after the intervention, the knowledge level was significantly higher (P<0.001) in the intervention group (91) 97.8% than in the control group (66) 62.3%.

Table 4.10: Knowledge on cultural practices during pregnancy, labour, delivery and post partum period.

(n = 119 at both Mpanshya and Chongwe respectively at pre course).

(n=96 at Mpanshya at post course due to missing information in Mpanshya).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q30. CULTURAL PRACTICES RELATED TO:	Mpanshya n (%)	Chongwe n (%)		Mpansh ya n (%)	Chong we n (%)	
A. Pregnancy Pregnancy should be seen and not to be told to anybody						
Yes	0 (0)	0(0)	**-**	75 (78.1)	88 (88.0)	**0.065**
Does not know	119 (100)	119 (100)		21 (21.9)	12 (12%)	
Total	**119 (100)**	**119 (100)**		**96 (100)**	**100 (100)**	
B. Labour To drink herbal medicine to hasten labour. Do not inform anybody of being in labour. Do not show any signs of pain during delivery.						
Yes	0 (0)	1 (0.8)	**0.316**	72 (77.4)	90 (90)	**0.017**
Does not know	119 (100)	118 (99.2)		21 (22.6)	10 (10)	
Total	**119 (100)**	**119 (100)**		**93 (100)**	**100 (100)**	
C. Post partum No sex for six–eight weeks after delivery; Wash the vagina with cold water to contract the vagina; The woman is secluded from the people.						
Yes	0 (0)	49 (42.6)	**<0.001**	61 (61.9)	85 (85%)	**<0.001**
Doesn't know	119 (100)	66 (57.4)		33 (35.1)	15 (15)	
Total	**119 (100)**	**115 (100)**		**94 (100)**	**100 (100)**	

Table 4.10 shows that at pre-course respondents in both the control and intervention groups were not aware of the cultural belief which states that pregnancy should be seen and not told to anyone. But after the intervention, the level of knowledge among the intervention TBAs ((88) 88%. was not significantly different (P=0.065) from the control group (75)78.1%.

At pre-course the table shows that there was no significant difference (P=0.316) between the two groups on the cultural and traditional beliefs during labour which states that women could hasten labour by drinking herbs, being silent when she goes into labour and so not show any signs of pain when in labour (0) 0.0% and (1) 0.8%) but after the intervention, the knowledge levels among the intervention TBAs was significantly (P=0.017) higher than that of the control group (72)77.4% and (90) 90%.

The same table on Question 30 C indicates that at pre-course, it was significantly evident (P<0.001) that majority of the TBAs in Chongwe follow the traditional practice of not having sex within six–eight (6-8) weeks after delivery, washing the vagina with cold water and being secluded from people compared to the control TBAs in Mpanshya who showed lack of knowledge in the practice of the above cultural and traditional practices at pre course (0) 0.0% and (49)42.0% respectively) and even after the intervention the knowledge levels among the intervention TBAs remained significantly (P<0.001) different from that of the control group (61)61.9% and (85) 85.0%.

***All the questions in this table have been grouped together logically and sequentially for clarity.**

Table 4.11: Knowledge on when the women start drinking herbal drinks. (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 106 at Mpanshya at post course due to missing information).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q32. At what stage do women start drinking the herbal drink?						
7, 8 or 9 months	33 (27.7)	25 (21.0)	**0.227**	82 (77.4)	88 (88.0)	**0.044**
Doesn't know	86 (72.3)	94 (79.0)		24 (22.6)	12 (12.0)	
Total	**119 (100)**	**119 (100)**		**106 (100)**	**100 (100)**	

Table 4.11 shows that during the pre-course, there was no significant difference (P=0.227) between the two groups who know when women start drinking herbs to initiate labour and hasten delivery (33) 27.7% in Mpanshya and (25) 21.0% in Chongwe) but after the intervention the knowledge level among the intervention TBAs was significantly higher (P<0.044) than that in the control group (88) 88.0% and (82) 77.4% in Chongwe and Mpanshya respectively).

Table 4.12: Knowledge of dangers that may occur during pregnancy.

(n = 119 at both Mpanshya and Chongwe respectively at pre course).

(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q34a **Bleeding is a danger that may occur during pregnancy**	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Knows that Bleeding is a danger that may occur during pregnancy	106 (89.1)	48 (40.3)	**<0.001**	93(86.9)	92 (92)	**0.236**
Does not know Bleeding is a danger that may occur during pregnancy	13 (10.9)	71 (59.7)		14 (13.1)	8 (8)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q 34b. Breaking of the bag of waters is a danger that may occur during pregnancy?						
Knows that Breaking of the bag of waters is a danger that may occur during pregnancy	13 (10.9)	76 (63.9)	**<0.001**	38 (35.8)	80 (80)	**<0.001**
Does not know Breaking of the bag of waters is a danger that may occur during pregnancy	106 (89.1)	43 (36.1)		68 (64.2)	20 (20)	
Total	**119 (100)**	**119 (100)**		**106 (100)**	**100 (100)**	

Table 4.12 shows that there was a significant difference (P<0.001) between the two groups who know that bleeding is a danger sign during pregnancy at pre course as majority (106) 89.1% of the study respondents in Mpanshya were more knowledgeable than those in Chongwe (48) 40.3.1%. After the intervention, the knowledge levels on bleeding as a danger sign among the intervention group was not significantly (P=0.236) different from that of the control group (93) 86.9% and (92) 92%.

At pre-course the knowledge level among the TBAs in Chongwe was also statistically significant (P<0.001) compared to those in Mpanshya who know that breaking of the bag of waters during pregnancy is a danger sign (76), 63.9%, and (13),10.9% respectively. After the intervention, the proportion of the intervention TBAs (80) 80% who know that the breaking of the bag of waters is a danger sign remained significantly (P<0.001) different from that of the control group (38), 35.8%, (80) 80% .respectively).

Table 4.13: Knowledge on dangers associated with bleeding during Pregnancy as one of the dangers that may occur during pregnancy. (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q37. What are dangers associated with bleeding during pregnancy?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Uterine infections and death of mother	119 (100)	110 (92.4)	0.003	99 (92.5)	100 (100)	0.007
Doesn't know	0 (0)	9 (7.6)		8 (7.5)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.13 shows that during the pre-course, there was a significant difference (P=0.003) between the two groups on the knowledge that uterine infections and death may occur as a result of bleeding during pregnancy (119) 100% and (110) 92.4%. However, after the intervention the knowledge level in this area among the intervention TBAs was significantly (P=0.007) different from that of the control group (99) 92.5% and(100) 100% respectively.

Table 4.14: Knowledge on policy which forbids the TBAs from doing vaginal examinations on their clients in-order to prevent introducing infections in the mother?

(n = 119 at both Mpanshya and Chongwe respectively at pre course).

(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q38. As a TBA do you know that the reproductive health policy forbids you from doing vaginal examinations?						
Yes	25 (21.0)	9 (7.6)	**0.003**	14 (13.1)	58 (58.0)	**<0.001**
No	94 (79.0)	110 (92.4)		93 (86.9)	42 (42.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.14 shows that there was a significant difference (P=0.003) between the two groups who know the policy which forbids them from doing vaginal examinations during delivery (94) 79% and (110) 92.4% at pre-course. But after the intervention the knowledge level on the policy that forbids them from doing vaginal examinations in the intervention group was significantly (P<0.001) different from that of the control group (14) 13.1% and (58) 58.0% respectively).

Table 4.15: Knowledge on what may happen to the mother and baby if the "bag of waters break"

(n = 119 at both Mpanshya and Chongwe respectively at pre course).

(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshyan (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q40. What may happen to the mother and the baby if the "bag of waters break before term.						
Uterine infections and prolapse of the cord	0 (0)	0 (0)	-	53 (49.5)	85 (85.0)	**<0.001**
Doesn't know	119 (100	119 (100)		54 (50.5)	15 (15.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.15 shows that during the pre-course, the P Value was not computed between the two groups due to not knowing that uterine infections and prolapsed cord may occur in the mother and the baby if the bag of waters break before term. But after the intervention, there was an increase on the knowledge levels among the intervention TBAs (85) 85% which was significantly (P<0.001) different from that of the control TBAs (53) 49.5%.

Table 4.16: Knowledge on how many hours a TBA can wait for the birth of the baby after the bag of waters break before she may refer the client to the next level of care.

(n = 119 at both Mpanshya and Chongwe respectively at pre course).

(n = 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q41. How many hours can you wait for the birth of the baby after the bag of waters break before you refer your client to the clinic?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
.After 4 hours, I refer the mother to the nearest health center	99 (83.2)	28 (23.5)	**<0.001**	89 (83.2)	95 (95.0)	**0.007**
Do not know.	20 (16.8)	91 (76.5)		18 (16.8)	5 (5)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.16 shows the existence of a significant difference (P<0.001) which was observed between the two groups who know that they should refer their client who does not deliver four (4) hours after the membranes rupture to the nearest health center (89) 83.2% and (28) 23.5% respectively during the pre course, but after the intervention the knowledge level among the intervention TBAs was significantly (P=0.007) different from that of the control group (89)83.2% and (95) 95% respectively.

Table 4.17: Knowledge on that foul-smelling is a sign of infection of the bag of waters
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 99 at Chongwe due to missing information at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q42. How can you tell when the bag of waters has become infected?						
Foul smelling vaginal discharge	54 (45.4)	104 (87.4%)	**<0.001**	70 (65.4)	98 (99)	**<0.001**
Doesn't know	65 (54.6)	15 (12.6%)		37 (34.6)	1 (1)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**99 (100)**	

Table 4.17 shows that during the pre course there was a significant (P<0.001) difference between the two groups who know that foul smelling vaginal discharge could be a sign of infected bag of waters (54) 45.4%, (104) 87.4%: but after the intervention, the knowledge level in the intervention group was significantly (P<0.001) different from that of the control group (70) 65.4% and (98) 99% in the intervention group.

Table 4.18: Knowledge on how to care for the umbilical cord after delivery (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q45. Describe the advice you will give the mother about how to care for the umbilical cord after delivery.						
Clean with boiled cooled water and leave it exposed in the absence of spirit or gentian violet.	20 (16.8)	0 (0)	**<0.001**	33 (30.8)	91 (91)	**<0.001**
Doesn't know	99 (83.2)	119 (100)		74 (69.2)	9 (9)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.18 shows that at pre-course, there was a significant difference (P<0.001) observed in cleaning the cord with boiled cooled water in the absence of spirit and gentian violet and leaving the cord exposed between the two groups (20) 16.8%, (0) 0%) respectively. But after the intervention, the knowledge level among the intervention TBAs was significantly (P<0.001) different from that of the control group (33) 30.8% compared to (91) 91% in the intervention group.

Table 4.19: Knowledge on the number of days the cord takes to dry and fall off if not infected.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q46. State the number of days the cord takes to dry and fall off if not infected?	Mpanshya n (%)	Chongwe n (%)		Mpansh ya n (%)	Chongw e n (%)	
4 – 7 days	116 (97.5%)	118 (99.2)	**<0.001**	97 (90.7)	99 (99)	**0.007**
Wrong (over 9 days)	3 (2.5)	1 (0.8)		10 (9.3)	1 (1)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.19 shows that a significant association (P<0.001) was observed between both groups who know that the cord takes 4-7 days to dry and drop off if not infected between the two groups (116) 97.5% and (118) 99.2%) during the pre-course. After the intervention, the knowledge levels among the TBAs in the intervention group was significantly (P=0.007) different from that of the control group (97) 90.7% and (99) 99%) respectively.

Table 4.20: Knowledge on signs of an infected umbilical cord
(n = 119 at both Mpanshya and Chongwe respectively at pre course.
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q48. If yes, describe the signs of an infected umbilical cord.	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
The cord may look greenish, very dirty and smells	30 (25.2%)	6 (5%)	**<0.001**	89 (83.2%)	100 (100%)	**<0.001**
Do not know the signs of an infected umbilical cord.	89 (74.8%)	113 (95%)		18 (16.8)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.20 shows that during the pre course, there was a significant difference (P<0.001) between the two groups who know the signs of an infected umbilical cord (30) 25.2%, (6) 5% respectively. After the intervention, the knowledge level among the TBAs in the intervention group was significantly (P<0.001) different from that of the control group (89) 83.2% compared to (100) 100%) in the intervention group.

Table 4.21: Knowledge on referrals due to infected umbilical cord (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q49. Do you know that you should refer a mother whose baby's umbilical cord is infected to the nearest clinic?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Know that they should refer a mother whose baby's umbilical cord is infected to the nearest clinic?	68 (57.1)	13 (10.9)	**<0.001**	93 (86.9)	99 (99)	**<0.001**
Does not know that they should refer a mother whose baby's umbilical cord is infected to the nearest clinic?	51 (42.9)	106 (89.1)		14 (13.1)	1 (1)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.21 shows that there was a significant difference (P<0.001) in knowing to refer the baby with an infected umbilical cord to the nearest clinic between the two groups (68) 57.1%, (13) 10.9%) during the pre-course. After the intervention, the proportion of the TBAs in the intervention group who knew that they should refer a baby with an infected umbilical cord was significantly (P<0.001) different from that of the control group (93) 86.9%, (99) 99%) respectively.

Table 4.22: Knowledge on how a perineal tear get infected
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q52a. How does a perineal tear get infected in your client?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
By applying African herbs	35 (29.4%)	7 (5.9%)	**<0.001**	65 (60.7%)	97 (97%)	**<0.001**
Doesn't know	84 (70.6%)	112 (94.1%)		42 (39.3%)	3 (3%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
By using dirty pieces of clothing for pads	54 (45.4%)	79 (66.4%)	**<0.001**	33 (30.8%)	92 (92%)	**<0.001**
Doesn't know	65 (54.6%)	40 (33.6%)		74 (69.2%)	8 (8%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.22 shows that at pre-course, there was a significant (P<0.001) difference in the proportion of control TBAs who know that applying African herbs can infect their client's perineal tear compared to the intervention TBAs (35) 29.4%, (7) 5.9% respectively during the needs assessment. After the intervention, the proportion of the intervention TBAs who know that the application of African herbs can infect their clients' perineal tear was significantly (P<0.001) different from that of the control group (65) 60.7%, (97) 97% respectively.

The same Table also illustrates that at pre-course, there was a significant (P<0.001) difference in knowing that using dirty pieces of clothing for pads can infect the client between the two groups (54) 45.4%, (79) 66.4% respectively). After the intervention, the knowledge level in this area in the intervention group was significantly (P<0.001) different from that of the control group (33)30.8%, (92) 92%) respectively.

Table 4.23: Knowledge on how to prevent a perineal tear from getting infected.
(n = 119 at both Mpanshya and Chongwe respectively at pre course)
(n = 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q52b. How can you prevent a perineal tear from getting infected in your client?						
By cleaning the perineum with boiled cooled water	26 (21.8%)	21 (17.6%)	**0.416**	34 (31.8%)	90 (90.9 %)	**<0.001**
Doesn't know	93 (78.2%)	98 (82.4%)		73 (68.2%)	9 (9.1%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4 23 shows that at pre-course , there was no significant (P=0.416) difference in the knowledge that cleaning the perineum with boiled cooled water could prevent their clients' perineal tears from getting infected between the two groups (26) 21.8%, (21)17.6% respectively. After the intervention, the proportion of the intervention TBAs who know that they could prevent their clients' perineal tears from getting infected by cleaning them with boiled cooled water was significantly (P<0.001) different from that of the control group (34)31.8%, (90) 90.9% respectively.

Table 4. 24: Knowledge on infections a TBA can pass onto the baby (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 107 at Mpanshya and 99 at Chongwe due to missing information at post course).

Pre-course				**Post-course**		
Factor	Site1	Site2	P-value	Site 1	Site 2	P-value
Q57. Knowledge on infections that a TBA can pass on to the baby	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Knows that a TBA can pass on TB germs to the baby while coughing	101 (84.9%)	60 (50.4%)	<0.001	43 (40.2%)	90 (90.9%)	<0.001
Does not know that a TBA can pass on TB germs to the baby while coughing	18 (15.1%)	59 (49.6)		64 (59.8%)	9 (9.1%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**99 (100)**	
Knows that a TBA can pass on Tetanus germs to the baby	2 (1.7%)	69 (58.0%)	<0.001	26 (24.3%)	78 (78.8%)	<0.001
Does not know that a TBA can pass on tetanus germs to the baby.	117 (98.3)	50 (42.0)		81 (75.7)	21 (21.2)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**99 (100)**	
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Knows that a TBA can pass on skin infections like scabies to the baby.	90 (75.6)	4 (3.4)	<0.001	25 (23.4)	79 (79.8)	<0.001
Does not know that a TBA can pass on skin infections like scabies to the baby.	29 (24.4)	115 (96.6)		82 (76.6)	20 (20.2)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**99 (100)**	
Knows that a	92	47	<0.001	58	96	<0.001

TBA can pass on HIV virus to the baby	(77.3%)	(39.5%)		(54.2%)	(97.0%)	
Does not know that a TBA can pass on HIV virus Tetanus germs to the baby	27 (22.7%)	72 (60.5%)		49 (45.8%)	3 (3.0%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**99 (100)**	
Knows that a TBA can infect the baby by Sneezing	0 (0)	12 (10.1)	<0.001	29 (27.1)	86 (86.9)	<0.001
Does not know that a TBA can infect the baby by Sneezing	119 (100)	107 (89.9)		78 (72.9)	13 (13.1)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**99 (100)**	

Table 4.24 shows that at pre-course, there was a significant (P<0.001) difference in the two groups who know that a TBA who is infected with Tuberculosis germs can pass it on to the baby through coughing (101) 84.9%, (60) 50.4%) respectively. After the intervention, the proportion of the intervention TBAs who know that TBAs who are infected with tuberculosis germs can easily pass it on to the babies was significantly (P<0.001) different from the control group (43) 40.2%, (90) 90.9%).

At pre-course, there was a significant (P<0.001) difference in the two groups in knowing that a TBA can infect the new born baby with the tetanus germs during birthing by using dirty or rusty instruments to cut the baby's cord (2) 1.7% and (69) 58.0% respectively. After the intervention, there was a significant (P<0.001) difference among the intervention TBAs who know that they can infect the baby with tetanus germs by using dirty or rusty equipment to cut the cord (78) 78.8% compared to (26) 24.3% in the control group.

The table also demonstrated a significant (P<0.001) difference in the two groups who know that the TBA who has scabies on her skin can pass on the skin infections like scabies to the newly –born baby. (90) 75.6% and (4), 3.4% respectively at pre-course. After the intervention, there was a significant (P<0.001) difference in the intervention group (79) 79.8 who acquired more knowledge in this area compared to the control group (25) 23.4%.

At pre-course there was a significant (P<0.001) difference in the two groups in terms of knowing that they can pass on the HIV virus while conducting delivery (92) 77.3% and (47) 39.5% respectively. After the intervention, there was a significant (P<0.001) difference among the intervention TBAs who know that an HIV–infected TBA can infect the babies (96) 97% compared to the control group (58) 54.2%.

A significant difference (P<0.001) existed in the two groups who know that they can infect the babies with common cold through sneezing (0) 0% in Mpanshya and (12) 10.1% in Chongwe was also noted at baseline. After the intervention, the proportion of intervention TBAs who have this knowledge was significantly (P<0.001) different (86) 86.9% from the control group (29) 27.1%.

***All the questions in this table have been grouped together logically and sequentially for clarity.**

Table 4.25 Knowledge on signs and symptoms of Puerperal infection (n = 119 at both Mpanshya and Chongwe respectively at pre course) (n= 106 at Mpanshya due to missing information and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q60. List the signs and symptoms of Puerperal infections.						
- Listed None				1 (0.9%)	0 (0%)	**<0.001**
- Lower abdominal pain **(1 response)**	3 (2.5%)	24 (20.2%)	**<0.001**	10 (9.3%)	0 (0%)	
- Lower abdominal pain - High fever **(2 responses)**	36 (30.3%)	77 (64.7%)		17 (15.9%)	0 (0%)	
- Lower abdominal pain - High fever - Abdominal pain that comes and goes **(3 responses)**	41 (34.5%)	15 (12.6%)		21 (19.6%)	1(1%)	
- Lower abdominal pain - High fever - Abdominal pain that comes and goes - Very bad back pain **(4 responses)**	17 (14.3%)	2 (1.7%)		36 (33.6%)	3 (3%)	
- Lower abdominal pain - High fever - Abdominal pain that comes and goes - Very bad back pain - Dark colored vaginal discharge **(5 responses)**	22 (18.5%)	1 (0.9%)		17 (15.9%)	23 (23%)	
- Lower abdominal pain - High fever - Abdominal pain that comes and goes - Very bad back pain - Dark colored vaginal discharge - Pus; **(6 responses)**	-	-		3 (2.8%)	19 (19%)	

- Lower abdominal pain - High fever - Abdominal pain that comes and goes - Very bad back pain - Dark colored vaginal discharge - Pus; - Burning sensation during urination **(7 responses)**	-	-		0 (0%)	16 (16 %)	
- Lower abdominal pain - High fever - Abdominal pain that comes - and goes - Very bad back pain - Dark coloured vaginal discharge - Pus; - Burning sensation during urination and; - Continued vaginal bleeding **(8 responses)**	-	-		2 (1.9%)	38 (38 %)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.25 shows that at, pre-course there was a significant (P<0.001) difference among the TBAs who correctly listed five (5) symptoms of puerperal infections comprising of lower abdominal pain, high fever, abdominal pain that comes and goes, very bad back pain, dark coloured vaginal discharge, (22) 18.5% and (1) 0.9% - between Mpanshya and Chongwe respectively. But after the intervention there was a significant difference (P<0.001) in the proportion of intervention TBAs in Chongwe who listed eight correct responses comprising of Lower abdominal pain, High fever, Abdominal pain that comes and goes, Very bad back pain, Dark colored vaginal discharge' Pus; burning sensation during urination and; Continued vaginal bleeding (38) 38% and compared to control TBAs in Mpanshya (2) 1.9%.

***All the questions in this table have been grouped together logically and sequentially.**

Table 4.26: Knowledge on traditional practices and customs that put the mother at risk of infections during labour, delivery and post partum period (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q62a. Do you know the traditional practices and customs that can put the mother at risk of infections during labour, delivery and post partum period?	Mpanshyan (%)	Chongwen (%)		Mpanshyan (%)	Chongwen (%)	
By inserting herbs into her vagina after delivery in-order to contract the vagina	49 (41.2%)	21 (17.6%)	**<0.001**	84 (78.5%)	94 (94.0%)	**<0.001**
Does not know this traditional practice	70 (58.8%)	98 (82.4%)		23 (21.5%)	6 (6.0%)	
Total	**119 (100)**	**119 (100**		**107 (100)**	**100 (100)**	
By sitting in cold water with herbs that are not properly cleaned	42 (35.3%)	42 (35.3%)	**1.000**	26 (24.3%)	89 (89.0%)	**<0.001**
Does not know this traditional practice.	77 (64.7%)	77 (64.7%)		81 (75.7%)	11 (11.0%)	
Total	**119 (100)**	**119 (100**		**107 (100)**	**100 (100)**	

Table 4.26 shows that at pre-course, there was a significant difference (P<0.001) in between the two groups who know that inserting herbs into the vagina after delivery can cause infections in the mother (49) 41.2% in Mpanshya and (21), 17.6% in Chongwe). After the intervention, the proportion of the intervention TBAs who have this knowledge (94) 94.0% was significantly (P<0.001) different from that of the control group (84) 78.5%.

The table also indicates that at pre-course there was no significant difference (P=1.000) between the Mpanshya and Chongwe groups who know that sitting in cold water with dirty herbs can cause infections in the mother during the post partum period (42) 35.3% and (42) 35.3% respectively. After the intervention, majority of the

intervention TBAs who know that sitting in cold water with dirty herbs can cause infections in the mother during the post partum period ((89) 89.0% was significantly ($P<0.001$) different from that of the control group (26) 24.3%.

Table 4.27: Knowledge on infections that may occur during the puerperal period.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n = 107 at Mpanshya and 94 at Chongwe due to missing information at post course).

Pre-course				Post-course		
Variable	Site1	Site2	P-value	Site 1	Site 2	P-value
Q 63i. Swelling on both legs may occur in the mother during the puerperal period.	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Circled that swelling on both legs may occur in the mother during the puerperal period.	0 (0%)	0 (0%)	-	37 (34.6 %)	64 (68.1%)	<0.001
No did not circle this	119 (100 %)	119(100 %)		70 (65.4 %)	30 (31.9%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**94 (100)**	
Q 63ii. Circle whether pain or bleeding may occur when passing urine due to infections during the puerperal period.						
Circled that pain or bleeding may occur when passing urine due to infections during the puerperal period.	80 (67.2 %)	49 (41.2%)	<0.001	58 (54.2%)	86 (86.0%)	<0.001
Did not circle this.	39 (32.8)	70 (58.8%)		49 (45.8%)	14 (14%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q 63iii. Circle whether pain in the back may occur during the puerperal period.						
Circled that pain in the back may occur during the puerperal period.	22 (18.6%)	71 (59.7%)	<0.001	39 (36.4%)	72 (72.0%)	<0.001
Did not circle this.	97 (81.5%)	48 (40.3%)		68 (63.3%)	28	

					(28.0%)	
Total	119 (100)	119 (100)		107 (100)	100 (100)	
Q 63iv.Circle whether high fever may occur due to infections during the puerperal period.						
Circled that high fever may occur due to infections during the puerperal period.	90 (75.6%)	7 (5.9%)	<0.001	56 (52.3%)	97 (97.0%)	<0.001
Did not circle this.	29 (24.4%)	112 (94.1%)		51 (47.7%)	3 (3.0%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q 63v. Circle whether abdominal pain may occur as a sign of infection during the puerperal period in the mother.						
Circled that abdominal pain may occur as a sign of infection during the puerperal period in the mother.	47 (39.5%)	85 (71.4%)	<0.001	79 (73.8%)	93 (93.0%)	<0.001
Did not circle this	72 (60.5%)	34 (28.6%)		28 (26.2%)	7 (7.0%)	
Total	119 (100)	119 (100)		107 (100)	100 (100)	
Q 63vi: Circle whether foul smelling vaginal discharge may occur as a sign of infection in the mother during the puerperal period						
Circled that foul smelling vaginal discharge may occur during as a sign of infection in the mother during the puerperal period.	63 (52.9%)	10 (8.4%)	<0.001	62 (57.9%)	90 (90%)	<0.001
Did not circle this.	56 (47.1%)	109 (91.6%)		45 (42.1%)	10	

					(10.0%)	
Total	119 (100)	119 (100)		107 (100)	100 (100)	
Q63vii: Circle whether burning sensation may occur as a sign of infection during the puerperal period in the mother.						
Circled that burning sensation when passing urine may occur as a sign of infection during the puerperal period in the mother.	68 (57.1%)	64 (53.8%)	0.602	83 (78.3%)	91 (91.0%)	0.012
No did not circle this	51 (42.9%)	55 (64.0%)		23 (21.7%)	9 (9.0%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.27 indicates that during the pre-course, the P Value was not computed between the two groups due to lack of knowledge on the implications of swelling on either or both legs after delivery

After the intervention, the results show that the proportion of intervention TBAs (64) 68.1% who knew the danger associated with swelling in one or both legs was statistically different (P<0.001) between knowledge levels from the control group in Mpanshya (37) 34.6%).

At pre-course,the same table also shows that there was a significant disparity (P<0.001) in knowledge that pain or bleeding when passing urine is an infection that may occur after delivery between the two sites, (80) 67.2 % in Mpanshya and (49) 41.2% in Chongwe) After the post course analysis, the intervention TBAs 86 (86%) showed a statistically significant difference (P<0.001) in knowing that pain or bleeding when passing urine is a sign of infection in the mother during the puerperal period compared to the control group (58) 54.2% in Mpanshya.

At pre-course, there was a significant difference (P<0.001) between the two groups in knowing that pain in the back can occur during the puerperal period due to infections in the uterus (22) 18.6% and (71) 59.7% respectively). After the intervention, the

level of knowledge in the intervention group (72) 72.0%) was significantly different (P<0.001) from the control group (39) 36.4%.

During the pre-course, there was a significant difference (P<0.001) on the knowledge that high fever occurs due to infections after delivery between the two groups (90)75.6% and (7), 5.9% respectively. After the post course, the results further indicated a disparity (P<0.001) between the two groups on knowledge of fever occurring in post partum mothers as a sign of infection (56) 52.3% and (97) 97.0% in the intervention group.

The table revealed that at pre-course, majority in Chongwe (85) 71.4% were significantly (P<0.001) more knowledgeable that abdominal pain may occur as a sign of infection in the mother than those in Mpanshya (47) 39.5%. Further, at post course, majority (93) 93% of the study participants in Chongwe appeared significantly (P<0.001) more knowledgeable that abdominal pains may occur as a sign of infection in the mother than those in Mpanshya (79) 73.8%.

At pre-course, the table indicated that there was a significant difference (P<0.001) between the two groups on knowledge that foul smelling vaginal discharge may occur after delivery as a sign of infection (63) 52.9%, and (10) 8.4% respectively. Following the intervention, the level of knowledge in the intervention group (90) 90% was significantly different (P<0.001) from the control group (62) 57.9%.

Also, at pre-course, there was no significant difference (P=0.602) between the two groups in knowing the occurrence of swelling or tenderness in one or both breasts after delivery as a sign of infection in the mother (68) 57.1%, and (64) 53.8% respectively. After the post course intervention, the level of knowledge in the intervention group (91) 91.0% was significantly different (P<0.012) from that of the control group (83) 78.3%.

***All the questions in this table have been grouped together logically and sequentially for clarity.**

Table 4.28: Knowledge on ways that women can get infections during the post partum period because the cervix is still open
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
	Site1	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q65: Can women get infected by doing the following:	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Having sexual intercourse within 6 weeks after delivery?						
Knew that women can get infected by having sexual intercourse within 6 weeks after delivery.	51 (42.9%)	42 (35.3%)	0.232	38 (35.5%)	75 (75.8%)	<0.001
Do not know this.	68 (57.1%)	77 (64.7%)		69 (64.5%)	24 (24.2%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q65 Using dirty cloths as pads after delivery?						
Knew that women can get infected by using dirty cloths as pads after delivery.	44 (37.0%)	9 (7.6%)	<0.001	76 (71.0%)	92 (92.0%)	<0.001
Do not know this	75 (63.0%)	110 (92.4%)		31 (71.0%)	8 (8.0%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q65: Not changing the cloth they use as sanitary pads frequently after delivery?						
Know that women can get infected by not changing the cloth they use as sanitary pads	36 (30.0%)	7 (5.9%)	<0.001	63 (53.9%)	95 (95.0%)	<0.001

frequently after delivery						
Do not know this	83 (69.7%)	112 (94.1%)		44 (41.1%)	5 (5.0%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q65: Sitting in cold water from infected shallow wells?						
Know that women can get infected by sitting in cold water from infected shallow wells?	43 (36.4)	8 (6.7)	<0.001	18 (16.8)	89 (89.0)	<0.001
Do not know this.	75 (63.6)	111 (93.3)		89 (83.2)	11 (11.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

At pre-course,Table 4.28 shows that there was no significant difference (P=0.232) between the two groups that know that having sexual intercourse within six weeks after delivery is one of the ways that women can get infections after delivery (51) 42.9% and (42) 35.3% respectively. After the post course; the level of knowledge among the intervention TBAs (75) 75.8% was significantly different (P<0.001) from that of the control group (38) 35.5%,).

There was a significant difference (P<0.001) between the two groups who know that women can get infected by using dirty cloths as pads after delivery (44) 37% and (9) 7.6% respectively. After the intervention, the level of knowledge in the intervention group (92) 92% was significantly different (P<0.001) from the control group (76) 71.0%.

The table noted that at pre-course there was a significant difference (P<0.001) between the two groups in knowing that women can get easily infected by not changing the cloths they use as pads frequently (36) 30.0% and (7) 5.9% respectively. After the intervention, the level of knowledge in the intervention group was significantly different (P<0.001) from the control group (63) 53.9% and (95) 95% respectively).

The same table demonstrated a significant difference (P<0.001) between the two groups who know that women who sit in water from infected shallow wells can get infected after delivery (43) 36.4% and (8) 6.7% respectively) at pre-course. After the intervention, the proportion of intervention TBAs (89) 89.0%, who knew that women who sit in water from shallow wells may get infections was statistically significant (P<0.001) from the control group (18), 16.8%).

***All the questions in this table have been grouped together logically and sequentially for clarity.**

Table 4.29: Comparable analysis between knowledge of cultural practices and site adjusting for age and education.

Factor	Odds Ratio	95% CI
Site		
Chongwe	1.23	0.92, 1.64
Mpanshya	1	
Age		
20 – 51	0.99	0.65, 1.53
52 – 83	1	
Education		
Up to primary	1.12	0.84, 1.50
Secondary/Higher	1	

Table 4.29 shows that there was no difference in the knowledge of cultural practices acquired between the age groups 20-51 and 52-83 years.

Respondents with up to primary level were 1.12 (95%CI 0.84, 1.50) times more likely to have acquired adequate knowledge of cultural practices compared to respondents with higher educational level.

Compared to respondents in Mpanshya, respondents in Chongwe were 1.23 times (95% CI 0.92, 1.64) more likely to have acquired adequate knowledge of cultural practices after adjusting for age and education

Table 4. 30i: Knowledge Total Score Category at Base line.

	Frequency	Percent
Excellent knowledge (62-82)	0	0%
Good Knowledge (41 – 61)	1	0.4%
Satisfactory Knowledge (20 - 40)	197	82.8%
Inadequate Knowledge (<19)	40	16.8%
Total	**238**	**100.0**

Table 4.30i shows that during the pre-course, the knowledge levels in this study population were generally low and leaves much to be desired. The mean knowledge level was 25.32, the minimum was 12 and the maximum was 46. This table considers the set values that determined the knowledge levels put at 62-82 to be excellent knowledge, 41-61 to be good knowledge, 20-40 to be satisfactory knowledge and <19 to be inadequate knowledge, one would note that only (1) (0.4%) participant had good knowledge, 197(82.8%) had satisfactory knowledge and (40) 16.8% had inadequate knowledge.

The Whisker's plot (Figure 3) below showed an outlier parameter which happens to be the most intelligent study participant.

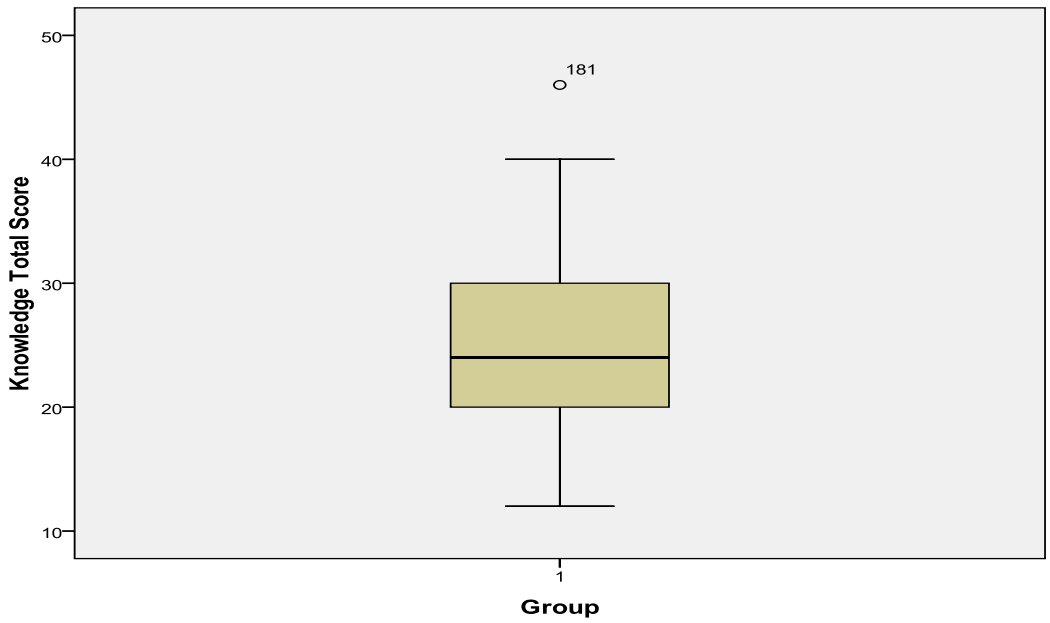


Figure 4. 3 Whisker's plot showing a knowledge Outlier parameter

Table 4. 30ii: Knowledge Total Score Category at Intervention Phase.

	Frequency	Percent
Excellent Knowledge (62 - 82)	76	36.7
Good Knowledge (41 – 61)	97	46.9
Satisfactory Knowledge (20 - 40)	34	16.4
Inadequate knowledge (,19)	0	0%
Total	**207**	**100.0**

Table 4.30ii shows that during the intervention phase, the knowledge levels in the study population were generally good. There was a marked improvement. The mean knowledge level was 53.92%, the minimum was 26 and the maximum was 74. Table 30ii also considers the set values that determined the knowledge levels put at 62-82 to be excellent knowledge, 41-61 to be good knowledge, 20-40 to be poor knowledge and <19 to be inadequate knowledge. The study noted that (76) 36.7% participants in the intervention group had excellent knowledge at post course, (97) 46.9% had good knowledge and no participant had inadequate knowledge levels in the intervention group.

Table 4.31: Categorization of Knowledge Score Levels Vs Site
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).
Knowledge versus site at pre and post course.

Pre-course				**Post-course**		
	Site1	**Site2**	**P-Value**	**Site1**	**Site2**	**P-Value**
	Mupanshya (%)	Chongwe (%)		Mupanshya (%)	Chongwe (%)	
Knowledge Levels						
Excellent C62 – 82 correct responses)	-	-		0 (0)	76 (76)	**0.001**
Good (41 –61 correct	0 (0)	1(0.8)	**0.001**	73 (68.2)	24 (24.0)	

responses**)**						
Satisfactory(20-40 correct responses)	117 (98.3)	80 (67.2)		34 (31.8)	0 (0)	
Inadequate (<19 correct responses)	2 (1.7)	38 (31.9)		-	-	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.31 shows that a comparison of the two sites at pre and post training was necessary to see if the training had an impact. The table 4.31 shows that at pre-course a higher proportion of participants in Chongwe had inadequate knowledge than in Mpanshya (P=0.001). However, after the post course, a higher proportion of participants in Chongwe (76) 76.0% had excellent (62 -82 correct responses) infection prevention knowledge which was statistically significant (P=0.001) than in Mpanshya

Table 4.32: Comparable analysis between knowledge and site adjusting for age and education.

Factor	Odds Ratio	95% CI
Site		
Chongwe	1.45	1.16, 1.81
Mpanshya	1	
Age		
20 – 51	0.77	0.56, 1.05
52 – 83	1	
Education		
Up to primary	1.74	1.38, 2.19
Secondary/Higher	1	

Table 4.32 shows that there was no difference in the knowledge acquired between the age groups 20-51 and 52-83 years [0.77 (95% CI 0.56, 1.05)].

Respondents with up to primary level were 1.74 (95% CI 1.38, 2.19) times more likely to have had acquired excellent to adequate knowledge compared to respondents with higher educational level.

Compared to respondents in Mpanshya, respondents in Chongwe were 1.45 times (95% CI 1.16, 1.81) more likely to have had excellent to adequate knowledge after adjusting for age and education

Section C

Practice Questions

The tables in this section show the respondents infection prevention practices at both pre-and post course stages of the study.

Table 4.33a: Practice of TBAs who wash their hands before delivering their clients.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q68a. Did you wash your hands before putting on gloves, delivering your client and afterwards?						
Yes	28 (23.5%)	38 (31.9%)	**0.148**	52 (48.6%)	100 (100%)	**<0.001**
No	91 (76.5%)	81 (68.1%)		55 (51.4%)	0 (0%)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.33a shows that at pre-course, there was no significant difference (P=0.148) between the two groups in the proportion of TBAs who wash their hands before delivering their clients (28) 23.5% and (38) 31.9%) respectively. After the post course, the proportion of TBAs who wash their hands before delivering their clients in the intervention group was significantly different (P<0.001) than that of the control group (52) 48.6% and (100) 100%).

Table 4.33b: Practice of TBA to help the client to deliver the baby fast by pushing the baby by putting her foot between her client's legs.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q68b. Did you help the client to deliver the baby fast by pushing out the baby by putting your foot between your client's legs?						
Yes	7 (5.9)	32 (26.9)	**<0.001**	42 (39.3)	13 (13)	**<0.001**
No	112 (94.1)	87 (73.1)		65 (60.7)	87 (87)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.33b shows that at pre-course, there was a significant difference (P<0.001) between the two groups in the proportion of TBAs who help their clients to deliver fast by pushing their legs in between the client's legs (7) 5.9% and (32) 26.9%) respectively. After the post course, the proportion of the intervention TBAs who do not carry out this practice was significantly different (P<0.001) than that of the control group (65) 60.7% and (87) 87%).

Table 4.34: Practice of TBA on how she helped her client to deliver the baby (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
	Site1	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Variable	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q69. Describe how you helped your client to deliver the baby?						
Lying down or squatting	10 (8.4)	1 (0.8)	**0.005**	48 (46.2)	64 (64.0)	**0.010**
Doesn't know	109 (91.6)	118 (99.2)		56 (53.8)	36 (36.0)	
Total	**119 (100)**	**119 (100)**		**104 (100)**	**100 (100)**	

Table 4.34 shows that at pre-course, there was a significant (P<0.005) difference among the TBAs who helped the mother to deliver either in the lying or squatting position between the Mupanshya control and Chongwe intervention group (10) 8.4%, (1) 0.8% respectively). After the intervention, there was a significant (P<0.010) difference in the two groups of TBAs who delivered their clients in either the lying or squatting positions (48) 46.2%, (64) 64.0% respectively).

Table 4. 35: Practice on how the tTBA cared for the cord during and after delivery in order to prevent infections.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
	Site1	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Variable	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q70. What did you use to tie the baby's cord after delivery?						
Cord ties or when none pieces from washed and clean chitenge materials cut between the two tied knots measured from my gloved finger	91 (86.7)	95 (91.3)	**0.280**	94 (87.9)	91 (91.0)	**0.463**
Used other means (ulushishi – stripped inside of a tree bark)	14 (13.3)	9 (8.7)		13 (12.1)	9 (9.0)	
Total	**105 (100)**	**104 (100)**		**107 (100)**	**100 (100)**	
Q71. What did you use to cut the cord?						
New blade which was not boiled, old blade boiled, old scissors boiled, or umbilical cord scissors boiled	31 (26.1)	35 (29.4)	**0.562**	78 (72.9)	100 (100)	**0.001**
Didn't use any of the above	88 (73.9)	84 (70.6)		29 (27.1)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q73. If yes, describe what you did after cutting the cord.	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Clean with boiled cooled	27 (22.7)	0 (0)	P<0.001	61 (57)	90 (90.9)	P<0.001

water if gentian violet and spirit gauze are not available.						
Did not do this	92 (77.3)	119 (100)		46 (43)	9 (9.1)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**99 (100)**	
Q74. What did you do to the cord that was still attached to the "after-birth"?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Put the end of the cord in the dish	0 (0)	0 (0)	-	51 (47.7)	82 (83.7)	<0.001
Didn't put the end of the cord in the dish.	119 (100)	119 (100)		56 (52.3)	16 (16.3)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**98 (100)**	

Table 4.35 shows that at pre-course, there was no significant difference (P=0.280) between the Mpanshya control and Chongwe intervention groups (91) 86.7%, (95) 91.3%) of TBAs regarding using the cord ties when available in their clean delivery kits or improvised washed and cleaned pieces of chitenge and those who used the traditional 'ulushishi'. After the intervention, the level of practice in the intervention group was not significantly different (P=0.463) from that of the control group [(94) 87.9%, (91) 91.0%].

During the pre-course, there was no significant difference (P=0.562) between the two groups in their practice of cutting the cord with an umbilical cord scissors when available or, a new blade that was not boiled, or boiled old scissors.(31) 26.1%, (35) 29.4%). After the intervention, the level of practice among the intervention TBAs who used an umbilical cord scissors or a new razor blade that was not boiled, or boiled scissors was significantly different (P<0.001) from that of the control group [(78) 72.9%, (100) 100%]

The table illustrated that there was a statistical significance (P<0.001) difference between the proportion of TBAs who cleaned the cord with boiled cooled water if gentian violet spirit were not available in their clean delivery kit in Mpanshya (27) 22.7% and Chongwe (0) 0% at pre-course.

At post-course the proportion of intervention TBAs Chongwe (90) 90.9% who cleaned the cord with boiled cooled water if gentian violet spirit was statistically significant P<0.001 compared to the control TBAs in Mpanshya (61) 57%.

The Table also showed that, at pre-course, there was no statistical significance among the TBAs who put the ends of the cord in a dish between the two groups (0%, 0%); but after the intervention the proportion of TBAs n the intervention group who put the end of the cord in a dish to avoid infections in the mother was significantly different (P<0.001) from that of the control group [(51) 47.7%, (82) 83.7%].

Table 4.36: Practice on how long the "afterbirth" takes to be delivered after the delivery of the baby.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q75. From experience, how long does "after-birth" take to be delivered after the birth of the baby?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Know that the placenta should be delivered within 15-30 minutes after the delivery of the baby.	9 (7.6)	0 (0)	**(P<0.003)**	25 (23.4)	65 (65.0)	**<0.001**
Do not know the length of time to deliver the 'afterbirth' after the delivery of the baby.	110 (92.4)	119 (100)		82 (76.6)	35 (35.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.36 shows that at pre-course, there was a significant difference (P=0.003) between Mpanshya and Chongwe participants who have experienced that the placenta may take between 15-30 minutes to be delivered after the delivery of the baby (9) 7.6% (0) 0%). After the post course, the proportion of TBAs in the intervention group who have experienced that the delivery of the placenta should not take longer than 30 minutes was significantly different (P<0.001) from that of the control group [(25) 23.4%, (65) 65%] respectively.

Table 4. 37: Practice on what the TBA did to deliver the afterbirth (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 106 at Mpanshya due to missing information and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q76. What do you do to deliver the afterbirth?	Mpanshyan (%)	Chongwen (%)		Mpanshyan (%)	Chongwen (%)	
To rub up a contraction and deliver the placenta by controlled cord traction	0 (0)	0 (0)	-	30 (28.3)	67 (67.0)	**<0.001**
Did not rub up a contraction and deliver the placenta by controlled cord traction.	119 (100)	119 (100)		76 (71.7)	33 (33.0)	
Total	**119 (100)**	**119 (100)**		**106 (100)**	**100 (100)**	

At pre-course, Table 4.37 shows that all the TBAs in Mpanshya and Chongwe 0 (0%), 0 (0%) did not rub up a contraction before the delivery of the afterbirth at the pre course. At post course, significantly (P<0.001) more TBAs in Chongwe 67 (67%) than those in Mpanshya 30 (28.3%) after the intervention reported rubbing up a contraction and delivering the placenta by controlled cord traction.

Table 4. 38: Practice on what the TBA does with the afterbirth after it is Delivered.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q78. What do you do with the afterbirth after it is delivered?	Mpanshyan (%)	Chongwen (%)		Mpanshyan (%)	Chongwen (%)	
Put the placenta on both palms and examine it for completeness	0 (0)	0 (0)	-	79 (73.8)	98 (98.0)	**<0.001**
Didn't do this	119 (100)	119 (100)		28 (26.2)	2 (2.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.38 shows that at pre-course in both Mpanshya and Chongwe (0) 0%, (0) 0%); the TBAs did not put the placenta in both palms to examine for completeness. After the intervention, significantly (P<0.001), more intervention TBAs in Chongwe 98 (98%) than those in Mpanshya 79 (73.8%) examined the placenta appropriately.

Table 4.39: Practice on what the TBA does with the equipment used to cut the cord if it falls down.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 98 at Chongwe due to missing information at post course).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q 81a. What the TBA does with the equipment used to cut the cord if it falls down.	Mpanshyan (%)	Chongwen (%)		Mpanshyan (%)	Chongwen (%)	
Use another blade but if there is none. Clean with spirit. If no spirit, pick it, boil it and cool it with boiled cooled water and use it again.	100 (84%)	3 (2.3)	<0.001	25 (23.4)	92 (93.9)	<0.001
Didn't do any of the above, but picked it up and used it again.	19 (16.0)	116 (97.7)		82 (76.6)	6 (6.1)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**98 (100)**	

Table 4.39 shows that at pre-course the knowledge level among Mpanshya TBAs (100) 84%, TBAs was significantly different (P<0.001) compared to Chongwe (3) 2.3%.

After the intervention, the proportion of TBAs in the intervention group who used another blade if available or if none picked, rinsed and cleaned it with spirit or if no spirit, boiled it cooled it with boiled cooled water and used it again was significantly different (P<0.001) from that of the control group [(25) 23.4%, (92) 93.9%] respectively.

Table 4.40: Practice on what the TBA advises the client on how to keep her birth canal clean after delivery.
(n = 119 at both Mpanshya and Chongwe respectively at pre course)
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q 83. How do you advise her to keep her birth canal clean after delivery?	Mpanshyan (%)	Chongwen (%)		Mpanshyan (%)	Chongwen (%)	
Bath once a day and wash in between her legs. Bath twice or three times a day and wash in between her legs or Wash in between her legs with cold water without adding salt twice or three times a day.	19 (16.0)	27 (22.7)	**0.189**	71 (66.4)	81 (81.0)	**0.017**
Did not practice any of the above	100 (84.0)	92 (77.3)		36 (33.6)	19 (19.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.40 shows that at pre-course, there was no significance difference (P=0.189) in the proportion of TBAs in Mpanshya and Chongwe 19 (16.0%), 27, (22.7%) respectively who advised their clients on bathing and washing in between their legs in cold water without adding salt. After the intervention, the proportion of TBAs who advised their clients on personal hygiene practices was significantly higher (P<0.017) among the intervention TBAs than that of the control group (71) 66%, (81) 81%) respectively..

Table 4.41: **Practice on when the TBA bathed the baby after delivery (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 106 at Mpanshya due to missing information and 100 at Chongwe at post course).**

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q84. When was the baby bathed after delivery?	Mpanshyan (%)	Chongwen (%)		Mpanshyan (%)	Chongwen (%)	
The day after delivery of the baby,	13 (10.9)	67 (56.3)	**0.001**	43 (40.6)	94 (94.0)	**0.001**
Did not specify when to bath the baby	106 (89.1)	52 (43.7)		63 (59.4)	6 (6.0)	
Total	**119 (100)**	**119 (100)**		**106 (100)**	**100 (100)**	

Table 4.41 shows that at pre-course, the proportion of Chongwe TBAs ((67) 56.3% who bathed babies on the day after delivery was statistically significant (P<0.001) compared to Mpanshya TBAs (13) 10.9%).

After the intervention, the levels of practice on bathing the baby on the day after delivery among the intervention TBAs (94) 94% continued to be statistically different (P<0.001) compared to the control group [(43) 40.6%.

Table 4.42: Practice on how to care for the baby after delivery.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 106 at Mpanshya due to missing information and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q85. Did you cover the baby with clothes after it was born?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Yes	106 (89.1)	66 (55.5)	<0.001	96 (90.6)	97 (97.0)	**0.058**
No	13 (10.9)	53 (44.5)		10 (9.4)	3 (3.0)	
Total	**119 (100)**	**119 (100)**		**106 (100)**	**100 (100)**	
Q86. What was the reason for covering the baby with clothes after it was born.						
To keep it warm	100 (84.0)	56 (47.1)	<0.001	97 (90.7)	96 (96.0)	**0.126**
Didn't know the reason.	19 (16.0)	63 (52.9)		10 (9.3)	4 (4.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.42 shows that at pre-course, there was a significant difference (P<0.001) between the Mpanshya TBAs (106) 89.1%, who covered the baby after delivery compared to Chongwe TBAs (66) 55.5%.

After the intervention, there was some significant difference P=0.058) that a higher proportion of TBAs in Chongwe ((97) 97% than in Mpanshya (96) 90.6% cover their babies after delivery.

The same table also indicates that there was statistical difference (P<0.001) noted at pre-course between Mpanshya (100) 84.0% and Chongwe (56) 47.1% regarding the reason for covering the baby is to keep the baby warm after delivery. But after the intervention, this practice among the intervention TBAs was not statistically significant (P=0.126) from that of the control group (97) 90.7%, (96) 96.0%) respectively.

Table 4.43: TBA advice on how to keep a piece of cloth clean and Hygienic
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q88. If your client uses a piece of cloth as a pad, describe how you advised them to keep it clean and hygienic.	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
When wet, wash it with soap and iron it or air dry it .	117 (98.3)	107 (89.9)	**0.007**	89 (83.2)	95 (95.0)	**<0.001**
Don't know	2 (1.7)	12 (10.1)		18 (16.8)	5 (5.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.43 shows that at pre-course, there was statistically significant difference (P<0.007) between the TBAs practice in Mpanshya (117) 98.3% on not advising their clients to wash their cloth pads with soap and air dry it and those in Chongwe (107) 89.9%.

After the intervention, significantly (P<0.001) more intervention TBAs in Chongwe (95) 95.0% compared to control TBAs in Mpanshya (89) 83.2% advised their clients to wash their cloth pads with soap and air dry it in the sun in-order to keep it clean and hygienic.

Table 4.44: What the TBA would do to her client with infection after delivery (n = 119 at both Mpanshya and Chongwe respectively at pre course) (n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable (hypothetical question).	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q89. As a TBA, what would you do to your client with infection after delivery?	Mpanshyan (%)	Chongwen (%)		Mpanshyan (%)	Chongwen (%)	
Refer her to the nearest hospital	0 (0)	0 (0)	-	72 (67.3)	93 (93.0)	**<0.001**
Use herbal medicine instead of referring her to the nearest hospital	119 (100)	119 (100)		35 (32.7)	7 (7.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.44 shows that at pre-course, all the TBAs did not refer their clients with an infection after delivery to the nearest health center. After the intervention, significantly (P<0.001) more intervention TBAs (93) 93.0% than control TBAs (72) 67.3%.would refer their clients to the nearest health facility when they notice that their clients have an infection.

Table 4.45: Advice TBAs gave to their clients on breast-feeding after delivery
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable (hypothetical question).	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q 90. What advice would you give your clients on breast-feeding after delivery?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Put baby on breast as it makes the uterus hard and encourages blood clots to come out or that it encourages bonding between the mother and the baby	63 (52.9)	115 (96.6)	<0.001	96 (89.7)	100 (100)	**<0.001**
Express the milk and throw it away	56 (47.1)	4 (3.4)		11 (10.3)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.45 shows that at both the pre-course and intervention more TBAs in Chongwe (115) 96.6%, (100) 100% than in Mpanshya (63) 52.9%, (96) 89.7% respectively would advise their clients to put the baby on the breast as it makes the uterus hard and encourages expulsion of blood clots as well as encourages bonding between mother and baby.

The knowledge levels among the Chongwe TBAs at pre-course and post course were statistically significant (P<0.001) compared to the Mpanshya TBAs.b

Table 4.46: Advice of TBAs on PMTCT
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q 91. Do you advise the mother against prevention of mother to child transmission of HIV/AIDS?	Mpanshyan (%)	Chongwen (%)		Mpanshyan (%)	Chongwe n (%)	
Yes	69 (58.0)	56 (47.1)	**0.092**	94 (87.9)	95 (95.0)	**0.068**
No	50 (42.0)	63 (52.9)		13 (12.1)	5 (5.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.46 shows that at both pre-course and intervention there were no significant differences in the proportion of TBAs who advise their mothers on PMTCT.

Table 4.47: Advice of TBAs on breast-feeding with an HIV (+) mother (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q 93. What advice would you give the mother regarding breast-feeding the baby if she were HIV positive?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
To continue exclusive breastfeeding as usual	74 (62.2)	51 (42.9)	**0.003**	70 (65.4)	90 (90.0)	**<0.001**
Stop breast-feeding or put the baby on bottle feeds if she can afford it	45 (37.8)	68 (57.1)		37 (34.6)	10 (10.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.47 shows that at pre-course, significantly (P<0.003) more TBAs in Mpanshya (74) 62.2% than in Chongwe (51) 42.9% would advise their clients to continue exclusive breastfeeding if they were HIV positive. After the intervention, significantly (P<0.001) more intervention TBAs in Chongwe (90) 90.0% compared to control TBAs in Mpanshya (70) 65.4% give the same advice to their clients..

Table 4.48: What the TBA checks on when she visits the client on the day after delivery
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Variable	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q 96a. Bleeding too much?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Yes	75 (63.0)	29 (24.4)	**<0.001**	84 (78.5)	93 (93.0)	**0.003**
Did not check on this.	44 (37.0)	90 (75.6)		23 (21.5)	7 (7.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q 96b. Checks for high fever?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Yes	65 (54.6)	22 (18.5)	**<0.001**	51 (48.1)	83 (83.0)	**<0.001**
Did not	54 (45.4)	97 (81.5)		55 (51.9)	17 (17.0)	
Total	**119 (100)**	**119 (100)**		**106 (100)**	**100 (100)**	
Q 96c. Checks if she is resting according to tradition.	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Yes	59 (49.6)	50 (42.0)	**0.242**	30 (28.3)	65 (65.0)	**<0.001**
Did not check on this.	60 (50.4)	69 (58.0)		76 (71.7)	35 (35.0)	
Total	**119 (100)**	**119 (100)**		**106 (100)**	**100 (100)**	

Table 4.48 shows that at pre-course, significantly (P<0.001) more TBAs in Mpanshya (75) 63.0% than in Chongwe (29)24.4% checked if their clients bled too much after delivery.

However, after the intervention, significantly (P<0.003) more TBAs in Chongwe (93) 93.0% than in Mpanshya (84) 78.5% visited their clients to check if they bled too much after delivery.

At pre-course, there was significantly (P<0.001) more TBAs in Mpanshya (65) 54.6% than in Chongwe (22) 18.5% would check if their client developed fever after delivery. However, after the intervention, significantly (P<0.001) more TBAs in Chongwe (83) 83% than in Mpanshya (51) 48.1% carry out this practice.

The same Table also illustrated that at pre-course, there was no significant difference in the proportion of TBAs who visited their clients to check if they were resting according to tradition in both groups. However, a higher proportion of TBAs in Chongwe (65) 65% than in Mpanshya (30) 28.3% checked if their clients were resting according to tradition post delivery during the intervention phase.

***All the questions in this table have been grouped together logically and sequentially for clarity.**

Table 4. 49: Ascertaining if the TBA health educates her clients during visitations.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	Site1	Site2	P-value	Site 1	Site 2	P-value
Q 96d. Do you health educate your clients to abstain from sex for up to six weeks after delivery in-order to prevent infections.	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Yes	34 (28.6)	13 (10.9)	<0.001	39 (36.4)	72 (72.0)	<0.001
Did not health educate the client to abstain from sex for up to six weeks after delivery.	85 (71.4)	106 (89.1)		68 (63.6)	28 (28.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q 96e. Health education on attending post natal clinics after 6 days, and 6 weeks after delivery during her visitations.	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Yes	32 (26.9)	113 (95.0)	<0.001	65 (60.7)	93 (93.0)	<0.001
Did not health educate the client to attend post natal clinics.	87 (73.1)	6 (5.0)		42 (39.3)	7 (7.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q 96f. Health education on breast feeding the infant	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Yes	44 (37.0)	56 (47.1)	0.115	64 (60.4)	91 (91.0)	<0.001
Did not health educate the client on breast feeding.	75 (63.0)	63 (52.9)		42 (39.6)	9 (9.0)	
Total	**119 (100)**	**119 (100)**		**106 (100)**	**100 (100)**	

Table 4.49 shows that at pre-course, significantly (P<0.001) more TBAs in Mpanshya (34) 28.6% than in Chongwe (13) 10.9% health educated their clients on the importance of abstaining from sex for up to 6-8 weeks in-order to prevent infections after delivery. However, after the intervention, significantly (P<0.001) more TBAs in Chongwe (72) 72% than in Mpanshya (39) 36.4% carried out this health education to prevent their clients from acquiring infection after delivery.

The table demonstrated that at both pre-course and intervention, a higher proportion of TBAs in the intervention group significantly (P<0.001) than in the control group heath educate their clients on the importance of attending post natal clinics after 6 days and 6 weeks after delivery .

There was no significant difference in the proportion of TBAs in Mpanshya and Chongwe at pre-course who health educate their clients on the importance of breastfeeding their infants. However, a significantly (P<0.001) higher proportion of TBAs in Chongwe (91) 91% than in Mpanshya (64) 60.4% health educated their clients on the importance of breast feeding after delivery.

Table 4. 50: Infection Prevention Practices of TBAs when they visit the clients. (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 107 at Mpanshya and 100 at Chongwe at post course)

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q 98a. Infection Prevention Practices of TBAs when they visit the clients.	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Sweep and mop the floor	27 (22.7)	16 (13.4)	**0.064**	64 (59.8)	88 (88.0)	**<0.001**
Did not do this	92 (77.3)	103 (86.6)		43 (40.2)	12 (12.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Washes her hands and spreads chitenge across her laps	23 (19.3)	17 (14.3)	**0.298**	69 (64.5)	88 (88.0)	**<0.001**
Did not do this	96 (80.7)	102 (85.7)		38 (35.5)	12 (12.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Lies baby on her laps.	48 (40.3)	23 (19.3)	**<0.001**	58 (54.2)	93 (93.0)	**<0.001**
Did not do this	71 (59.7)	96 (80.7)		49 (45.8)	7 (7.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Covers the baby to prevent the baby from catching cold.	11 (9.2)	8 (6.7)	**0.473**	87 (81.3)	92 (92.0)	**0.025**
Did not cover the baby.	108 (90.8)	111 (93.3)		20 (18.7)	8 (8.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Checks if the baby is bleeding from the umbilicus	33 (27.7)	12 (10.1)	**<0.001**	82 (76.6)	98 (98.0)	**<0.001**
Didn't do this	86 (72.3)	107 (89.9)		25 (23.4)	2 (2.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Checks if the fontanel is depressed or bulging.	13 (10.9)	13 (10.9)	**1.000**	65 (60.7)	69 (69.0)	**0.245**
Didn't do this	106 (89.1)	106 (89.1)		42 (39.3)	31 (31.0)	
Total	**119 (100)**	**119**		**107**	**100**	

		(100)		**(100)**	**(100)**	
Checks the skin for any skin rashes	19 (16.0)	14 (11.8)	**0.348**	76 (71.0)	97 (97.0)	**<0.001**
Did not check the skin for any rashes.	100 (84.0)	105 (88.2)		31 (29.0)	3 (3.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Asks whether the baby is breast feeding well.	47 (39.5)	36 (30.3)	**0.135**	79 (73.8)	96 (96.0)	**<0.001**
Did not ask the mother this question	72 (60.5)	83 (69.7)		28 (26.2)	4 (4.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Asked if baby is sleeping well.	5 (4.2)	5 (4.2)	**1.000**	85 (79.4)	93 (93.0)	**0.005**
Did not ask mother this question.	114 (95.8)	114 (95.8)		22 (20.6)	7 (7.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Asked if baby is opening its bowel.	14 (11.8)	11 (9.2)	**0.526**	73 (68.2)	87 (87.0)	**<0.001**
Did not ask mother this question.	105 (88.2)	108 (90.8)		34 (31.8)	13 (13.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Asked if baby is passing urine?	12 (10.1)	8 (6.7)	**0.350**	69 (64.5)	78 (78.0)	**0.032**
Didn't ask this	107 (89.9)	111 (93.3)		38 (35.5)	22 (22.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Asked if the baby cries a lot?	9 (7.6)	7 (5.9)	**0.605**	27 (25.2)	33 (33.0)	**0.218**
Didn't do this	110 (92.4)	112 (94.1)		80 (74.8)	67 (67.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.50 shows that there was no significant difference in the proportion of TBAs in Mpanshya and Chongwe at pre-course who sweep and mop the floor when they visit their clients. However, a significantly (P<0.001) higher proportion of TBAs in Chongwe (88) 88% than in Mpanshya (64) 59.8% swept and mopped the floor when they visit their client after delivery.

There was no significant difference in the proportion of TBAs in Mpanshya and Chongwe at pre-course that spread chitenge across their laps when checking on the baby in-order to protect the baby from acquiring infections. However, at post course, significantly (P<0.001) higher proportion of TBAs in Chongwe (88) 88% than in Mpanshya (69) 64.5% carried out this practice before checking the baby during her visits after delivery.

The table showed that at pre-course, significantly (P<0.001) more TBAS in Mpanshya (48) 40.3% than in Chongwe (23) 19.3% lay the baby on their laps during examination. However, after the intervention, significantly (P<0.001) more TBAs in Chongwe (93) 93.0% than in Mupanshya (58) 54.2%. did lay the baby on their laps during examination

At pre-course, there was no significant difference (P=0.473) in the proportion of TBAs in Mpanshya and Chongwe that covered the baby in-order to prevent baby from catching cold while checking the new born.
However, statistically significant (P<0.025) proportion of TBAs in Chongwe (92) 92% than in Mpanshya (87) 81.3% covered the baby while checking the new born baby at post course
There was a significant difference (P <0.001) in the proportion of TBAs in Mpanshya (33)27.7% than in Chongwe (12) 10.1%, who checked if the baby is bleeding from the umbilical stump at pre-course. However, statistically significant (P<0.001) proportion of TBAs in Chongwe (98) 98% than in Mpanshya (82) 76.6% did carry out this practice after the intervention.
The table also showed that at both pre-course and after the intervention the proportions of TBAs who checked if the fontanels were depressed or bulging were not statistically significant between Mpanshya and Chongwe.

At pre-course, there was no significant difference (P=0.348) between the two groups regarding checking the skin for any rashes. But, after the intervention, significantly (P<0.001) more TBAs in Chongwe (97) 97% than in Mpanshya (76) 71.0% checked the skin for any rashes.

The table indicated that there was no significant difference (P=0.135) in the proportion of TBAs who asked if the baby is breast feeding well in Mpanshya and Chongwe at pre-course.
However, at post course, significantly (P<0.001) more TBAs in Chongwe (96) 96% than in Mpanshya (79) 73.8% did ask mothers if their babies were breast feeding well.

There was no significant difference (P=1.000) in the proportion of TBAs who asked if the baby is sleeping well in Mpanshya and Chongwe at pre-course.
However, significantly (P<0.005) more TBAs in Chongwe (93) 93.0% than in Mpanshya (85) 79.4% did ask if baby sleeps well at post course

The table also indicated that there was no significant difference (P=0.526) in the proportion of TBAs who asked if the baby is opening its bowel in Mpanshya and Chongwe at pre-course.
However, at post course, significantly (P<0.001) more TBAs in Chongwe (87) 87% than in Mpanshya (73) 68.2% did ask mothers if their babies were opening their bowel well.

It was noted that there was no significant difference (P=0.350) in the proportion of TBAs who asked if the baby is passing urine without any problems in Mpanshya and Chongwe at pre-course.
However, after the intervention, significantly (P<0.032) more TBAs in Chongwe (78) 78% than in Mpanshya (69) 64.5% did ask mothers if their babies were passing urine without any problems,
The table revealed that at both at pre-course and after the intervention, the proportions of TBAs who asked if the baby cries a lot which may be a symptom that baby may be experiencing pain due to some infection were not statistically significant (P=218)between Mpanshya and Chongwe.
***The questions in this table have been grouped together for clarity**

Table 4. 51a: What the TBA does to reduce infant morbidity and mortality. (n = 119 at both Mpanshya and Chongwe respectively at pre course). (n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q99a. What would you do if the baby is taking quick and shallow breaths or struggling to breathe?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Refer to the clinic/hospital	65 (54.6)	79 (66.4)	**0.063**	104 (97.2)	100 (100)	**0.247**
Didn't do this	54 (45.4)	40 (33.6)		3 (2.8)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q99b. What would you do if you find the baby has a sunken or depressed fontanel?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Refer to the clinic/hospital	35 (29.4)	5 (4.2)	**<0.001**	93 (86.9)	100 (100)	**<0.001**
Would not refer the baby.	84 (70.6)	113 (95.8)		14 (13.1)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q99c What would you do if you find the baby has a swollen fontanel?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Refer baby to the clinic /hospital	34 (28.6)	9 (7.6)	**<0.001**	105 (98.1)	99 (99.0)	**1.000**
Would not refer the baby	85 (71.4)	110 (92.4)		2 (1.9)	1(1.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q99g. What would you do if you find the new born baby is sleeping for a long time?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Refer a new born baby found sleeping for a long time to the nearest health facility	0 (0)	0 (0)	-	62 (57.9)	81 (81.0)	**<0.001**
Would not refer the baby.	119 (100)	119 (100)		45 (42.1)	19 (19.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

***The questions in this table have been grouped together for clarity**

Table 4.51a shows at pre-course there was no statistical difference (P=0.063) at pre-course between the two groups (65) 54.6% (79) 66.4% respectively. After the intervention, the results remained statistically non significant (P=0.247) between the control group and the intervention group (104) 97.2% and (100) 100%.

The table also shows that there was a significant difference (P<0.001) in the proportion of TBAs in Mpanshya (35) 29.4% than in Chongwe (5) 4.2% who would refer a baby with sunken or depressed fontanel to the nearest health facility at pre-course.
However, after the intervention, significantly more TBAs in Chongwe (100)100% than in Mpanshya (93) 86.9% would refer this baby.

It was also indicated that at pre-course, there was a significant difference (P<0.001) in the proportion of TBAs who would refer the baby to the clinic /hospital if the baby has a swollen fontanel was higher in Mpanshya (34) 28.6% than in Chongwe (9) 7.6%. However, after the intervention there was no significant difference (P=1.000) between Mpanshya (105) 98.1% and Chongwe (99) 99.0%.

During the pre-course, there was no comparative statistics in terms of referring a baby who sleeps for a long time between the control and the intervention groups (0) 0.0%, (0)0.0%.
However, after the intervention, significantly (P<0.001) more TBAs in Chongwe (81) 81% than the control group in Mpanshya (62) 57.9. % would refer a new born baby found sleeping for a long time to the nearest health facility.

Table 4.51b: What the TBA does to reduce infections in the infant.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q99d. What would you do if you find the baby's umbilicus is bleeding?	Mpanshyan (%)	Chongwe n (%)		Mpanshyan (%)	Chongwe n (%)	
Refer to the nearest health facility	35 (29.4)	73 (61.3)	<0.001	106 (99.1)	100 (100)	1.000
Didn't do this	84 (70.6)	46 (38.7)		1 (0.9)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q99e. What would you do if you find the umbilicus is red, swollen, discharging pus or foul smelling?	Mpanshyan (%)	Chongwe n (%)		Mpanshyan (%)	Chongwe n (%)	
Refer to the nearest health facility	78 (65.5)	41 (34.5)	<0.001	104 (97.2)	99 (99.0)	1.000
Didn't do this	41 (34.5)	78 (65.5)		3 (2.8)	1 (1.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	
Q99f. What would you do if you find the baby is stiff or is fitting or has tight clenched jaw?	Mpanshyan (%)	Chongwe n (%)		Mpanshyan (%)	Chongwe n (%)	
Refer to the nearest health facility	67 (56.3)	8 (6.7)	<0.001	85 (79.4)	100 (100)	<0.001
Would not refer the baby.	52 (43.7)	111 (93.3)		22 (20.6)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

At pre-course, Table 4.51b showed that after the pre-course there was a significant difference (P<0.001) in the proportion of TBAs who would refer the baby bleeding from the umbilical stump to the nearest health center/hospital was significantly higher in Chongwe (73) 61.3% than in Mpanshya (35) 29.4% but after the intervention there was no significant difference between the two groups.

The Table also indicates that at pre-course, there was a significant difference (p<0.001) in the proportion of TBAs that would refer the baby to the nearest health facility if they found the baby's umbilical stump is red, swollen, discharging pus or foul smelling was higher in Mpanshya (78) 65.5% than in Chongwe (41) 34.5%.
However, after the intervention, there was no significant difference (P=1.000) between Chongwe (99) 99.0% and Mpanshya (104) 97.2%.

Table 4.51b also reveals that there was a significant difference (P<0.001) in the proportion of TBAs in Mpanshya (67) 56.3% than in Chongwe (8) 6.7% who would refer this baby to the nearest health facility at pre-course,
However, after the intervention, significantly (P<0.001) more TBAs in Chongwe (100) 100% than in Mpanshya (85) 79.4% would refer this baby to the nearest health facility.

Table 4. 52a: Practice versus site at pre and post course.

Pre-course				**Post-course**		
	Site1	**Site2**	**P-Value**	**Site1**	**Site2**	**P-Value**
	Mpanshya (%)	Chongwe (%)		Mpanshya (%)	Chongwe (%)	
Practice Levels						
Excellent (49 – 59)	-	-		0 (0)	32 (32.0)	**0.001**
Good (38- 48)	-	-		54 (50.5)	67 (67.0)	
Satisfactory (27-37)	8 (6.7)	1 (0.8)	**0.017**	50 (46.7)	1 (1.0)	
Unsatisfactory (<26)	111(93.3)	118(99.2)		3 (2.8)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.52a showed that at pre-course, a higher proportion of participants in Mpanshya had satisfactory practice than in Chongwe (P=0.017). However, after the post course, a higher proportion (32%) of participants in Chongwe had significantly (P=0.001) excellent practice (49-69 correct responses) more than in Mpanshya where no participants had excellent practice.

Table 4.52b: Cultural Practices versus Site.

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
	Mpanshya	Chongwe		Mpanshya	Chongwe	
29. Do you know the cultural practices that are related to pregnancy, labour and post partum period?						
Yes	106 (89.1)	100 (84)	**0.254**	78 (73.6)	88 (90.7)	**0.002**
No	13 (10.9)	19 (16)		28 (26.4)	9 (9.3)	
Total	**119 (100)**	**119 (100)**		**166 (100)**	**203 (100)**	

Table 4.52b showed that the study at pre-course showed that there was no significant (P=0.254) difference between cultural practices and site between the control and the intervention group (106 (89.1%) in Mpanshya and 100 (84%) in Chongwe). After the intervention, the level of cultural beliefs was significantly higher in the intervention compared to the control group (P=0.002) (78 (73.6%) in Mpanshya and 88 (90.7%) in Chongwe).

Section D

Attitude questions

The tables in this section show the respondents work attitudes at both pre-and post course

Table 4. 53: Attitude of the TBA towards length of hours she stays with client after delivery
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q104. After delivery, do you mind the length of hours you stay with your client?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
No	30 (25.2)	91 (76.5)	**<0.001**	106 (99.1)	100 (100)	**1.000**
Yes	89 (74.8)	28 (23.5)		1 (0.9)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

At pre-course, Table 4.53 showed that the proportion of TBAs who would not mind the length of time they would spend with their clients after delivery was significantly

higher in Chongwe (91) 76.5%) than in Mpanshya (30) 25.2%. But after the intervention there was no significant difference (P=1.000) between the two groups (106) 99.1% in Mpanshya. and (100) 100% in Chongwe. (Used fisher's Exact Test for the Post course)

Table 4.54: Attitude of the TBA towards the hours to stay with the client after delivery.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q 105. If yes, state how long you intend to stay with them after delivery	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongw e n (%)	
None	91 (76.5%)	(30) 25.2%	**<0.001**	104 (97.2)	95 (95.0)	**0.487**
Between 1 and 7 hours and above	(28) 23.5%	89 (74.8%)		3 (2.8)	5 (5.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.54 showed that the proportion of TBAs who would stay with their clients between 1 and 7 hours and above was significantly higher (P<0.001) in Chongwe (89) 74.8%) than in Mpanshya (28) 23.5% during the pre-course. But after the intervention, there was no significant difference (P=0.487) between control TBAs (104) 97.2% and the intervention TBAs (95) 95%.

Table 4.55: Attitude of TBA towards her belief to improve the health of the mothers and babies she delivers.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Q106. Do you believe that you can improve the health of the mothers and the babies you deliver?	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Yes	101 (84.9)	114 (95.8)	**0.004**	104 (97.2)	96 (96.0)	**0.714**
No	18 (15.1)	5 (4.2)		3 (2.8)	4 (4.0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.55 shows that the proportion of TBAs who believe that they can improve the health of the mothers and the babies in their communities was significantly higher (P=0.004) in Chongwe (114) 95.8%) than in Mpanshya (101) 84.9% at pre-course. But after the intervention there was no significant difference (P=0.634) between the two groups (104) 97.2% and (96) 96%.(Fisher's used)

Table 4. 56: Attitude versus site at pre and post course.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				**Post-course**		
Factor	**Site1**	**Site2**	**P-value**	**Site 1**	**Site 2**	**P-value**
Attitude Score	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Good Attitude (4 – 8 correct responses)	119 (100)	119 (100)	-	106 (99.1)	100 (100)	**1.000**
Poor Attitude (<4 correct responses)	0 (0)	0 (0)		1 (0.9)	0 (0)	
Total	**119 (100)**	**119 (100)**		**107 (100)**	**100 (100)**	

Table 4.56 shows that all the study participants at pre-course had good attitude((measured by scoring 4-8 correct responses) towards the care of the mothers and the babies and after the intervention only (1) 0.9% of participants in Mpanshya had poor attitude while the rest in Mpanshya and all of them in Chongwe had good attitude.

This study used the method triangulation which included using the quantitative and qualitative data collection methods. The qualitative data supplemented the data from the quantitative data. So the presentation of the qualitative data followed as shown below.

4.6. Data Presentation on Phase 4c: The findings from the Focus Group Discussions.

The Findings showed the varied roles of TBAs in Chongwe district.

The previous phase (4b) of the study dealt with the comparative analysis of the pre- and post course quantitative data. This phase (4c) focuses on the presentation of the focus group discussions. The study used the method triangulation to ensure trustworthiness of the study findings.

FGD Results

FGD Table 4.57: Demographic Characteristics of the FGD Sample

Characteristic	**TBAs N=28**	**Mothers n=4**	**Midwife Supervisor n=2**	**Village Leader n=1**	**Nurse n=2**
Age					
22-31	3(10.7%)	2(50%)	0	0	0
32-41	4(14.2%)	2(50%)	2(100%)	0	2(100%)
42-51	13(46.4%)	0	0	0	0
52-61	7(25%)	0	0	1(100%)	0
62 years	1(3.6%)	0	0	0	0
Marital Status					
Married	28(100%)	4(100%)	2(100%	1(100%)	2(50%)
Single	0	0	0	0	0
HighesEducational level					
Illiterate	2(7.1%)	0	0	0	0
Primary	14(50%)	4(100%)	0	1(100%)	0
Lower secondary	12(42.9%)			0	
Upper Secondary	-		2(100%)		2(100%)
Able to read and write in english and local language					
Yes	26(92.9%)	4(100%)	2(100%)	1(100%)	2(100%)
No	2(5.4%)	0	0	0	0
Number of children					
One –five children	12(42.9%)	2(50%)	2(100%)	0	2(100%)
Six - ten children	15(53.6%)	2(50%)	0	1(100%)	0
Eleven and more	1(3.6%)	0	0	0	0
Occupation					
House wife/	28(100%)	4(100%)	2(100%)	0	1(50%)
Nursing	0	0	0	0	2(100%)
Midwifery supervisors	0	0	2(100%)	0	0
Subsistence farmer/housewife	0	0	0	1(100%)	0

The mean age for the FGD participants was 46.6 years with standard deviation of 8.2 years. The youngest respondent was 29 years old while the oldest was 62 years. Most

of the respondents were 50 years old. The above table also showed the educational attainment and the ability to read and write in English or local language of the FGD TBAs. 56.8% of the respondents had primary school education 37.8% had secondary level of education. The table showed that 94.6% of the respondents were literate. They could read and write in local and English languages. Only 2 (5.4%) were illiterates who could neither read nor write in English or local language. The same table showed that more than half (56.8%) of the FGD participants had primary school education while less than half (37.8%) had secondary level of education. The FGD respondents had an average of 6 children, the minimum number of children was 2 and the maximum number of children was 11.

FGD Table 4.58: Deliveries conducted per week, month and year by age category

Age Group	Weekly	Monthly	Yearly
22-31 Years	0	1	12
32-41 Years	6	30	74
42-51 Years	15	64	195
52-61 Years	10	21	66
62 Years	0	0	1
Total	**31**	**116**	**348**
Average deliveries	**6.2**	**23.2**	**69.6**

FGD Table 4.58 showed that on the average, the FGD respondents conducted an average of 6 deliveries weekly, 23.2 deliveries monthly and 70 deliveries yearly.

Presentation on the main theme, the sub-themes and categories of the FGD.

MainTheme: Community Social Support.

A theme explains the underlying meaning of the data (Graneheim et al., 2004). The researcher came up with a main theme which is 'Community Social Support which has two sub-themes, and two categories. The first category has three components while the second category has four components. During the discussions, the TBAs showed that they visit and interact with their clients and thus provide them with the much-appreciated social support they need.

The sub-themes which are 'Providing Safe Motherhood Initiatives and Psycho-social Counseling indicate that TBAs give targeted health education messages and counseling to their clients (Refer to table 3.1 on page 70).

Sub-Theme I: Providing Safe Motherhood Services

Ia. Care During the Pre natal Period

Health education on Early Booking at Antenatal clinics.

This category demonstrates that tTBAs provide health education to mothers on early ante natal booking. For example, one tTBA in group 5 stated: **"I teach women to attend the ante natal clinic as early as 2 months".tTBA Edith further explained that ' we advise them in the case of any illnesses to come to the clinic'.-**

Good Nutrition

Health education on good nutrition is given as the TBAs, being locals know the seasonally- available vegetables. For example, another **tTBA** in group 5 **explained**

"We have to tell them what kinds of local vegetables to take when pregnant".

Infection Prevention During Pregnancy in Preparation for Labour.

As pregnancy progresses, the tTBAs provide health education to their clients advising them to buy the gloves in preparation for labour and delivery. For example, the TBA in group 1 in Kasisi stated : **"We advise mothers to buy gloves or clean delivery kits. We don't have CDKs so we tell mothers to buy these things.**

- **Personal Hygiene Practices and maintenance of Environmental Sanitation.**

The tTBAs also teach their clients about personal hygiene practices and proper maintenance of environmental sanitation. Another tTBA in group 1 reported **"I am a member of the NHC. I work with Kasisi Home Based Care and (Christian Children's Fund). We all come together at Kasisi Health Center when they call us. I teach my friends about hygiene, and cleanliness to the Community also".**

Avoiding harmful traditional practices during pregnancy, labour delivery and the post partum period

The tTBAs also teach their clients to avoid negative traditional practices like drinking herbs during the last trimester to initiate and hasten labour, as this practice may lead to a ruptured uterus. For example, one TBA in group 3 noted **"We don't allow them to drink any African Medicine".**

Role plays on dangerous traditional birthing practices to avoid while conducting deliveries were demonstrated by another tTBA 4 who stated: " **The untrained TBA sits the woman in labour down with her legs wide apart. She ties a cloth round her back and pushes her foot onto the perineum as the client pushes. This is expected to help push out the baby quickly."**

Ib. Observing Infection Prevention Measures during the Intra-partum Period

This category also shows how the tTBAs prepare the environment for delivery and all that they do during the birthing process as the verbatim descriptions from the tTBAs in group 5 in Chongwe below depicts.

"We inspect the room, clean it, spread a clean plastic if we have any".

"We clean the floor for the delivery if there are no family members to help them"

" But even before you wash your hands, you must analyze the warmth of the environment. If it is cold, you must make a fire. You dry your hands in the air. Then you put everything in order. When the baby is coming out, you take a napkin and spread and be ready to receive the child. Once the baby has shown its head, you wipe its nose and mouth. You then put the baby on the mother's womb. Now you must tie the umbilical cord and cut it. Then you must clean the baby and leave it on the mother's chest. Now you must be ready for the placenta to come. You need to put something between the anus and vagina so that the placenta falls into that container. Now you must clean the mother - both sides. When you finish, you take out the dirty clothes and replace them with clean ones"

The FGD showed that the tTBAs apply theory to practice thus proving evidence–based hand washing practices among the tTBAs. A tTBA in group 5 explained**: "I wash my hand, put on my gloves before I start receiving the baby. I know there are germs on my hands from the test during the training".**

Ministry of Health Reproductive Health Policy- No Vaginal Examinations During Delivery

The Ministry of Health Reproductive Health Policy bars the TBAs from conducting vaginal examinations. One of the comments from a tTBA in group 3 indicated that she abides by this policy which was stressed during their training in-order to avoid them infecting their clients according to her statement **"We don't feel their inside".**

Ic. Care Diromg the Post-Partum Period

Ic(i). Integrating Traditional Practices with Modern Medicine in the Disposal of the Placenta after Delivery and Avoiding Harmful Traditional Practices During the Post partum period

The verbatim report below aptly illustrates this integration which shows that the TBAs examine the placenta for completion before disposal.

A tTBA in group 3 narrated thus: **"I checked to see that the placenta has no spaces between them**. **Then I knew it was complete. I put it into a plastic bag. We went together and threw it down the pit latrine, the razor blade I used to cut the cord and the plastic mat and the cotton wool with blood, I threw them into pit latrine. You must find a close relative to go with."**

The FGD findings confirmed that traditional beliefs promote the proper disposal of placenta after delivery in rural settings. For example, another tTBA in the same group 3 noted: **"Because we want to make sure it was thrown down the pit latrine". This tTBA further stated: " Yes madam, some people practice witchcraft with blood".**

Ic(ii). Care of the Vaginal and Perineal Wounds during the Postnatal Period

This verbatim quotes in this category illustrate the application of infection prevention measures by the tTBAs in her practice for the prevention of puerperal sepsis.

Mother delivered by a tTBA in Kanakantapa (group 2): "My mother-in- law prepares the leaves from mukuyu tree. She adds it in cold water and tells me to sit in the cold water every day until my wounds heal. According to tradition we use traditional herbs on the perineum till the wound heals. The tTBA advised me against this practice as it may cause infections. She said we must wash our female parts with cooled boiled water with no salt three times a day".

1c (iii). Baby Bathing after Delivery.

Different cultures have different methods and beliefs on baby bathing after delivery. Some cultures believe the baby should not be bathed till the cord drops off. Both the clients and the tTBAs reported that babies are bathed a day after delivery and are, thus, protected from hypothermia thus avoiding harmful traditional practices as the discussions illustrate:

The mother who had been delivered by a TBA in group 2 (Kanakantapa) reported: "She came the following day and assisted me in bathing the baby. "Then after, she used to come daily to visit me for some 4 days examining and bathing the baby each time she comes and showing me how to bath the baby".

A tTBA in group 2 in Kanakantapa went on to illustrate what she does to prevent hypothermia in the new born: **"I dry baby with clean cloth, I put a hat and socks on the baby and put on clean clothes, then wrap baby in a showel if there is any". This is done so that the baby does not catch cold".**

Ic(iv). Care of the Cord after Delivery.

Cords can bleed or even become infected after delivery if mothers apply cow dungs and herbs on them hence the necessity for tTBAs to health educate their clients as confirmed by this text narrated by a mother delivered by atTBA in group 1 at Kasisi.

"She advised me not to put herbs on the baby's umbilicus. I cleaned the cord with boiled cooled water until it dropped after 6 days".

Ic(v). Handling of Complications Like Bleeding from the Cord.

A mother who had been delivered by a tTBA in group 4 in Chongwe reported**: "She advised me to check and see if baby bleeds from the cord or has any sores in the mouth and that I should take baby to the clinic".**

Another mother in group 4 delivered by a tTBA in Chongwe reported: "She advised me not to cover the cord with cloth.

1c (vi) Infant Feeding Practices

- **Breast Feeding Practices**

The tTBAs provide health education to clients on the importance of breast feeding as confirmed below:

A tTBA in group 5 in Chongwe noted: "We explain that the breast is like a tank

for the milk and full of nutrition".

A mother in group 2 in Kanakantapa who had been delivered by a tTBA noted: "The TBA said we breastfeed all our babies after delivery pantu (because) the first milk (colostrum) is very good for the baby. It protects baby against diseases. Breast feeding is also cheaper than buying tinned milk."

Ic(vii). Prevention of Mother–to-Child- Transmission of HIV Virus

tTBA in group 1 at Kasisi narrated : "We promote exclusive breast-feeding, even on how to attach the baby to the breast, the advantages of breast-feeding, especially for HIVpositive mothers".

(Mother delivered by a tTBA) in group 1 in Kasisi: "I was told to breast feed excrushively (exclusively) for 6 months . – no feeding baby with anything else – not even water".

tTBA from group 1 in Kasisi continued : "If you are HIV positive, you should breastfeed exclusively for 6 months and then visit the clinic after 6 months. You can heat the breast milk and feed it to the baby with cup and spoon".

Ic(viii) Family Planning

Several tTBAs reported that they provide family planning services to women. For example, one of the tTBAs in group 3 in Chinyunyu reported: "**As we go around the village, if we see that there are mothers that are having a lot of children we talk to the mothers about the benefits of family planning and the disadvantages of having many children in a short period of time".**

Ic(ix). Post Natal Health Education Messages on Clean Environments. tTBAs also health educate their clients on the maintenance of environmental sanitation in-order to protect them from diarrhoeal diseases and malaria. This was described in the verbatim report below by a tTBA who is also a SMAG member in group 1 in Kasisi**:**

"I am a member of the NHC. I work with Kasisi Home Based Care and (Christian Children's Fund). We all come together at Kasisi Health Center when they call us. I teach my friends about hygiene, and cleanliness to the Community also".

2: Psychosocial Counseling

2a. Male Involvement/Support for the Family.

The discussion showed that the tTBAs counsel the men in the community on helping out with house work during the puerperal period. Their involvement in housework helps their wives to concentrate on looking after the babies. This is very essential for mothers to adhere to exclusive breast feeding if that is their chosen infant feeding option. The tTBAs noted that male involvement promotes harmony and communication in the family and lessens the workload on the wife during pregnancy and the puerperal period.

A tTBA in group 1 in Kasisi who is also a SMAG member had this to say: "They are able to talk to their husbands freely" about having time to breast feed the baby. The community is co-operating with each other in this way and I am very happy about it."

A male SMAG member in group 1 at Kasisi made this observation duing the focus group: " I am very happy with what the women (TBAs) in SMAG are doing in the community .They teach us to help our wives when they are pregnant. Also when I look at my wife, I know it is me who has this pregnancy so I should help in sweeping , bathing the children and fetching firewood for cooking'. People in the community now come to me to discuss their diseases very openly as a CHW in SMAG".

2b. Category on Counseling to Prevent Infections due to Abortions, Save Lives and Improve Parent-Daughter Relationships.

During the discussions, it surfaced that the tTBAs carry out their culturally-assigned roles for the elderly people in rural communities by advising the youth against conduct that may lead to teenage pregnancies, abortions and poor parent-daughter relationships as the following statements confirm:

A tTBA in group 4 in Chongwe enunciated thus: "**Sometimes, when initiating young generations it is very difficult. You can educate them right there but when they go outside they have bad friends. Whatever you teach them can be a waste of time because they want to experience what they hear. After that, they get pregnant without even knowing what they were doing. You can find that the mother and the father are good people, but their child, they are in a miserable state because of friends' influence."**

A tTBA in group 1 who is also a SMAG member in Kasisi made this contribution "ZINGO is an organisation which educates the youth on sex and HIV through the churches like the New Apostolic, Roman Catholic and Christian Unity". "ZINGO organises materials they use for sensitising the youth in Communities. We get permission from the Headman to address the youths at school".

A tTBA in group 1 who is also in SMAG continued thus: ' I intervene to stop young girls from aborting but some die in the process. Because of the work CIDRZ is doing going to talk to the girl not to abort'.

A tTBA in group 2 in Kanakantapa shared that :"So far, I have saved the lives of two young girls who got pregnant when they were 15 years old"

The same tTBA continued : 'I also talk to her mother to try and understand the daughter. I have to be very careful when I talk to both of them'

2c. Promoting Couple Counseling for HIV Testing

The ideal situation in counseling focuses on Couple counseling. It promotes acceptance of HIV status, treatment, adherence, understanding and prevents physical and emotional abuse of spouses in families. During the discussions, emphasis on all the above was shown by statements like this made by a tTBA in group 1 in Kasisi: **"If women test on their own, it's usually a problem. They fail to disclose to their husbands because they fear being divorced, being beaten, being accused of unfaithfulness...So most of the time women are advised to go and tell the husbands that at the clinic they want to see you. That way they get tested together, they get told together. That's what we advise them".**

"Because of tTBAs in SMAG when wives test RPR positive, they quietly go and bring their husbands for treatment so both get treated without fighting each other".

2d. Promoting Team work

A tTBA in group 3 in Chinyunyu commented on the importance of team work which facilitates referrals in rural sttings: "Women are being brought to the clinic- they are able to go to the clinic through the help of the villagers. The distance is too far to the clinics". "During the day if the mother can manage to walk, we go to the road and beg for a taxi to help us . We have no money. During

night we beg neighbours with bicycles to help us. If not we use ox carts" "The farmers who have Ox Cart help us out a lot".

In conclusion. the FGD supplemented the findings from the comparative analysis of the quantitative data. This confirmed the importance of TBA training using the modified MoH TBA training curriculum. This training also showed that there is the need to document the impact of the tTBAs contributions in safe motherhood initiatives. This could best be done through monitoring and evaluating their practices. This led the researcher to developing a monitoring and evaluation tool in the next phase of the study.

The findings that emerged from the FGD informed the design and development of the monitoring and evaluation tool.

4.7. Data Presentation on Phase 5: The Monitoring and Evaluation Findings

This phase presented the sixteen (16) components of the Monitoring and evaluation tool. In addition this phase also showed the outcome of training the TBAs using the modified MoH TBA training curriculum. The phase is an essential and integral component of this study as it provided scientific evidence for monitoring and evaluating the impact and outcome of the services that TBAs render to their communities.

The Process of Designing and Developing the Monitoring and Evaluation Tool.

This process aims at instituting a mechanism for documenting the impact of the traditional birth attendants in their practice environments. These are the villages, the health post and the health centers.

Monitoring and Evaluation Results

M&E Table 4.59: Education Level of TBAs interviewed during the M& E Phase in Chongwe.

Education Level	Frequency	Percentage
Never been to school	2	8
Primary	11	44
Secondary	12	48
Total	**25**	**100**

Table 4.59 showed that the majority 12 (48%) of the 25 ME respondents had secondary school education while only 44% had primary level of education.

M&E Table 4. 60: Can You Read/Write in English and Local Language?

Can you read/write in English and Local Language?	Frequency	Percentage
Yes	23	92
No	2	8
Total	**25**	**100**

Table 4.60 results showed that at least 23 (92%) of the respondents in the M&E were literate. They could read and write both in the English language as well as in their local language. Only 2 (8%) could not read or write in their local language.

The M&E respondents had an average of 6) children, most of them had at least 4 children, the minimum number of children was 2 and the maximum number of children was 11. The respondents had a total number of 65 children in all.

M&E Table 4.61: Deliveries conducted per week, month and year by age category

Age Group of TBAs	Weekly	Monthly	Yearly
22-31 Years	0	0	4
32-41 Years	19	72	235
42-51 Years	10	36	181
52-61 Years	5	52	76
62 Years	0	0	1
Total	**34**	**123**	**497**
Average deliveries	**1**	**5**	**20**

Table 4.61 results showed that on average the M&E respondents conducted an average of 1 delivery weekly, 5 deliveries monthly and 20 deliveries yearly.

M&E Table 4. 62a: Analysis of infections in babies delivered by trained TBAs in Chongwe District during the monitoring and evaluation phase

Mpanshya			**Chongwe**		
Total number of babies	Babies with infections	%age of babies with infections	Total number of babies	Babies with infections	%age of babies with infections
131	2	1.5 %	147	0	0%

During the situation analysis which took place between March –October ,2006, table 4.1 showed that 18 (27%) of babies delivered by TBAs in Mpanshya and 32 (27%) in Chongwe developed infections within 14 days after delivery. But during the monitoring and evaluation phase which took place from January- December 2010 table 4.62a showed that only 2 (1.5%) of babies developed umbilical cord infections in Mpanshya while 0 (0%) of the babies developed infections in Chongwe. This showed a 27% reduction in neonatal morbidity in the intervention group and 25.5% reduction in the control group in Mpanshya.

M&E Table 4.62b: Analysis of infections in mothers delivered by trained TBAs in Chongwe District during the monitoring and evaluation phase

Mpanshya			**Chongwe**		
Total number of mothers	Mothers who developed puerperal infections	%age of mothers with infections	Total number of mothers	Mothers with infections	%age of mothers with infections
131	23	17.5%/	147	9	6%

During the situation analysis which took place between March – October ,2006, table 4.2 showed that 13 (20%) of mothers had puerperal infections in Chongwe and 25 (21%) in Mpanshya. But during the monitoring and evaluation phase from January–December 2010, Table 4.62b showed that 9 (6%) out of 147 mothers delivered by the intervention TBAs had puerperal infections in Chongwe compared to 23 (17.5%) out of 131 mothers delivered by control TBAs in Mpanshya. This showed 14% reduction in maternal morbidity in the intervention group and 3.5% reduction in the control group in Mpanshya.

The Monitoring and Evaluation Tool.

The monitoring and evaluation tool that was designed and developed focused on the tTBAs practice areas within their scope of practice, supervision and availability of resources they use. Tables 4.62a and 4.62b showed the success of the TBA training using the modified MoH TBA training curriculum. The monitoring and evaluation tool appended (Appendix R tables i - xvi) was one of the study outputs.

Summary of Identified Opportunities for Infection Control

The table below illustrates the opportunities the researche identified for infection prevention among the TBAs. These include hand washing practices, cord care and perineal care.

Table 4.63: Identified Opportunities for Infection prevention.
(n = 119 at both Mpanshya and Chongwe respectively at pre course).
(n= 107 at Mpanshya and 100 at Chongwe at post course).

Pre-course				Post-course		
Factor	Site1	Site2	P-value	Site 1	Site 2	P-value
	Mpanshya n (%)	Chongwe n (%)		Mpanshya n (%)	Chongwe n (%)	
Q68a. Did you wash your hands before putting on gloves, delivering your client and afterwards?						
Yes	28 (23.5%)	38 (31.9%)	0.148	52 (48.6%)	100 (100%)	<0.001
No	91 (76.5%)	81 (68.1%)		55 (51.4%)	0 (0%)	
Total	119 (100)	119 (100)		107 (100)	100 (100)	
Q70. What did you use to tie the baby's cord after delivery?						
Cord ties or when none pieces from washed and clean chitenge materials cut between the two tied knots measured from my gloved finger	91 (86.7)	95 (91.3)	0.280	94 (87.9)	91 (91.0)	0.463
Used other means (ulushishi – stripped inside of a tree bark)	14 (13.3)	9 (8.7)		13 (12.1)	9 (9.0)	
Total	105 (100)	104 (100)		107 (100)	100 (100)	
Q 83. How do you advise her to keep her birth canal clean after delivery?						
Bath once a day and wash in between her legs. Bath twice or three times a day and wash in between her legs or Wash in between her legs with cold water without adding salt twice or three times a day.	19 (16.0)	27 (22.7)	0.189	71 (66.4)	81 (81.0)	0.017
Did not practice any of the above	100 (84.0)	92 (77.3)		36 (33.6)	19 (19.0)	
Total	119 (100)	119 (100)		107 (100)	100 (100)	
Q 98a. Infection Prevention Practices of TBAs when they visit the clients						
Sweep and mop the floor	27 (22.7)	16 (13.4)	0.64	64(59.8)	88 (88.0)	0.001
Did not do this	92 (77.3)	103(86.6)		43(40.2)	12(12.0)	
Total	119 (100)	119 (100)		107(100)	100	

					(100)	
Washes her hands and spreads chitenge across her laps	23(19.3)	17(17.3)	0.298	69(64.5)	88(88.0)	<0.001
Did not do this	96(80.7)	102(85.7)		38(35.5)	12(12.0)	
Total	119(100)	119(100)		107(100	100(100	

Table 4.63 shows that at pre-course, there was no significant difference (P=0.148) between the two groups in the proportion of TBAs who wash their hands before delivering their clients (28) 23.5% and (38) 31.9%) respectively. After the post course, the proportion of TBAs who wash their hands before delivering their clients in the intervention group was significantly different (P<0.001) than that of the control group (52) 48.6% and (100) 100%).

The same table shows that at pre-course, there was no significant difference (P=0.280) between the Mpanshya control and Chongwe intervention groups (91) 86.7%, (95) 91.3%) of TBAs regarding using the cord ties when available in their clean delivery kits or improvised washed and cleaned pieces of chitenge and those who used the traditional 'ulushishi'. After the intervention, the level of practice in the intervention group was not significantly different (P=0.463) from that of the control group [(94) 87.9%, (91) 91.0%]. The Table also shows that at pre-course, there was no significance difference (P=0.189) in the proportion of TBAs in Mpanshya and Chongwe 19 (16.0%), 27, (22.7%) respectively who advised their clients on bathing and washing in between their legs in cold water without adding salt. After the intervention, the proportion of TBAs who advised their clients on personal hygiene practices was significantly higher (P<0.017) among the intervention TBAs than that of the control group (71) 66%, (81) 81%) respectively.

The Table shows that there was no significant difference in the proportion of TBAs in Mpanshya and Chongwe at pre-course who sweep and mop the floor when they visit their clients. However, a significantly (P<0.001) higher proportion of TBAs in Chongwe (88) 88% than in Mpanshya (64) 59.8% swept and mopped the floor when they visit their client after delivery. There was no significant difference in the proportion of TBAs in Mpanshya and Chongwe at pre-course that spread chitenge across their laps when checking on the baby in-order to protect the baby from acquiring infections. However, at post course, significantly (P<0.001) higher proportion of TBAs in Chongwe (88) 88% than in Mpanshya (69) 64.5% carried out this practice before checking the baby during her visits after delivery.

CHAPTER 5

5.0. DISCUSSION OF FINDINGS

Introduction

In the last chapter, the findings of all the five phases of this study were presented. This study aimed at determining the TBAs infection prevention knowledge, practices and attitudes and to improve on their deficiencies through training. The outcome of this training showed reduction in maternal and neonatal morbidity rates in Chongwe District.

In this chapter, the findings of the five phases of the study are discussed. The phases are the following:

- First phase is the situation analysis which consisted of the record review and the needs assessment at the study sites.
- The second phase is the desk review
- The third phase is the modification of the MoH TBA training curriculum
- The fourth phase consisted of three sub-phases as reported under the methodology section.
- The fifth phase was the monitoring and the evaluation phase

5.1. Discussion on phase 1: The Situation Analysis.

This phase consisted of the record review and the base line data.

The record review produced the baseline data which showed high neonatal morbidity rates of 27% at both study sites while the maternal morbidity rates stood at 20% in Chongwe and 21% in Mpanshya. The baseline data showed poor infection prevention practices of the TBAs in the district.

This revelation prompted the researcher to conduct a needs assessment into the infection prevention knowledge, attitude and practices of TBAs in Chongwe. The theoretical model equates a needs assessment to doctors coming up with a medical diagnosis that precedes a medical treatment plan. The findings from the base line data informed the desk review. Subsequently, the researcher modified the MoH curriculum based on the desk review findings. During this modification, the researcher mainstreamed infection prevention measures into the curriculum. This was used in the training of the intervention TBAs in the study. During the training, the researcher

made the participants to understand the context in which the home deliveries occurred. Some villages are very far from the nearest health centers for example Shikabeta is located 118 kilometres from the Mpanshya Mission Hospital while Shipeketi is located 22 Kms away from Lukwipa Rural health center which is the nearest health center. It is impassable during the rainy season and has poor referral facilities due to inadequate transport and poor road infrastructure. Only four (4) health centers provide a 24 hour health service in this vast area. So pregnant women in labour, are left with no other option but to deliver with TBAs. Therefore, there is the need to better understand these contextual issues in-order to put relevant intervention measures to lower neonatal and maternal morbidity rates.

The morbidity rates in the situation analysis were unacceptably high hence provided the rationale for the study. Therefore, under the circumstances where Zambia is undergoing human resource crisis, the roles of the tTBAs become very essential.

The information from the situation analysis provided additional advantage for the study because it provided the proportion reference of 20% maternal and neonatal morbidity rates which was used in the calculation of the sample size of the study.

5.2. Discussion on Phase 2: The Desk Review

The findings from the record review and the needs assessment necessitated a desk review to be conducted in phase 2 of the study. The purpose is to identify any gaps in infection prevention measures in the curricula used to train TBAS in the district.

The main aim of the desk review was to respond to the findings in the situation analysis. Hawaii Department of Education, (2011), noted that desk reviews are used to screen programmes for in-depth evaluations in relation to their efficiency and effectiveness in meeting the objectives of the programme. This phase discussed the number of TBAs trained by one of the key stake holders in its catchment area. It critiqued the TBA training curricula, proposed changes for inclusion in the modified TBA curriculum and suggested the way forward.

Number of TBAs Trained by a Key Stakeholder in its Catchment Area.

In Chongwe, one of the key stakeholders had its catchment areas where it conducted the TBA training. These are Chalimbana, Lwimba, Kampekete, Katuba and Mwalumina. They are surrounded by some hard–to-reach rural communities. In 2003, the key stake holder trained 40 TBAs and 28 in 2004. They used a common TBA training Curriculum. The duration of the training was 6 weeks and this included both Theory and Practicals. The researcher feels that what matters in TBA training is the impact of their infection prevention knowledge and their application to practice. Their application of good infection prevention measures would result in good health outcomes of the mothers and babies they delivered. It can be seen that the infant and maternal morbidity rates remained high despite the numbers trained as already stated in the previous phase of the study.

Unstandardised Training Period and Refresher Courses

Under normal circumstances, the TBAs under training were supposed to undergo at least ten (10 days) (2 weeks) theory in class followed by four, (4) weeks practicals in health facilities within their environment. The study showed that Theory was covered in 165 hours (approximately 4 weeks) for the two key stake holders. The number of hours spent in theory/class exceeded the two (2) weeks stipulated didactic training period in theory, considering that it takes eight (8) working hours per day and five (5) working days / week. This meant that the TBAs only had two (2) week clinical experience. (ie deducting the theory period of 4 weeks out of the stipulated six (6) weeks. The other stake holder and the MOH spent approximately 2 weeks didactic and the rest of the 4 weeks were spent on practicals. This study is not the only study that emphasizes on the quality of the TBA training as some other authorities like Jokhio, et al (2005), noted that the effectiveness of tTBAs does not depend on the time taken to train them but on their effectiveness after training. The tTBAs effectiveness depends on their caliber to apply learned theory to practice. Jokhio et al (2005) intervention study involved training of Traditional Birth Attendants for three days in the care of pregnant women and their follow-up up to 42 days puerperal period. The impact of their care on the Perinatal and Maternal Mortality rates in Pakistan was documented. The study showed reduced maternal death rate (268/100,000) in the intervention group compared to (360/100,000) in the control

group. Perinatal death rates were also reduced in the intervention group compared with the control group. The authors concluded that "Sustainable and substantial improvement in pregnancy outcomes was achieved in this large-scale trial by training traditional birth attendants and making them part of an improved healthcare system". In addition to the author's conclusion, the researcher also feels that the period of training depends on the objectives, lecture methods, depth of the subject covered and the willingness of the TBAs to learn, internalize and apply learned theory into their practice. The trainees should be monitored for six weeks in clinical areas. This should be followed by a monitoring and evaluation exercise. This exercise would determine their impact within the scope of their practice. The researcher concludes that this approach will help us to develop an evidence-based mechanism to monitor the impact of TBAs in specific areas in Safe Motherhood Initiatives. This strategy will contribute to remarkable reductions in both infant and maternal morbidity rates in the country.

The desk review showed that there were gaps in the infection prevention measures in the old curriculum for the Traditional Birth Attendants. There was no emphasis on the application of universal precautions which emphasizes avoiding contact with body fluids, secretions and excretions in the mucous membranes of the mouth and eyes by using protective barriers. These gaps were very important considering the advent of the HIV/AIDS and other blood-borne pathogens on the horizon. The principle investigator noted that tTBAs can only be effective in reducing infant and maternal morbidity rates if they are taught infection prevention modalities during the birthing process. Lefeber, et al (1994), UNFPA, (1996), Goodburn, (2000), Sibley and Sipe, (2004) and Gill et al (2011) related studies correspond with this notion. The TBAs should be trained in environments with functioning infection prevention programmes. This would encourage the trainees to visualize how to implement infection prevention practices in their own environments.

Environment for Training TBAs.

It is the policy of one of the key stakeholders to train the TBAs in the community where they live and operate from. The key stakeholder trained the TBAs at the Chinyunyu Health Center for the practicals while the venue for the theory was the

spacious Lutheran Church Hall, District hospitals, health centres, farming institutions and motels. The related

This corresponds with Patel et al (2010) study in the state of Gujarat in Eastern India, He worked for Action Research for Community Health and Development (ARCH). He trained 50 TBAs in 2007-8 in conducive environments within their communities where they were able to get some interpreters as the TBAs were completely illiterate and elderly. The proximity of the training environments cut down costs for the sponsors and also saved the trainees some opportunity cost of the training programme. These were trained in collaboration with the Government of Mankuniya and some other NGOs who supplied the Clean Delivery Kits after their training. The TBAs were trained in their communities for 10 days (2 days each month for 5 months). The TBAs were monitored and supervised on monthly basis as they report to the ARCH office monthly for additional training and Refresher courses. This study also emphasizes on the importance of monitoring and evaluating the practices of the tTBAs.

Process of Choosing TBAs for Training.

Some stake holders did not specify the process of choosing their TBAs for training. In this study, the researcher worked with the Chongwe DHMT and so followed the national guidelines and criteria in choosing the TBAs to be trained. This process was guided by the precede-proceed theoretical model which emphasizes on community participation before embarking on any community projects. This is not the only study that emphasized on community participation in community projects. Pigg, (1973) also emphasized the need for community participation in choosing the right women for training as well as in the formulation of the TBA training syllabus. In this study, the community identified the need for the training and their areas of concern were included in the training curriculum that was used during the training of the TBAs in their communities. Their main area of concern was due to increased infant and maternal morbidity and mortality rates in home deliveries. The Neighbourhood Health Committee Chairperson reported their concern at the Health Center Committee Meeting. The Sister in Charge of the Health Centers confirmed this through the Registers. The DHMT also confirmed this in its quarterly and yearly Reports. When Chongwe was chosen for the study, letters were written to the Sisters in Charges who, in turn, informed the NHC Chairpersons to choose eligible mothers to undergo this

training. The communities met and chose eligible mothers to be trained as TBAs. This process is important for the communities to demonstrate ownership of the TBA training through the community's participation.

Criteria for Choosing TBAs

The key stake holders also followed the criteria for choosing TBAs for training. Likewise, the researcher emphasized that the communities follow some laid down criteria when choosing the TBAs in their communities. these criteria included women who have own biologic children. They are deemed fit to assist in the delivery of other women in their communities. They form the first contact with mothers who deliver in geographically and medically- disadvantaged villages. Usually they are called upon in emergency situations as the following statement depicts ''ba m-a-y-o, njitileniko bana chimbusa pantu, ifimo lyabuka.' (Mother, please call me the traditional birth attendant because I'm going into labour now. Chanda (2001) stated, in her study, that these TBAs work under crisis situations as the above statement confirmed.

TBAs are held in very high esteem. Their services are acceptable and accessible. They do not object being called upon at anytime and do not mind being paid in kind. They share the same traditions, socio-cultural values and norms of the community. They have very good interpersonal relationships with community members. They are trusted to maintain confidentiality. These criteria were supported by Green et al, (1999).

Incentives

The precede-proceed theoretical model emphasized on reinforcing and enabling factors. These create environment which may have direct impact on the practice of the TBAs. Incentives play a very important role in motivating the tTBAs and so should not be ignored or left unaddressed by the Headmen, NHCs and the other influential community leaders. During the FGD, the TBAs revealed that neither their clients nor the trainers give them any incentives as the verbatim report illustrates.

TBA Maleki (not the real name): "Women are being brought to the clinic- they are able to go to the clinic through the help of the villagers. The distance is too far to the clinics". "During the day if the mother can manage to walk, we go to

the road and beg for a taxi to help us, we have no money. The women don't give us any money During night we beg neighbours with bicycles to help us. If not we use ox carts" "The farmers who have Ox Cart help us out a lot".

There are two types of these incentives. The first and most important incentives are those that support and impact on their work – the enabling factors according to the theoretical model. These are usually given by the staff during the supervisory visits like supplies of cotton wool, soap and panadol for after pains in mothers that they deliver, a fresh supply of Clean delivery Kits, touches, lamps, bicycles, rain boots, canvas shoes, identity cards, plastic aprons, head ties, uniforms, umbrellas for use during the hot weather to protect them from the heat of the sun and from the rains during the rainy seasons. The plastic aprons would help protect their 'chitenges' and tops. Identity cards and uniforms are given for identification purposes. The uniforms would distinguish them from the untrained TBAs and give them some air of dignity while they carry out their voluntary roles in rural settings. However, the study also cautioned that the community may misinterpret the use of the identity cards and uniforms by the tTBAs. The community thought that the tTBAs who wore uniforms and identity cards were employed by the MoH. This meant that they are now on the Government's pay roles and so stopped giving them any gifts after conducting deliveries. The influential leaders like the Headmen, NHCs and the other community leaders should continue to sensitise the community on the significance of the identity cards and the uniforms and so convince them to continue supporting the tTBAs in their localities.

The second type of the incentives at the community level consisted of the social support system from the communities. This is demonstrated by the communities tending to the tTBAs' fields during cultivation and harvesting periods just to demonstrate some form of community social support for the TBAs. Also there is the need to sensitize communities on the importance of showing some sort of appreciation to the TBAs by giving them some in-kind gifts like farm produce or any gifts that they can afford in rural settings. it is worthy to note some opposing views as some authors like Verderese and Turnbull, (1975) cautioned against these incentives as it may affect the quality provision of care by the tTBAs.

Supervision of TBAs

The stakeholders did not specify whether the tTBAs were supervised after training. Due to inadequate human resource, the supervisory visits, which are supposed to be done on quarterly basis, were irregular due to inadequate resources. The MCH co-coordinator at the District level coordinates all the TBA activities through the midwives who act as their Team Leaders' in the various Health Centers.

This is in contrast with the training conducted by Patel et al (2010) in the state of Gujarat in Eastern India where the tTBAs are required to report to the ARCH Office on monthly basis for consultations, supervision and further training. In this study, the researcher noted that the health centers have a duty rota for tTBAs weekly visits to the health centers. These visits coincide with days for ante natal and children's clinics. The TBAs are supervised as they carry out their roles during these visits. Maybe we can learn from the Gujarat training programme and conduct monthly supervisory visits if the resources can allow.

Poor Referral System

The desk reviews showed that there were no indications regarding referral plans between the TBAs and the health centers. Poor referral system still persists in the health care system currently between the rural settings and the health centers. Poor referrals is the reason why the health care system feels that TBAs do not make an impact in safe motherhood initiatives. This is because the TBAs are unable to refer haemorrhaging women or those experiencing obstructed labour as quickly as possible to the nearest health facility. In rural communities quick referrals can be effected through community participation The SMAG membership arranges transportation of expectant mothers to the next level of care through their community participation and support efforts. The researcher ensured community participation in the study by involving them during the pre-and post course phases of the study according to the theoretical model. TBAs can be given Talk-time to enable them to reach the Team leaders at the DHMT during Emergencies.

Scientific Evidence of the Sterility of Razor Blades in CDKS

The stake holders did not conduct any situation analysis or studies before embarking on their training programmes. This study analysed the pre-course questionnaire and found that the TBAs were using 'ulshishi' for cutting the cord after delivery. This

finding prompted the researcher to conduct evidence-based exercise. This led to the researcher, taking specimens from the blades for laboratory analysis. These grew nothing after 48 hours of incubation. This was done to promote the use of sterile razors by TBAs as against the traditional use of 'ulushishi' which surfaced during the pre-course data analysis.

This bacterial analysis of razor blades found in CDKs is based on literature review on experienced untrained TBAs poor infection prevention practices in Bangladesh. They are more likely to use potentially-harmful birthing practices (Fronczak et al (2007) that may cause infections in babies and mothers. These are the TBAs who may apply harmful indigenous practices like using 'ulushishi' and other dirty equipment or used razor blades to cut the cord thus exposing the baby to infections like tetanus neonatorum. Tetanus infections account for 07% of infections in the newborn globally (Mugala N. and Mwiinga, K. 2006), hence the need to convince the tTBAs that the razor blades in the CDKs are sterile and so are safe to use. These should not be re-used especially during the HIV/AIDS pandemic. They are to be discarded after use in pit latrines. The training ensured that the TBAs were taught against the use of these harmful practices by providing scientific proof of the sterility of the razor blades in the CDKs.

The desk review offered the researcher the opportunity to identify new topics and some relevant current concepts that added value to the modified curriculum in phase three of the study.

Finally, the desk review provided a strong evidence for modifying the MoH TBA training curriculum and conducting the training of the TBAs in both the control and intervention sites as discussed under phases 3 and 4 below.

5.3. Discussion on Phase 3: Modifying of the MoH TBA Training Curriculum

The curriculum consists of topics ranging from one to twenty–three, each of which has subheadings used for the training of the tTBAs).The topics were arranged logically and sequentially to facilitate adult learning in a conducive learning environment. Each lecture ends with the trained Traditional birth Attendant (tTBAs) expected competencies. The curriculum was developed by the MoH in 1977. Since that time, there has been the advent of HIV and AIDS and the constraints by the health care delivery system to provide quality health services in rural settings. These entail the modification of the TBAs training curriculum by mainstreaming infection prevention measures into the curriculum. This modification was followed by training

the TBAs in-order to mitigate the impact of HIV and AIDS among the rural populations. Since the TBAs conduct majority of the deliveries in rural settings, the researcher found it very necessary to train this cadre to conduct safe and clean deliveries. This would enable the MoH in meeting their mission statement of providing cost effective, quality health services as close to the family as possible in order to ensure equity of access in health service delivery and contribute to the human and socio-economic development of the nation. The researcher is contributing to the MoH in meeting their overall goal which is 'To further improve health service delivery in order to significantly contribute to the attainment of the health MDGs and national health priorities with the key principles of equity of access; affordability; cost-effectiveness; accountability, partnerships, decentralisation and leadership. The modification of the curriculum meets all these key principles.

5.4. Discussion on Phase 4a: The Training (intervention) of the TBAs

The training of the intervention TBAs using the modified MoH TBA training curriculum in phase 4a followed the modification of the MoH TBA training curriculum. Infection Prevention was a major component in the training. Literature reviewed, inspired the researcher to mainstream hand washing practices and the care of the environment of delivery into the training curriculum. This study responded to the situation cited by Day, (2004) from Community Development Awareness Forum. The authors found that less than 20% of TBAs wore gloves while conducting deliveries due to being in a hurry. The TBAs were often called from their fields. Most did not wash their hands. This study provided a scientific evidence of the presence of germs on hands. The TBAs were taught the importance of hand washing before any client contact. They were taught that germs on their hands and the environment can cause infections in both the mother and baby that they deliver. They were taught on how micro-organisms can enter the body and that anyone can carry micro-organisms on their hands. This was proven by the results of the specimens that were taken from their hands and sent to UTH for laboratory analysis

The specimens were taken from the right hands of seventy-eight (78) study participants chosen by simple random selection during the training sessions. These were sent for laboratory analysis. The main objective of this exercise was to provide a scientific evidence for the tTBAs hand washing practices.

Table 4.5 showed the results of the specimens taken from their right hands during the training. They were reminded that all micro-organisms have the potential to cause infections in their clients after delivery and in immune - compromised clients. Infection prevention activities are seen as the most important task of the TBAs. The TBAs were taught that when a mother delivers, the placental site is raw because of the exposed blood vessels which cause bleeding after delivery. Once germs enter through the woman's birth canal into these exposed blood vessels, infections may occur. The tTBAs understood that they can infect their clients if they do not wash their hands properly during the birthing process. So, taking the specimens from their hands and discussing the micro-organisms found convinced them on why they have to wash their hands before and after each contact with their clients.

The micro-organisms that were cultured from the TBAs hands were mostly enteric micro-organisms which included *Enterococci species. Klebsiela species, Klebsiela pneumoniae, Streptococcal species, streptococcl pneumonia* and *Citrobacter species,* Also cultured were some environmental micro-organisms which included *Burkhoderia, Bacillus, Pseudomonas aeruginosa and Acinetobacter*. Some resident micro-organisms on the skin were also cultured such as *Coagulase negative Staphylococcus, Staph aureus,* and *Diphtheroids.*

The TBAs were taught that hands are very active. Women are always touching and cleaning the environment. They also use hands for toilet purposes. The enteric micro-organisms come from the gut due to improper hand washing after using the toilet. The resident micro-organisms are normally found on the skin while the environmental micro-organisms are found in the environment. These micro-organisms were found on the hands of the TBAs. All these were organisms that could potentially cause systemic infections. These infections may lead to septicaemia, pelvic inflammatory disease, genito-urinary tract infections, puerperal sepsis in the mother and umbilical sepsis in the baby. The tTBA could use this experience in health educating mothers on the importance of hand washing before breast feeding their babies and on personal hygiene practices in-order to protect themselves from skin and gastro-enteric infections with organisms like the *E coli, Enterococcus species, acinetobacter species, Klebsiela species, staphylococcus aureus* and *pseudomonas species.*

This demonstration formed a constant reminder of the importance of hand washing before and after attending to their clients. The tTBAS showed active cognitive

domain as they applied learned theory into practice with this verbatim report during the FGD by. tTBA Maria: "I wash my hand, put on my gloves before I start receiving the baby. I know there are germs on my hands from the test during the training".

Also in Senegal, the TBAs conduct the deliveries on bare ground at the backyard outside the client's home (WHO, 1975). They believe that the child should be in contact with the soil from the moment of birth. The soil provides nourishment in the form of farm produce that we thrive on and also is the burial ground after death (WHO, 1975). This researcher disagreed with the Senegalese traditional and cultural practice because the Clostridium tetani which causes tetanus is found in the soil. They can infect the baby's umbilical cord stump and cause neonatorum tetani in the newborn. During the training, the intervention TBAs were taught to create rooms to conduct their deliveries. The rooms should always be swept and cleaned thoroughly before any delivery takes place. They were taught against delivering on bare ground as both mother and infant may acquire infections from a dirty environment.

Again, this study is unique because no other study has produced a documented evidence of germs on the TBAs hands. It also demonstrated the importance of hand washing for tTBAs before conducting deliveries. So their practice should be evidence-based. This FGD verbatim report showed all TBA trainers to utilize scientific based evidence where possible during the TBA trainings

Most of the participants expressed a lot of interest on the topic on hand-washing. The TBAs highlighted the importance of having soap for hand washing in the Clean Delivery Kits always. This would help them to prevent transmission of infections as they conduct deliveries in the community. This phase was guided by the enabling factors in the precede-procced theoretical model.(See Appendix P for full Report on the TBA trainings).

5.5. Discussion on the Phase 4b: Comparative analysis from the Quantitative Data.

The researcher discussed the study findings which were based on the responses from 238 TBAs from both Chongwe and Mpanshya during the needs assessment phase and 207 at the intervention phase. The study participants included 107 from Mpanshya and 100 from Chongwe who formed the control and the intervention groups respectively.

The findings necessitated the integration of the new concepts in infection prevention which produced the modified MoH TBA training curriculum.

This phase discussed the findings of the quasi- experimental study of the TBAs in Mpanshya and Chongwe which were carried out between 31st January 2008 – 6th March /2009 during which 207 TBAs were trained between St Lukes Mission hospital and Chongwe DHMT venues. It also discussed the implications of all the phases of the study in the health care system. Finally, the Researcher made recommendations based on the findings of the study to the managers at the different levels of the health care system.

5.5.1. Socio-demographic Characteristics of the Sample

The results of the study are based on a sample of 238 TBAs from both Chongwe and Mpanshya during the pre-course and 207 at the intervention stage which included 107 from Mpanshya and 100 from Chongwe who formed the control and the intervention groups respectively. The required sample size between the untrained TBA in each group was 79. These untrained TBAs were randomly allocated to either of the groups**.** The sample size calculation was explained under methodology. It was obtained using a proportion reference of adherence of 20% in the control group and 40% in the intervention group at a significance level of 5% and power of 80% as explained in the calculation of the sample size

Therefore with our values of 79 (119 after adjustment) in each group at pre-course and 107 and 100 at post-course, the sample size of 79 was reached and we have no loss in the power of the study

The study showed that generally, the TBAs were not significantly similar in the two settings-during the pre-course and the post course phases on many demographic characteristics. At pre-course, the majority (92.4%) of the TBAs in Mpanshya and more than half (64.7%) in Chongwe were married. During the post course, also majority (78.5%) in Mpanshya and more than three quarters (77%) of the study participants in the intervention group were also married. There were significant differences within the two sites at pre-course ($P<0.001$) whereas at the post course, there were no significant differences ($P=0.795$). This finding supports Gender in Development Division (2006) which stated that 70% of women get married by the age of 20 years in Zambia. This is because, culturally, in Zambia married women command more respect in the community than the single unmarried ones. In this

study, marriage was one of the major criteria for being chosen to be trained as a TBA. TBAs stood a better chance of being chosen to be trained as TBAs by the community members if they are married. Based on this finding, it is assumed that the communities considered marital status as a factor in their choice of those to be trained as TBAs.

All the TBAs under study had children and the mean was 4. During the pre-course, 38.7% in Mpanshya and 43.7% in Chongwe had more than 8 children compared to 22.4% in Mpanshya and 26% in Chongwe who had the same number of children.

However, there were no significant differences in the number of children within the two sites at the pre-course (P=0.553) and during the post course (P=0.835). These findings also showed that the communities considered child bearing as a factor before choosing women to be trained as TBAs. In African culture the number of children one has signifies wealth and respect. Most children are used in cultivating the fields which will yield more farm produce and hence more income after sales of the produce. This supports 'more productivity and more money in people's pockets. This finding corresponds with the Zambia Demographic and Health Survey, CSO, (2001-2002, which stated that the majority (60%) of married women want to have many children. The more children one has the more social support one has. Social support is held in very high esteem in any society especially among rural folks, hence the number of children the woman has the more likely she is to be picked for the training. High fertility is another major criterion for choosing the TBAs for training. In support of the above, this study found out that the TBAs were involved in a number of other community activities including, farming, business and tending the homes which all need the family's social support systems. During the pre-course, more than three quarters (81.5%) of the study participants in Mpanshya and 86^% in Chongwe compared to 79.4% in Mpanshya and 70.4% in Chongwe during the post course were all involved in Farming and other businesses as well as tending to the homes where the children's help are needed. They were also leaders in various committees. However, these roles were not significantly different in the two sites at pre-course (P=0.224) and at intervention (P=0.182) phases of the study.

The study showed that at pre-course, the average number of deliveries conducted by each TBA per week stood at 2, 7-9 deliveries monthly and 41-47 deliveries per year.

The study findings indicated that at post-course the average number of deliveries per week had decreased to 1, 3-4 per month and 8-16 per year. In contrast, the FGD (Table 58) showed that the FGD respondents conducted an average of 6 deliveries, weekly, 23 monthly and 70 yearly. This showed that the rural women are still opting to be delivered by the tTBAs hence the need to continue training and offering refresher courses to the tTBAs.

At the pre-course in both Mpanshya and Chongwe, the mean age was 44.67 years while the mode was 49 years and at post course, the mean age was 45.95years while the mode stood at 45 years in both Mpanshya and Chongwe. The minimum age was 30 years at pre-course compared to 22 years at post course while the oldest was 81 years during the pre-course compared to 68 years at post course. Analysis of the participants at the pre-course also showed that, more than half (52.5%) of the study participants ages ranged between 42-51 years compared to 43.5% at post course of the same age range. Less than half (33.48%)) of the participants ages ranged between 22-41 years at pre-course compared to 30.4% of the same age range at post course..

The study showed the results of the independent T Tests conducted at both sites. At Pre-Course, there was a significant difference (in the mean ages of the TBAs in Mpanshya (mean = 43.25; SD = 6.419) and Chongwe (mean = 46.1; SD = 6.96). At the Post-Course, the mean ages of the TBAs remained significantly different (P=0.005) between those in Mpanshya (44.37 years; SD 8.128) and those in Chongwe (mean = 47.64; SD = 8.390). It is evident that the TBAs from Chongwe were older during the pre-course and post course phases. The finding showed that 41% of the study participants were aged between 30-43 years. This finding shows that there is a shift now towards choosing younger, vibrant women with a lot of stamina to train as TBAs in the District.

This finding is contrary to the commonly-held belief that the communities only choose old women to train as TBAs. The fact is that culture is not static but dynamic as it changes according to external factors that influence the communities' ways of thinking. These external factors are seen within the society due to globalization. The 'Global village concept' or Global partnership for development (the eight MDG) is being demonstrated in Chongwe through partnership with International organizations like CIRDZ and JHPIEGO who have brought a lot of developmental programmes in the health care system in Chongwe. Most of these developmental programmes have

targeted the community-based agents. So it can be assumed that the communities have been influenced on modern, better and different ways of doing things like choosing some young women who meet some basic cultural requirements of marriage, having children, maintaining confidentiality and of good moral standing to go for the training. Besides, the younger women also have the ability to withstand the stress of the training. This view is supported by the fact that 'culture has a fluid and elusive nature, being not a static concept but rather a dynamic force which adopts different forms across time and space' (Stamatopoulou, 2007). The study also demonstrated that at pre-course, more than half (63.9%) of the TBAs in Mpanshya and less than half (43.7%) in Chongwe were supported by their husbands while during the post course, majority (81.1%) in Mpanshya and 79.2% in Chongwe were supported by their husbands. There were significant differences within the two sites at pre-course (P=0.002) whereas at the post course, there were no significant differences (P=0.726). This is an important finding because culturally women play submissive roles while the men play expressive roles within the family structure. This is because wives are culturally subordinated to their husbands. This study has shown that in families where the women are TBAs, majority of the husbands support their wives as they carry out their roles in rural settings. This scenario gives both husband and wife the opportunities to appreciate each other's gender roles as they both understand how they complement each other. The husbands understand the strengths that the wives have within the family structure because while she is out performing her varied roles, the husband takes up her role of looking after the children, farming and conducting the family businesses. Conclusively, this study is seen to usher in a balance in the social structure within rural communities where both the male and the female learn that social development can be equated to the two wings of a bird which can only soar to the skies from the efforts of both wings of the bird in flight thus promoting the third MDG which supports gender equality and empowering women.

Other cultural beliefs bar the younger women from attending to the older women. This means that younger TBAs should deliver younger clients while the older ones deliver the older women thus promoting the 'peer delivery syndrome' in our communities. This study finding confirmed the above scenario as the TBAs aged 22-31 had the least number of deliveries compared to the TBAs aged 42-51 who conducted majority of the deliveries at both pre and post course stages of the study.

This belief should not be encouraged as it is dangerous. A tTBA should be free to conduct clean and safe deliveries regardless of the clients' age. This positive culture should cut out the 'peer delivery syndrome. This finding can show the need to balance the competing cultural beliefs and the demands of modern professional best practices. The findings demonstrated that during the pre-course, 30.3% and 55.5% in Mpanshya and Chongwe respectively attained secondary level of education. The post-course analysis showed that, less than half (33%) of the intervention TBAs compared to 17.8% of the control TBAs attained secondary level of education. Both findings were statistically significant. The researcher noted that the age and educational characteristics were similar with the FGD respondents. The mean age of the FGD respondents was 46.6 years. Majority 22 (59.5%) of the FGD respondents were aged between 42-51. Majority of the TBAs 21(56.8%) had primary school education while 14 (37.8%) had secondary level of education.

This finding significantly contradicts a commonly-held belief that TBAs are old and illiterates who cannot read and write and who base their practice on magic and mysticism (Swai, 2005, and Swai, 2011). This study showed that they are trainable judging by their educational attainments. This finding showed that the district acknowledges the emancipatory power of education as advocated by Paulo Freire (1994) the famous Brazilian educationist.

The national adult literacy aged 15 years and above stands at 67.2% while Chongwe's adult literacy ranges between 41-46% which is quite commendable (Census Atlas, CSO, 2003). Due to cultural and traditional orientation, the TBAs are willing to learn so that they can carry out their roles more efficiently.

In summary, noting that this was a quasi experimental design and that the respondents for this study were identified and recruited by the community in accordance with the theoretical model that guides this study It was not possible to ensure uniform demographic characteristics of the study respondents who were not randomized. The principle investigator is cognizant of the difference between the pre-course and the post-course groups. This is because some of the study respondents who participated during the pre-course dropped off due to a variety of reasons and hence the discrepancy in the ages and educational levels noted in the study. However, the study did not keep a detailed record of key demographic characteristics of those respondents

who dropped off. This is not necessary in a quasi experimental design. This did not affect the power of the study as already stated.

5.5.2. The TBAs Knowledge of Infection Prevention Measures

Being guided by the precede-proceed theoretical model, the researcher conducted an educational diagnosis which identified the poor infection knowledge of TBAs before offering the intervention (training). In order to improve on the infection prevention knowledge levels, the TBAs were asked questions to identify their deficient areas. Questions on the TBAs infection prevention knowledge were asked in section B of the questionnaire (Appendix G). The objective was to compare the TBAs infection prevention knowledge levels between Mpanshya and Chongwe before and after training both groups.

The study compared the infection prevention knowledge categories both during the pre-course and the post course phases. The results showed that at pre-course the knowledge levels were inadequate. Table 4.30i considered the set values that determined the knowledge levels put at 62-82 to be excellent knowledge, 41-61 to be good knowledge, 20-40 to be poor knowledge and <19 to be inadequate knowledge. one would note that only 0.4% participant had good knowledge, 82.8% had poor knowledge and 16.8% had inadequate knowledge. The Whisker's plot (Figure 5) showed an outlier parameter which happens to be the most intelligent study participant at the pre-course phase. Overall, the mean knowledge level was 25.32, the minimum was 12 and the maximum was 46. In contrast, Table 4.30ii showed that at post course, the knowledge levels improved tremendously. Table 4.30ii also considered the set values that determined the knowledge levels put at 62-82 to be excellent knowledge, 41-61 to be good knowledge, 20-40 to be poor knowledge and <19 to be inadequate knowledge. The study noted that 36.7% participants had excellent knowledge at post course, 46.9% had good knowledge and no participant had inadequate knowledge levels at post course. The mean knowledge level was 53.92%, the minimum was 26 and the maximum was 74. The study also compared the two sites at pre and post training as it was necessary to see if the training had an impact. The results showed that at pre-course, a higher proportion of participants in Chongwe had inadequate knowledge than in Mpanshya (P=0.001). However, after the post course, a higher proportion (76%) of the intervention TBAs in Chongwe had excellent knowledge which was statistically significant (P=0.001) than the TBAs in

Mpanshya. During the pre-course it was evident that low knowledge levels among the TBAs have implications of understanding the infection prevention measures and so played a major role in the poor management of pregnancy, labour and delivery and the puerperal period. This was well demonstrated during the pre-course when the high infant and maternal morbidity rates were noted. Consequently, after the training intervention, the knowledge levels among the intervention TBAs increased significantly hence the reduction in the maternal and infant morbidity rates in Chongwe. Questions were asked in specific areas as shown below.

5.5.3. Knowledge on Boiling of and Care of the Equipment Used for Cord Care.

In relation to the reasons for boiling the equipment they use during the birthing process, the findings showed that during the pre-course, a large proportion (91.6% and 98.3%) of the TBAs did not know that boiling their equipment destroyed the micro-organisms on them and so prevented infections in the babies after delivery. But after the training, the knowledge levels among the intervention TBAs in Chongwe was significantly different ($P<0.001$) compared the Control TBAs (97.6%, and 72.4% respectively)

With regard to the timing of the boiling of the equipment, the findings showed that almost all (97.9%) of the intervention TBAs who were trained with the modified MoH TBA training curriculum had significantly higher ($P<0.001$) knowledge of boiling their equipment for, at least, twenty (20) minutes than the control group (16.8%). The results also showed that the intervention tTBAs had significantly higher ($P<0.001$) knowledge on waiting for the boiled equipment to dry and then storing them away covered to keep them germ-free. These equipment could be used pairs of scissors used for cutting the cord after delivery in the absence of razor blades in their CDKs. These razor blades should be thrown down the pit latrine after use. These razor blades are germ-free. The researcher provided a scientific evidence of the germ-free state of new blades in the TBAs Clean Delivery Kits (CDKs). These include the Gillette Silver blue 1 and 11, Laser super Stainless 1 and 11, Vit gut super max Stainless 1 and 11 and Topaz stainless blades. The researcher attributed the infant and maternal infection reductions to their increased knowledge on boiling of and caring of the equipment they use. Other authors agree that TBAs should use sterile equipment during the birthing process (Sharana et al, 2011)). Boiling of equipment is essential in

killing the HIV, Hepatitis B and most other organisms that could cause umbilical cord sepsis in the baby. Poor cord care could be as a result of using unclean or dirty equipment while cutting the cord. This contributes to cord sepsis or oomphalitis and neonatal tetanus if rusty equipment is used. This increases the incidence of infant morbidity and mortality rates hence this study established the knowledge of TBAs in this area. (Bello et al, 2009). The tTBAs with this infection prevention knowledge would prevent infections in the babies they deliver while those without this knowledge would be contributing to the increased infant morbidity rates.

In reference to the advice the TBA gives to the mother regarding the care of the cord, The study findings showed that during the pre-course, a statistically significant (P<0.001 number of TBAs (83.2%) in Mpanshya and (100%) in Chongwe could not advise mothers on the proper care of the umbilical cord stump after delivery. But after the intervention the findings confirmed that statistically significantly (P<0.001) number (91%) of intervention tTBAs knew to advise their clients to clean the cord with boiled cooled water in the absence of spirit and gentian violet as well as leave it exposed compared to the knowledge of 30.8% of the control tTBAs. This advice is very important because clean water is not easily available in rural settings. So the TBAs are required to advice the mother to boil, cool and store the water in a bottle specifically for this purpose if they cannot afford to buy spirit or gentian violet.

Regarding the length of days the cord takes to dry and fall off, the knowledge on the signs of an infected cord and what to do to a child with cord sepsis, almost all the intervention TBAs (99%) knew that the cord stump should dry and fall off within 4-7days in the absence of infections in the neonate compared to the control tTBAs. This knowledge was statistically significant (P<0.007). The intervention tTBAs had statistically significant knowledge on the signs of infected cord and the need for referrals to the next level of care (P<0.001) than the control tTBAs.

Tables 4.24 established if the TBAs are aware that they could infect the babies under their care.The study finding indicated that more than three-quarters of the intervention TBAs had statistically significant (P<0.001) higher knowledge levels than the control TBAs. The intervention TBAs knew that they could pass on TB germs (Mycobacterium tuberculosis) through coughing and sneezing and even scabies to the new born baby. Comparing the knowledge levels at post-course, majority (78.8%) of

the intervention tTBAs compared to (24.3%) of the control TBAs knew that the baby could develop tetanus if the TBAs used dirty or any other rusty equipment in cutting the cord. Still after the intervention as few as (9%) of the intervention TBAs compared to 12.1% of the control TBAs still used the traditional 'ulushishi' stripped from the inside of a tree bark to cut the baby's cord due to lack of razor blades in the CDKs. This is not the only study that has shown the dangers of infecting the baby's cord by using unsterile equipment. This finding corresponds with Bello et al's, (2009) study who also noted that the new born baby could be infected with Clostridium tetani micro-organisms if dirty or rusty equipment is used to cut the cord. **The verbatim report from mothers delivered by the TBAs on cord care clearly showed that the tTBAs are doing a commendable job.**

Bana Katy"**She advised me not to put herbs on the baby's umbilicus. I cleaned the cord with boiled cooled water until it dropped after 6 days".**

Handling of Complications like bleeding from the cord.

Mother delivered by a tTBA-Mulenga: "She advised me to check and see if baby bleeds from the cord or has any sores in the mouth and that I should take baby to the clinic".

The Mother delivered by a tTBA-Anastasia: "She advised me not to cover the cord with cloth.

The FGD confirmed that tTBAs advise their clients against the use of local herbs that are unhygienically prepared thus protecting the neonates from tetanus neonatorum. The above verbatim reports confirm that mothers ensure that the cords remain uninfected and heal within the first week of delivery.

This showed that the tTBAs with this infection prevention knowledge on cord care worked harder to prevent transmission of infection to their clients by ensuring that they acquire CDKs so as to use the cord ties from the CDKs.

During this comparative analysis phase, the intervention TBAs showed that they have good theoretical knowledge on cord care till it falls off during the first week. This finding corresponds with what other authors (Galba, 1975, Whaley and Wong, 1985 and WHO 1999) findings in their studies.

The findings in this study are unique because of providing a scientific evidence of the sterility of the razor blades through laboratory analysis. It also showed the TBAs how to boil their equipment counting from the roll-boiling point for 20 minutes. The study also emphasized on the importance of hand-washing. The tTBAs even move with water and soap for hand washing. This knowledge helped them to observe proper hand washing practices when they go for deliveries as illustrated from a tTBAs verbatim report during the FGD : **" I move with water and soap and wash my hands before I start receiving the baby. I know there are germs on my hands from the test during the training**". The findings proved and convinced them that germs are present on hands despite them looking clean. This exercise emphasised the importance of hand washing before and after each contact with their clients as the TBA mentioned above. This is not the only study that focused on micro-organisms that cause infections. WHO, (2007) also identified Coagulase negative staphylococcus and Micrococci as some of the commonest resident micro-organisms that can cause infections in the sterile body cavities or non-intact skin. This study is unique in that it went further to provide scientific evidence of the presence of germs on the hands of the TBAs.

5.5.4. Knowledge on the Signs and Symptoms of Puerperal Infections

Regarding how perineal tears could get infected, The study findings showed that there was a significant ($P<0.001$) difference in the proportion of control TBAs who know that applying African herbs can infect their client's perineal tear compared to the intervention TBAs (29.4%, 5.9% respectively) during the pre-course. After the intervention, the proportion of the intervention TBAs (97%) who know that the application of African herbs can infect their clients' perineal tear was significantly ($P<0.001$) different from that of the control group (60.7%). In developing countries, Zambia inclusive most women use harmful traditional herbs in treating perineal wounds according to cultural and traditional beliefs and practices. They also have poor hygienic practices like improvising 'chitenge materials, for sanitary pads after delivery. These practices predispose them to developing puerperal sepsis after delivery.

This study is the first of its kind to prime-move the concept of cleaning the perineum with boiled-cooled water with no added salt. Physiologically, salt attracts water. This means that the perineal wound would ooze for longer periods. Infections might set in

during this period. The tTBAs health educate their clients against this practice. this is supplemented by the verbatim report in the FGD by a mother delivered by a tTBA.

Mother delivered by a tTBA: "My mother-in- law prepares the leaves from mukuyu tree. She adds it in cold water and tells me to sit in the cold water every day until my wounds heal. According to tradition we use traditional herbs on the perineum till the wound heals. The tTBA advised us against this practice as it may cause infections. She said we must wash our female parts with cooled boiled water with no salt three times a day".

In relation to identifying the signs and symptoms of puerperal sepsis which consist of lower abdominal pain, high fever, abdominal pain that comes and goes, very bad back pain, pus and dark coloured vaginal discharge, and continued vaginal bleeding, pain or bleeding while passing urine, during the needs assessment. The findings indicated that the knowledge level was very scanty between the two groups 12.6% and 5.0% in Mpanshya and Chongwe respectively and this difference was statistically significant (P=0.040,). But after the post-course, the overall knowledge levels, in more than three-quarters (76%) of the intervention TBAs (76.0%) was significantly different (P<0.001) from that of the control TBAs (25.2%). The intervention tTBAs were able to list all the eight signs and symptoms of puerperal sepsis which would prompt them to refer their clients to a health facility. The tTBAs with this knowledge could have contributed in lowering maternal morbidity rates.

The intervention TBAs had statistically significant(P<0.001) higher knowledge in identifying the infections like burning sensation or pain when passing urine, high fever, foul smelling vaginal discharge and pain in the back that may occur during the puerperal period.

The TBAs who have this theoretical knowledge would be able to apply it in their practice of identifying the complications and referring their clients to a health facility as opposed to the TBAs without this knowledge.

This study finding is supported by Sibley, et al., (2004) and Sharana et al, 2011, Ana J. 2011) who confirmed that untrained TBAs had low knowledge levels compared to the increased knowledge levels in identifying signs of puerperal infections that prompt them to refer their clients These later studies have outweighed Goodburn, (2000) who feels on the contrary that training of TBAs on hygiene practices do not

reduce maternal and infant morbidity and mortality rates. This counteracts the phasing out of the training of TBAs sentiments as expressed by Peltzer, et al, (2009) in their study in Port Elizabeth in South Africa like in other hardest- to- reach rural communities where some training is better than no training at all in conducting safe and clean deliveries.

5.5.5. Knowledge of Intrauterine Infections Following Premature Rupture of Membranes.

Intrauterine infections complicate premature rupture of membranes and so emphasize the relevance of TBAs knowledge in relation to infection prevention when the membranes rupture before term. Averbuch et al (1995), noted that intrauterine infections occurred in two-thirds of women who had premature rupture of membranes hence the need to assess the knowledge of the TBAs both at pre-course and post course in this area as premature rupture of membranes should prompt the TBAs to refer their clients soonest to the nearest health facility. Literatures reviewed on this very important area have been silent on the knowledge and practices of tTBAs on this topic. This study provides a scientific evidence of the knowledge and practices of tTBAs on the management of their clients with premature rupture of membranes. Therefore, during the training, it was important to ascertain the knowledge of the study participants on the implications of bleeding and breaking of the bag of waters in relation to entry of micro-organisms to the birth canal. During the pre-course, the study participants were asked to mention the dangers that might occur during pregnancy. The findings showed that there was a statistical significant difference ($P<0.001$) between Mpanshya (89.1%) and Chongwe (40.3%) who mentioned bleeding as a danger sign. There was also a statistical significant difference of ($P<0.001$) between Mpanshya and Chongwe (10.9%, and 63.9% respectively) who mentioned breaking of the bag of waters. After the post course, the findings showed that there was statistical difference ($P=0.007$) in the acquiring infection prevention knowledge among the intervention TBAs because all the study participants knew that bleeding may lead to uterine infections or even the death of the mother. At pre-course, the findings showed that none of the study participants knew that the cord could prolapse when the bag of waters break before term but after the post course, statistically significant ($P<0.001$) number (85%) of the intervention TBAs compared

to 49.5% of the control TBAs knew that cord prolapse and uterine infections can complicate premature rupture of membranes if it happens before term due to poor infection prevention practices.

The findings indicated that the intervention TBAs had a statistical significant (P<0.001) on referring their clients to the nearest health facility after 4 hours of the rupture of the bag of waters during labour. This showed delayed labour and the increased chances of mothers becoming infected and also transmitting the HIV virus to the baby if mother is HIV positive.

The study findings noted that the intervention TBAs had statistically significant (P<0.001) knowledge that foul smelling vaginal discharge denotes infection when the membranes rupture pre term, than the control TBAs during the post course. Averbuch, B, et al (1995) supported this study finding when they concluded that the 'women presenting with preterm premature rupture of membranes (PPROM) had intra-uterine infections. This study noted that the tTBAs who have this knowledge would protect the mother and the baby from infections while those who do not have this knowledge will be exposing them to infections. So this is an important knowledge that the tTBAs acquired during the training.

5.5.6. Knowledge on the Policy that Bars TBAs from Doing Vaginal Examinations.

Following the proceed component of the Precede-proceed theoretical model, a question regarding the policy that bars TBAs from conducting vaginal examinations was asked.

Regarding the above policy that bars TBAs from doing vaginal examinations at pre-course, the study findings showed that only 14.2% out of 238 TBAs knew about this policy but after the training intervention, the knowledge level in 58% of the intervention TBAs was significantly (P<0.001) different from that of the control TBAs (13.1%).

The tTBAs were taught that doing vaginal examinations could cause uterine infections in the mother in the absence of observing infection prevention procedures. So the reduced maternal morbidity in this study finding could be attributed to the increased knowledge of this policy.

5.5.7. Knowledge on the Cultural and Traditional Beliefs that Could Cause Infections in both Mother and Baby During Pregnancy, Labour and Delivery.

According to Table 4.10, it was significantly (P<0.001) evident that some (42.6%) of the TBAs in Chongwe follow the traditional practice and belief that pregnancy should be seen and not told, drinking and inserting herbs into the vagina to hasten labour from 7-9 months (Table 4.9) of pregnancy, inserting herbs into the vagina to contract it or sitting in cold water with herbs that are not prepared hygienically compared to the TBAs in Mpanshya whose level of understanding and conducting cultural and traditional practices were very low at pre course. But after the post course, the findings showed that the knowledge levels among the intervention TBAs (85% in table 4.10 and 89% in table 4.26) remained significantly higher (P<0.001) from that of the control group (61.9% in table 4.10, and 24.3% in table 4.26).

Both practices of inserting herbs into the vagina to expedite labour can be quite dangerous as it causes very strong contractions which do not correlate with the dilatation of the cervix and so can cause ruptured uterus. Culturally and traditionally it is, also, believed that inserting herbs to contract the vagina after delivery or 'delele' during labour prevents perineal tear as it helps the baby's head to slide out from the vagina. These negative cultural and traditional practices like using herbal mixtures that erode and infect the vaginal mucosa which acts as a natural defence against blood-borne pathogens like the HIV virus (Bulterys, 2004, and UNICEF, UNESCO and WHO, Working Group (E/CN.4/1986/42). These negative practices can be sources of infection to the mother and so the tTBAs were taught to health educate their clients against these negative practices.

These results are supported by the United Nations Special Report on Human Rights (E/CN.4/1995/42, (1995) which confirmed the dangers that are attached to these harmful cultural and traditional practices. The report stated that 'The use of herbal mixtures and magic is common during delivery throughout Africa. The chemical components of some of these mixtures are beneficial, but others are quite lethal, especially when taken in large dosage'. All these are done for fear of witchcraft. The untrained TBAs in rural areas mostly carry out these cultural beliefs and traditional practices on their clients. Literature reviewed has shown that the practice of the untrained TBA is surrounded by myths and superstition, what may be a simple mishap can be explained in much more sinister terms as the product of evil spirits or bad

omens (United Nations Special Report on Human Rights entitled (E/CN.4/1995/42. 1995 & SWai, 2005). The UN Report further correlates with the study findings which states that these cultural beliefs and practices are there because rural settings have disproportionately fewer health centres and clinics, trained midwives, nurses and doctors than urban areas. The UN Report reiterated that TBAs conduct most deliveries in rural settings.

On the positive side, the study noted that tTBAs integrated some beneficial cultural and traditional practices like abstaining from sex within 6- 8 weeks after delivery of the baby, into modern obstetric practices. These practices protected the mothers from acquiring infections and thus contributed to the reduction in both the infant and maternal morbidity rates.

Comparable analysis showed that there was no difference in the knowledge of cultural practices acquired between the age groups 20-51 and 52-83 years.

This finding shows that age cannot stop any woman from acquiring knowledge of their cultural and traditional practices. It depends on the interest the TBA exhibits to acquiring knowledge regarding traditional beliefs and cultural practices.

Respondents with up to primary level were 1.12 (95% CI 0.84, 1.50) times more likely to have acquired adequate knowledge of cultural practices compared to respondents with higher educational level (Table 4.29). This shows that the women with up to primary level of education live in the village and are more in contact with the elder people who can impart this knowledge to them compared to the more educated friends who may have other alternative interests than sitting and conversing with old people in the village.

Compared to respondents in Mpanshya, respondents in Chongwe were 1.23 times (95% CI 0.92, 1.64) more likely to have acquired adequate knowledge of cultural practices after adjusting for age and education

Hence this study noted the desired impact of reduced infant and maternal morbidity rates after the training among the intervention TBAs thus proving the hypothesis of the study and answering the research question.

5.5.8. Comparable Analysis between Knowledge and site adjusting for Age and Education.

Based on the above results, the study did a comparable analysis between knowledge and site adjusting for age and education during the two phases of the study. The study

showed that there was no difference in the knowledge acquired between the age groups 20-51 and 52-83 years (Table 4.32).

This shows that age is not a significant factor in relation to the acquisition of knowledge among the TBAs. This means that any woman who is mentally alert and willing to be trained can undergo the TBA training.

The study finding (Table 4.32) also showed that the respondents with up to primary level of education were 1.74 times (95% CI 1.38, 2.19) more likely to have had acquired excellent to adequate knowledge compared to respondents with higher educational level. This could probably be because those women with up to primary education had no other alternative career choices and so paid particular attention to what was being taught during the training.

Compared to respondents in Mpanshya, respondents in Chongwe were 1.45 times (95% CI 1.16, 1.81) more likely to have had excellent to adequate knowledge after adjusting for age and education.

The study showed that education and age did not play any role in the acquisition of knowledge by the TBAs, so it can conclusively be said that the curriculum content that was used in training the TBAs does not require prior education of the TBAs. This finding has an implication for future training. This means that this training curriculum can be used in another site for purposes of replication using a controlled study method. Thus the objectives 1 and 4 of the study which sought to compare the culture, traditions and infection prevention knowledge levels between the control TBAs inMpanshya and the intervention TBAs in Chongwe before and after training the intervention group with the modified MoH TBA training curriculum have been met. The outcome evaluation was noted in the reduction of the infant and maternal morbidity rates in Chongwe district.

5.6.0. Practice

5.6.1. TBAs Infection Prevention Practice of Safe and Clean Deliveries.

In this study, the tTBAs quality practice **is illustrated in her** ability to conduct clean and safe deliveries according to set minimum standards of performance that are known to be safe, acceptable and affordable to the community being served and which are known to reduce the maternal and infant morbidity and mortality levels. The study asked questions to determine the infection prevention practices of TBAs in the questionnaire (Appendix G). The objective was to compare the TBAs infection

prevention practice levels between Mpanshya and Chongwe before and after training both groups following the theoretical model. Hence the study also compared the practice level categories both during the pre-course and the intervention phases. At pre-course, the findings showed that the infection prevention practices among the study participants were of unacceptable standards. The analysis considered the set values that determined the practice levels put at 49-59 to be excellent practice, 38-47 to be good practice, 27-37 to be satisfactory practice, <26 to be unsatisfactory. The study found that only 6.7% of the study participants in Mpanshya compared to 0.8% in Chongwe had satisfactory practice while 93.3% in Mpanshya and 99.2% in Chongwe had unsatisfactory practice during the pre-course phase. The mean score was 16.65, the minimum was 8 and the maximum was 28. The study noted that at post course, the practice levels in the study population were quite impressive among the intervention TBAs. There was a marked improvement in their practices. The mean score was 40.47, the minimum was 25 and the maximum was 53. At post course, Table 4.52a also considered the set values that determined the practice levels which were set at the same levels as during the pre-course. The study noted that 32% intervention TBAs had excellent practice at post course, 67% had good practice while 1% had satisfactory practice and no participant had unsatisfactory practice levels. Generally, the level of excellent practice was significantly different ($P<0.001$) from the control TBAs. The study went on to look at the practices during the birthing process as shown below.

5.6.2. The TBAs Practice of Hand washing for Safe, Clean Deliveries and Cord Care.

Regarding hand washing practices before conducting deliveries to ensure safe clean deliveries and cord care, The findings showed that at pre course, there was no significant difference ($P=0.148$) between the two groups in the proportion of TBAs who wash their hands before delivering their clients 23.5% in Mpanshya and 31.9% in Chongwe. But after the post course, the proportion of the intervention TBAs who wash their hands before delivering their clients was significantly different ($P<0.001$) from that of the control group (52) 48.6% and (100) 100%) respectively. The above finding was a good improvement on the hand washing practices. The FGD verbatim report confirmed the infection prevention practices during the birthing process (Refer to page 120).

Some TBAs used to believe that the products of conception are unclean and so conducted their deliveries using the most archaic methods like putting the foot between the clients perineum in an effort to push out the baby (Table 4.33b). This practice promoted puerperal sepsis in their innocent clients. The findings showed that at pre-course, there was a significant difference (P<0.001) between the two groups in the proportion of TBAs who help their clients to deliver fast by pushing their legs in between the client's legs 5.9% and 26.9% respectively. After the post course, the proportion of the intervention TBAs (87%) who do not carry out this practice was significantly different (P<0.001) from that of the control group (60.7%). This finding is unique to this study as no other study has been conducted in this area before.

In relation to cord care during the delivery of the baby, the findings showed at pre course, none of the study participants practised putting the end of the cord in a dish in-order to prevent ascending infections in the mothers but after the post course, the proportion (83.7%) of TBAs n the intervention group who put the end of the cord in a dish to avoid infections in the mother was significantly different (P<0.001) from the proportion (47.7%) in the control group.

Regarding using blades from their CDKs for cutting the cords, table 35 showed that the tTBAs insisted on delivering with CDKs which has the sterile blades in them. So it is evident that the training also provided the much-needed knowledge application to practice on cutting the cord with the razor blade in the CDKs as this practice significantly (P<0.001) increased among all (100%) the intervention TBAs during the post course. This finding was in accordance with our findings during the monitoring phase when it was found and reported that all the tTBAs use CDKs when they have to conduct a delivery. Clean cord care during the delivery is very significant as it contributed to the prevention of infections in the babies born by the tTBAs in the intervention group in Chongwe. At pre-course, the study finding indicated that very few study participants cleaned the cord with boiled cooled water if gentian violet or spirit were not available in their clean delivery kit in Mpanshya (22.7%) and Chongwe 0%. This difference was statistically significant (P<0.001). After the intervention at post-course, the majority (90.9%) of the TBAs in the intervention group in Chongwe who cleaned the cord proficiently with gentian violet or spirit or when not available used boiled cooled water was statistically significant P<0.001 compared to the control TBAs in Mpanshya (57%.). Conclusively, the study findings showed that the intervention tTBAs were able to apply their acquired knowledge

related to the importance of hand washing before delivering and cleaning the babies' cords. This means that they must have followed standards that were set during the training to produce an impressive impact on the reduction of umbilical sepsis in infants and puerperal sepsis. This impact is illustrated on the outcome of the mothers and babies delivered by the intervention TBAs. The findings showed that none of the babies delivered by the intervention TBAs and only 1.5% of babies delivered by the control TBAs developed infections. There was also an 11% reduction in maternal morbidity among the intervention TBAs and 3.5% reduction among the control TBAs. These reductions in infant and maternal morbidity rates is not unique to Zambia as Literatures reviewed have shown that TBA training impacts very positively on the knowledge, practice and attitude of TBAs. This impact is vividly illustrated in a very recent study by Gill, et al (2011) which showed a reduced (45%) infant mortality among intervention birth attendants than control birth attendants (rate ratio 0.55, 95% confidence interval 0.33 to 0.90). Also Sibley et al (2004) study showed that TBA training was associated with a six percent (6%) decrease in peri natal mortality. Both studies concluded that training of TBAs significantly reduced neonatal morbidity and mortality in rural African settings. This approach has high potential to be applied to similar settings with dispersed rural populations.

5.6.3. Health education against Harmful Traditional Practices during Post natal Visits.

Post natal visits of the clients are very important as they offer the opportunity to the TBAs to health educate their clients against harmful traditional practices.

It is customary that the TBAs visit their clients after delivery to ensure they are resting well, check on their health outcomes and to accompany them to the nearest health center for check-ups after delivery. This contrasts with the study conducted by the National Population fund (2003) who reported that tTBAs in their study only 23 % of the respondents agreed to visiting their clients everyday in the morning till the cord fell off. The clients were neither visited from 6 hours after delivery nor 6 days and 6 weeks after delivery. It also indicates that tTBAs do not visit their clients nor give them health education which would help them maintain good quality of life after delivery. The importance of post natal visits was emphasized in the modified MoH TBA Training curriculum. Hence this study ensured that the tTBAs visit their clients as stipulated in the training curriculum

In verifying what they actually do during these post natal visits, the findings showed that at pre-course there was no significant difference (P=0.189) in the proportion of TBAs in Mpanshya (16.0%) and Chongwe (22.7%) who visited and advised their clients on bathing and washing in between their legs in cold water without adding salt. After the intervention, the proportion of TBAs who advised their clients on perineal care without adding salt was significantly higher (P<0.017) among the intervention TBAs than that of the control group 66%, (81%) respectively. This is a very important health education from the tTBAs as salt causes water retention in the wound and so delays wound healing which may end up getting infected leading to puerperal sepsis. The study findings indicated that majority (83%) of the intervention TBAs compared to 48.1% of the control TBAs visited their clients a day after delivery to check for high fever which would mean onset of infections. This was statistically significant (P<0.001).during the post course. During these visits, the researcher noted that the intervention TBAs also health educated the clients on the importance and urgency of attending post natal clinics (Table 4.49). They even accompanied them to attend the post natal clinics for checkups after delivery.

In most developing countries, Zambia inclusive, the application of harmful traditional herbs in treating perineal wounds and the use of improvised 'chitenge materials, for sanitary pads contribute to puerperal sepsis in post partum mothers. During the pre-course, the study found that the use of both was very common place.

In the study, findings showed that at pre-course, only 29.4% of TBAs in Mpanshya and 5.9% in Chongwe knew the dangers associated with the application of African herbs and this was a significant finding (P<0.001). After the post course, the proportion of the intervention TBAs (97%) who advised mothers against this practice and who did not apply African herbs to heal perineal tears was significantly (P<0.001) different from that of the control group (60.7%). Also, the study at pre-course showed that there was there was a significant (P<0.001) difference in advising mothers against using dirty pieces of clothing for pads as they can infect them between the two groups 45.4%, 66.4% respectively) (Table 4.22) . After the post course, almost all the intervention TBAs (92%), knowledge level in this area increased significantly (P<0.001) compared to less than one–third (30.8%) of the control TBAs group. This is an important finding as the TBAs who do not have this practical knowledge will not advise their clients appropriately and therefore, will be exposing them to infections

during the puerperal period. The study findings showed that the reduced infant and maternal morbidity rates could have been due to the distribution of adequate resources to the intervention tTBAs.

In relation to the maintenance of environmental sanitation this study noted that statistically significant (P<0.001) number of intervention TBAs (88%) compared to 59.8% of the study respondents in the control group would sweep and mop the floor (Table 4.50) to ensure a clean environment. This finding agrees with Mwiinga's (2009) study which showed that 92% of respondents helped their clients with cleaning their environments; fetch water as this allows the mothers to rest. This indicates that TBAs have a lot of tasks to carry out in the community. National Population Fund (1996) expressed the notion that the addition of these new tasks, the tTBAs role may change its focus from its traditional one to that of multi-purpose community health worker. This implies that relatives should be involved in the care of the environment so the tTBAs can focus on proper infection prevention practices while visiting and providing direct care to the clients during the post partum period. A view that is supported by Tietjen et al (2003) who stated that failure to perform appropriate hygiene is considered to be the leading cause of infections and the spread of multi-resistant micro-organisms in the tTBA practices.

The same table (4.49) illustrated that the TBAs health educated their clients on the importance of post natal clinics, abstaining from having sex from up to 6-8 weeks after delivery, and breast feeding the baby for good health outcomes. The study (table 4.50) showed that the TBAs washes her hands before examining the baby, also checked if baby has skin infections, fever, is sleeping well; passing urine well, opening their bowel, crying a lot, bleeding from the umbilicus, and is suckling well on both breasts. All these aim at preventing infections in the baby. This finding is in line with Galba, (1975) who also observed that proper application of infection prevention practices during the birthing process reduced the incidence of neonatal tetanus in the newborn as well as in the incidence of puerperal sepsis in the mothers delivered by the tTBAs. Day (2004) also supported the training of TBAs based on their experiences in the Volta region in Ghana. All these good practices definitely culminated in the non-occurrence of sepsis in the infants and reduction in maternal morbidity in the intervention TBAs. and thus answering the main Research question affirmatively. The study finding also showed that at pre-course significantly

(P<0.001) more TBAs in Mpanshya (63.0%) than in Chongwe (24.4%) checked if their clients bled too much after delivery. However, after the intervention, significantly (P=0.003) higher proportion of the intervention TBAs in Chongwe (93.0%) than in Mpanshya (78.5%) visited their clients to check if they bled too much after delivery. The finding also illustrated that at pre-course significantly (P<0.001) more TBAs in Mpanshya (4.6%) than in Chongwe (18.5%) would check if their client developed fever after delivery (Table 4.48). However, after the intervention, significantly (P<0.001) more TBAs in Chongwe (83%) than in Mpanshya (48.1%) would carry out this practice as fever heralds the onset of puerperal sepsis in mothers.

5.6.4. Care of the New Born Baby

With regard to the practice of care of the new born, the training emphasized against using 'ulushishi' striped from the inside of a tree bark for cutting the cord during the birthing process, Table 4.35 showed that this practice significantly (P<0.001) improved in all the (100%) of the intervention tTBAs compared to 72.95% in the control group. The sustained good practices of the intervention TBAs were seen in Tables 4.41 and 4. 42 where significantly (P<0.001) good practices were noted among most (94% and 97%) of the intervention TBAs who observed the principles of newborn care by drying the baby after birth, wrapping the baby warmly and bathing it the day after delivery (Table 4.41 and table 4.42). They observed the three cleans by washing their hands and placing the baby over a clean chitenge spread over their laps while thoroughly examining baby to see if bleeding from the cord (Table 4. 50), the state of the skin, breast feeding well, sleeping well opening its bowel and passing urine properly Almost all the intervention TBAs in the study would refer babies who cannot breathe well, bleeding from the cord or showing signs of umbilical infection or exhibiting signs of infection with Clostridium tetani micro-organism or even a sleepy baby to the nearest health facility. These study findings are in line with the studies carried out by UNICEF (2004) in South Asian countries on Newborn Care which supports the use of cost-effectively- trained Community Health Workers like traditional birth attendants to promote the health of the new born in rural communities. Most of the poor infection prevention practices are culturally-based hence the need for the training of TBAs.

5.6.5. Integrating Positive Cultural Beliefs with Modern Obstetric practices.

Regarding integrating positive cultural beliefs with modern obstetric practices, the study showed that the TBA training integrated both western and positive beneficial traditional practices as Table 4.49 ably demonstrated this integration when the intervention tTBAs significantly ($P<0.001$) ensured that mothers rest during the puerperal period as well as abstaining from sex during this period according to tradition thus abiding by suggestions made by (Piggs et al, 1973) This practice helped to lower the maternal and infant morbidity rates in the study. Their abandoning the use of 'ulushishi' in tying the cord clearly illustrates this (Galba, 1975) It is common knowledge that the negative cultural practices influence the behavior of women during pregnancy, labour and delivery as confirmed by the United Nations Special Report on Human Rights entitled 'E/CN.4/1995/42, 995) hence they are discouraged. These negative practices could predispose women and newborn babies to developing puerperal sepsis and umbilical cord sepsis. The positive integration of cultural and traditional practices with modern obstetrics could have contributed to the reduction in infant and maternal morbidity rates in Chongwe district.

5.6.6. Prevention of Mother-To Child- Transmission of HIV/AIDS (PMTCT).

Literature reviewed have shown that several International Organisations like CIDRZ and United Nations organisations like WHO, UNFPA aand UNICEF have done tremendous job on training community–based agents -TBAs inclusive on HIV/AIDS transmission Prevention, Voluntary Counseling and Testing and prevention of Mother–to child Transmission of HIV virus. This training also included PMTCT in its syllabus. The study results showed (Table 4.47) that the tTBAs would advise their clients on prevention of mother-child–transmission of HIV/AIDS as well as advising HIV positive mothers to continue breast feeding their babies. These are best practices in both the control and intervention TBAs as there were no significant differences noted in their practices. This is good because the HIV/AIDS knowledge and practice need to be rolled out to all care providers in all the levels of the health care delivery system starting from the rural communities (Asghar, 1999) where the majority of the people are thus fulfilling the principles of equity and striving to meet the 4^{th} and 5^{th} MDGs in health care provision by using the Primary Healthcare approach. Literature reviewed has shown that authorities like Butlerys, (2004, Madhivanan et al, 2010) support the training of the TBAs due to their positive impact in rural settings.

5.6.7. Adjusting Practice with Age and Education

The study could not adjust for the confounding factors of age and education dealing with the practice levels because of the small numbers in the cells. This will be included in the limitations of the study. Thus the objective 2 of the study which sought to compare the infection prevention Practice standards between Mpanshya and Chongwe before and after training the intervention group with the modified MoH TBA training curriculum has been achieved. The reduction in the number of infants who developed umbilical sepsis after delivery and the reduced number of mothers who developed puerperal sepsis shows that this objective has been achieved.

5.7.0. Discussion on the Attitude of TBAs

5.7.1. Attitudes of TBAs

The TBAs attitude expresses the way that they think according to the influence of socialisation process in the culture, traditions and norms of their society.

A striking find in the study is that almost all the study respondents except one had good attitude. This finding contrasts the notion 'that training does not substantially alter the belief systems of TBAs and will therefore have little impact on practices that are rooted in these beliefs (Goodburn et al. 1995). This result corresponds with Muchunu & Bhengu (2004) study on the knowledge and attitudes of TBAs towards HIV/AIDS and their beliefs related to perinatal care.

Considering the attitudes of the TBAs, Table 4.54 showed that at pre course, the response from more than three quarters (76.5%) of the respondents in Chongwe that would not mind the length of time they would spend with their clients after delivery was significantly higher ($P<0.001$) than in Mpanshya (25.2%). But after the intervention there was no significant difference ($P=1.000$) between the Mpanshya (99.1%) and Chongwe (100%). Table 4.54 further expressed their commitment to duty when they enunciated that they could stay for long periods with their clients after delivery since they have to accompany their client to the health center for proper examination after delivery. This commitment was demonstrated in Table 4.55 which showed their determination to improve the health of the mothers and their babies in the District both during the pre-course and intervention phases of the study. During the focus group discussions, the tTBAs clients expressed satisfaction with the attitudes of the tTBAs. This was amplified while interviewing one of the tTBAs clients during the monitoring and evaluation of the TBAs practices. The clients

expressed satisfaction for the services that the tTBAs (Mrs Mutale – not real name) rendered to them as shown by the statement by a mother delivered by a tTBA (mrs. Enoch), **'I have four children, the first two were delivered in this clinic . due to the experience I received, I decided to try Mrs Mutale. Every thing went on ok. I liked the way she looked after me from when I was pregnant till when I delivered the baby. So I called her back to care for me during my second pregnancy. She also delivered my fourth baby'.**

Even among the TBAs they showed satisfaction with their roles. They are happy with working as a team of community-based-agents (SMAG) in the village. The tTBAs are determined to contribute to the health care system. This determination has been demonstrated in the health outcomes of the mothers and babies that they delivered. This commitment, demonstrated in their good attitude, was due to the community participation during the selection of the TBAs for training. Piggs (1973), in Nepal, noted on the importance of the community choosing the right women with the right attitude to be trained. He emphasized that those wrong women, who just want to be seen as important since they are participating in an important government developmental activity as well as the allowances they get from attending the training, should not be picked as they will have negative attitude in their practices. These are the trainees who eventually drop out from practising citing lack of remunerations as reasons for non-practising depicting negative attitude. He also emphasized on the importance of including unharmful socio-cultural traditions in the training programme which this study did. The inclusion of the unharmful customs and norms in the training syllabus also helped to change the attitude of the TBAs towards their practice as has been demonstrated in the good attitude that the TBAs demonstrated. Another explanation for the good attitude could be because training local women builds their capacity and gives them social status and recognition as demonstrated by the Norwegian Refugee Council and the Norwegian Church Aid in Kushik Kuhna districts of Herat in Afghanistan. The result of the TBAs good attitude was further demonstrated by the practice which reduced the morbidity and mortality rates in Samangan, Baghlan, Takhar, Badakshan, Kapisa, Parwan and through out Afghanistan confirming the finding in this study.

Satisfaction with the TBA Role

Generally, the TBAs show satisfaction with their roles. They are happy with working as a team of community-based agents in the village.

In Brazil, Galba (1975) followed the recommendation of Pigg's in 1973, and set up a co-operative programme with a rural community of Gualuba, south of Fortaleza. They, then, embarked on training TBAs on safe motherhood practices after noting their dedication to duty and their humanity to their clients. After three years, an evaluation was carried out during which it was noted that the incidence of neo-natal tetanus and puerperal infections among mothers had drastically reduced.

5.7.2. Categorization of the Attitude Score

The study findings revealed that the mean attitude score was 5.89, the minimum score was 3 and the maximum score was 7 at pre course while at post course the mean was 6.72, minimum was 2 and the maximum stood at 7 as well. Table 4.56 also considered the set values that determined the attitude levels that were set at 4- 8 correct responses for good attitude and <4 for poor attitude.

It was not possible to do logistic regression analysis on the attitude score due to the small number in a cell. Conclusively it can be said that the attitudes in both groups are positively similar. Thus the objective 3 of the study which sought to compare the attitudes of the pre-course TBAs, and the control and intervention TBAs before and after training the intervention group with the modified MoH TBA training curriculum has been achieved. In summary, the TBAs conduct more than half of all the deliveries that occur

in developing counties (WHO, 1992, CBOH, 2002, Maimbolwa, 2004). WHO, (1999) stated that 21% out of 80% of all maternal deaths globally are due to infections. Globally, the major causes of death include severe neonatal infections while, in Zambia, bacterial infections account for 82% of early childhood death. Most of these infections occur in the medically and geographically isolated rural settings where the majority (65%) of the population resides. Parks (2011), states that infant and maternal morbidity and mortality rates form useful indicators of a country's level of quality health care provision and socio-economic development. In order to reduce infant and maternal morbidity and mortality rates, the vision of the MoH is equitable access to cost-effective and quality care by 2030. This can be done through knowledge transfer from the skilled birth attendants to the Traditional birth attendants

in hardest-to–reach rural geo-locations using the MoH modified infection prevention TBA training curriculum.

The study can, conclusively, say that the response to the main research question that was stated as **'**Would the training of the TBAs using the modified MoH TBA training curriculum improve the infection prevention knowledge, practice and attitude of TBAs in Chongwe District?' has been answered affirmatively.

5.8. Discussion on FGD

Socio-demographic Characteristics of the FGD Respondents.

The FGD respondents comprised of (28) TBAs, four (4) mothers delivered by the TBAs, two (2) midwife -supervisors, one (1) village leader, and two (2) nurses. This totals to 37 FGD participants

The FGD literature search showed that doubt still exists on the relevance of training TBAs for many years thus making it a very controversial topic. The argument is that they cannot reduce maternal and infant infection rates so there is no need to train them. But the argument is that half a loaf of bread is better than none at all, considering that **t**he traditional birth attendants conduct 53% of deliveries in rural villages (Maimbolwa, 2004) where 60.5% rural population resides (CSO, 2002).. Other authorities on the subject also confirmed this scenario. WHO, (1992) stated that untrained traditional birth attendants (uTBA) conduct 60-80% deliveries in developing countries using unclean equipment in unclean environment. The TBAs need to be trained as they are an indispensable part of the health care delivery system. They are like 'spare wheels' of a car to fall back on when need arises in safe motherhood activities. The rationale for the FGDs is because the practice of TBAs varies in different countries and even in communities within countries (Kruske et al, 2004, Fleming (1994). Therefore, it is important to understand their roles for policy formulation. The FGDs facilitated the assessment of how people accept and use the health education messages to improve the quality of their lives and explore and understand the socio-cultural and traditional values of the clients, (Kitzenger 1994, and Zimmerman M et al 1990). Hence the purpose of the FGD was to describe the roles of TBAs as reported by TBAs themselves, by their district midwife supervisors, and by their clients in Chongwe district. These TBAs are ordinary women who volunteer their services to their communities through their varied experiences. This

underscores Paulo Freire's famous speech that 'No one is born fully-formed: it is through self-experience in the world that we become what we are' (Freire Paulo, 1994).' It is agreed that, the Traditional Birth Attendants (TBAs) are important for providing maternal child health services in low resource countries, but disagreement exists about what their appropriate roles should be. The scope of practice of TBAs include direct care to mothers during the prenatal, intra partum, and postpartum period, health education, and counseling at health centers and homes where the traditional birth attendants conduct 30%-40% in South Africa, 70% in Ghana, 60% of births in rural Tanzania (Elinami, 2005) and 53% in Zambia (Maimbolwa, 2004). The more home deliveries they conduct, the more the chances of increased infection transmission if left untrained. Some researchers have suggested that TBAs can reduce maternal and neonatal mortality rates (Sibley et al, 2004)), but others recommend sensitization roles only (MoH, 2011). Currently, no studies have established the actual roles of TBAs in the country thus justifying this FGD. The verbatim report below illustrates cord care by tTBAs.

Bana Katy (not her real name)"She advised me not to put herbs on the baby's umbilicus. I cleaned the cord with boiled cooled water until it dropped after 6 days".
Most countries have focused on the roles assumed by the TBAs now and what others have reported about what their roles should be. In Zambia, the current situation is to encourage health facility deliveries through TBA referrals. This means that home deliveries are frowned upon. This is not unique to Zambia alone as same happens in the USA according to (Tsing, 1999, Goodburn, 2000). The FGD showed that TBAs counsel the youth against escalating teenage pregnancies (womennewsnetwork.net/.../doctors-campaign-for-safe-abortion-in-z. (accessed on 31/07/2011, Lusakatimes.com, accessed on 01/08/2011, This problem is also felt in the U.K. according to Julian Brazier, (2011). The tTBAs counseling role is essential as Uhaa Iyorlumun, (2011) stated that only about 50% of youth who got pregnant went back to school. Parents have realized that teenage pregnancy require societal intervention. Some school children face varied forms of stress which ruins their physical and mental well being (Quinn, 2000). The high stress levels affect their cognitive, psychomotor and affective domains (Durbin, (2009). Akutse, (2004) and Day, (2004) studies supported the training of the TBAs. Some countries believe in training community health care workers (MoH, 2010) to provide social support

services while others believe in training TBAs to deliver women in geographically and medically isolated rural geo-locations (De Brouwere et al, 1998) while yet others believe they should health educate only (MoH, 2011). But Asghar (1999) disagrees with 'strengthening one part and not the others' hence it is better to strengthen the TBAs roles in providing varied community social support in their neighbourhoods where they share the same socio-cultural and traditional beliefs and norms.

Most authorities now focus on integrating indigenous knowledge and western medicine as a primary health care strategy through community participation (WHO, 1972, Piggs, 1973, Galba, 1975, WHO, 1978, Family Health International, 1998, Asghar, 1999, Onjoro 2001, Baez and Manzana, 2002). The critical shortage of trained health care personnel, the womens' value of their culture and traditional medicine in Tanzania, Kenya and Nigeria call for this integration (Swai, 2004, Onjoro, 2001,Wallace and Giri, 1999). Poor infection prevention practices and cultural practices affect the practice of even tTBAs' safe and clean deliveries, (Hazemba, 2003).

Integration reduced infant and maternal morbidity rates due to neo-natal tetanus and puerperal infections among mothers in Brazil (Galba, 1975). The tTBAs can also be creative and innovative in their practice as literature reviewed have shown that the tTBAs prime-moved mothers to adopting vertical position during delivery as well as breast-feeding the infant immediately after delivery and exclusive breast feeding in Canada, (Galba, 1975, Ako et al, 2008, Fall et al, 2009,) which are all current concepts in safe motherhood initiative. The training of TBAs increased when it was noted that untrained TBAs may infect their clients since they conduct about 60-80% of all births in Africa, Asia, and Latin America, (WHO,1992). Some authorities support the training of TBAs due to reduction of infant and maternal morbidity and mortality rates, (Sibley et al, 2004, Hill et al, 2010). Most authorities acknowledge that trained TBAs practice the 'three cleans' of hand washing with soap, clean cord care and clean surface.(Goodburn, et al, 2000, Hill et al, 2010). TBAs now bath new born babies a day after delivery in-order to prevent hypothermia and this practice is supported by Bergstrom et al, (2005) and Thatte et al, (2007).

The FGD showed that tTBAs have embraced community social support in their volunteerism. This blends well with the culturally-sensitive care they render to their clients majority of who opt to be delivered by the tTBAS (Maimbolwa, 1998, Yousuf,

J., et al, 2010) www.amref.org. (accessed on 28/07/2011). The tTBAs orient clients on the importance of early ante natal booking, this finding corresponds with the view of other authors like (Menown et al, 1993, Pearson,1982, WHO,1996, Jimoh, 2003). Pembeni et al, (2007), who noted the 'median time for first antenatal care attendance was 23.7 weeks.' Late bookings confirm the cultural belief that 'pregnancies should be seen and not told' as occurs in Zambia, Mozambique and Zimbabwe – a view expressed by (Chapman, 2003 and Mathole, et al, 2004). The TBAs were taught to health educate their clients against this belief which promotes non-utilisation of antenatal care services during the training. The tTBAs also emphasise on good nutrition, birth Preparedness and avoiding harmful traditional birthing practices during pregnancy, labour and delivery. These messages help the mothers to abstain from inserting herbs into their birth canal or drinking them to hasten labour towards the end of their pregnancies as they cause infections and uterine rupture. After delivery, the FGD respondents follow the cultural practice for placental disposal where a family member accompanies them to ensure the placenta is disposed in the pit latrine to avoid suspicions of witch craft.

The FGD also showed that the tTBAs emphasize on safe delivery environments as well as practice clean delivery practices like hand washing, clean cord care and delivering on clean surface. This is not the only study that emphasized on hand washing practices. Other authors like (Hill et al, 2010, Goodburn et al, 2000) also emphasized on the same. The only unique activity in this area was taking the specimens by swabbing the hands of the intervention TBAs during the trainings.

Regarding Healing of vaginal and perineal wounds after deliveries, culturally, women are taught to sit in cold water with added salt. Physiologically, salt attracts water, so the wound oozes for longer periods thus delaying perineal wound healing. The FGD participants health educate their clients to sit in boiled cooled water with no added salt. Hence knowledge updates are essential.

In relation to the care of the cord after delivery, the tTBAs ensure that the umbilical stumps remain uninfected and heals within the first week (Whaley & Wong, 1985, WHO 1999, Galba, 1975).

The tTBAs prevent hypothermia by dressing the baby with locally-woven clothing like hand-knitted hats, socks and clean clothes and bath the neonates a day after the delivery (Thatte et al 2007, Bergstrom et al 2005).

Regarding breast feeding practices, the tTBAs encourage mothers to adopt good Breast Feeding Practices like putting the baby on the breast within one hour after delivery because " the breast is like a tank for the milk and full of nutrition"(Falle et al, (2009, Ako et al 2008). The tTBAs caution mothers to adopt a scientific-based family planning method.

The FGD noted that the tTBAs work as a Team within the Safe Motherhood Action Group (SMAG). So the tTBAs health educate on male involvement to facilitate referrals to the next level of care by using traditional modes of transport like the Ox-cart to ferry pregnant women should any complications arise during pregnancy, labour and delivery. tTBAs integrate indigenous and western medical practices (Piggs 1973, Ademuwagun, 1978, Asghar's 1999).

Regarding counseling, the tTBAs counsel both the adults and the youths in their turbulent years when stress can ruin their physical and mental well being (Quinn, 2000) affecting their cognitive, psychomotor and affective domains (Durbin, (2009).

Teenage pregnancies disrupt parent-daughter relationships. tTBAs improve relationships because they share all the socio-cultural and traditional norms but confidentiality is very essential (Bulterys, 2002).

Counseling for the adults surrounds the HIV/AIDS infection and in this area, the tTBAs encourage couple counseling for their clients.

Also Galba's (1975) findings in Brazil on breast-feeding the infant immediately after delivery have been shown to be practised by the tTBAs.

Lefeber, et al (1994) concern on TBAs inability to prevent infections in their clients does not apply in this study as proven by Hill et al, (2010, Sibley et al, 2004). So training them improves their infection prevention practices, gives them social status, recognition, and secures them economic independence (Kruske et al, 2004, Flemming's ,1994, Paulo Freire's Emancipatory Education Theory,1994).

The FGD findings have shown the various roles that tTBAs perform in their environments (De Brouwere et al, 1998). The FGD had some strengths and limitations which appear under the strengths and limitations of the whole study.

Strengths of the FGDs:

Generally, the FGD demonstrated some suggested strengths because using focus groups allowed the TBAs and the women they serve to provide their own perspectives and share their views on the activities and roles of the TBAs within their scope of practice. The views expressed by the women that were delivered by the tTBAs encouraged the tTBAs and so be a source of strength and confidence as they carry out their roles. So the FGDs supplemented the quantitative tool in the study.

Also, having the midwives who supervise the tTBAs' work in the groups provided another perspective and opportunity to corroborate the information provided by the tTBAs and their clients. It is hoped that this corroboration would lead to better planning of supervisory activities and better health service provision in medically and geographically isolated rural communities.

Heterogeneity of the groups added value to the study because the village leaders who attended the discussions said they would use the information from the discussions to improve on the reinforcing and the enabling factors for the community-based agents according to the precede a-proceed theoretical model They also said they would hold discussions with the District during the health center committee meetings to improve on the provision of CDKS, water, and access to other resources (enabling factors). These create environment which have direct impact on the practices of the tTBAs in the district. The theoretical model facilitated the provision of the enabling factors as well as strengthening the reinforcing factors.

The FGD guide served the researcher's purpose which was to know their actual roles, how they integrate positive cultural and traditional beliefs and infection prevention measures in their practices.

The clients expressed satisfaction for the services that the tTBAs as the verbatim report of the FGD showed.

Another strength is that the tool covered all the roles of the TBAs that fall under their scope of practice as identified and confirmed in the Focus Group Discussion.

Limitations of the FGD: During the discussions, the heterogeneity of the FGD groups may have brought some power relations which could have hindered some information from the mothers delivered by the tTBAs. Admittedly, the researcher could have missed out on some important informations due to the power relations between the groups.

Also having a smaller number of women than midwives in each group may have inhibited some of the women.

Also the presence of the supervising midwives in the groups may have inhibited some TBAs from reporting all their activities honestly since they are their supervisors.

Following the FGD discussion, the researcher embarked on discussing the monitoring and evaluation phase below.

5.9.0. Discussion on the Monitoring and Evaluation Phase

Socio-demographic characteristics of the M &E Respondents.

The mean age for the monitoring and evaluation (M&E) tTBA respondents was 47.40 years with standard deviation of 8.0 years. The youngest M&E tTBA respondent was 31 years old while the oldest was 62 years. Most of the respondents were 49 years old in this sample.

The majority 12 (48%) of the respondents were in the age range of 42 -51 while 5 (20%) were aged between 32-41 years of age.

In-order to sustain this improved infection prevention practices, it is essential to monitor, evaluate and document their impact in conducting safe and clean deliveries and other safe motherhood initiatives.

The researcher compiled all the critical issues derived from the literatures reviewed and these informed the designing and developing of the Monitoring and Evaluation Tool

These factors focused on relevant health-related factors such as the socio-cultural-traditional beliefs, and service–related factors. These beliefs affect the infection prevention practices of the tTBAs. Most of these impact either positively or negatively on the health-seeking behavior and practices of women in their reproductive age and teenagers.

Socio-Cultural, Traditional Beliefs and Practices that contribute to Infections in Women.

The communities in Chongwe have their own beliefs, customs and values which make them unique. Some of These socio-cultural and traditional beliefs have been included in the monitoring tool as they are of Public Health concern

The proceed component of the theoretical model which is a logical framework is outcome-oriented. The monitoring and evaluation phase of the study took place from January to December, 2010. During this phase, the researcher monitored and evaluated the impact of the training programme. The study findings confirmed the impact of the training programme. The findings showed that only 1.5% of babies developed umbilical cord infections in Mpanshya while 0% of the babies delivered by the intervention TBAs developed infections in Chongwe**.** This finding in tables 65a and 65b means a 27% reduction in infant morbidity in the intervention group and 25.5% reduction in the control group in Mpanshya. The findings also showed that 6% of mothers delivered by the intervention tTBAs developed puerperal infections compared to 17.5% in the control TBAs. This study finding showed a 14% reduction in maternal morbidity in the intervention group and 3.5% reduction among the control TBAs. The study attributed the reductions in both the infant and maternal morbidity rates to the improved infection prevention knowledge acquired from their training using the modified MoH TBA training curriculum.

This reduction is not unique to this study alone as other authorities like related article by Gill et al (2011) study proved that the training of the TBAs reduced infant morbidity rates in their study in rural populations. This finding corresponds with the study conducted by Sibley and Sipe (2004), which provided scientific evidence that supports TBA training programmes. They noted that TBA training was associated with a 6% decrease in peri natal mortality and an 11% decrease in mortality from birth asphyxia. Based on their findings, the authors argued that due to the current critical shortage of skilled care in low-resource countries, there is a need for effective community-based strategies including those that involve training of TBAs, particularly in areas with high infant and maternal mortality. They also emphasized that the training should be properly monitored and evaluated in-order to develop a strong evidence-base needed for effective policy formulation and programming.

On the other side of the coin, some authorities feel that tTBAs do not reduce infant and maternal morbidity and mortality rates (Goodburn 2000). As can be seen the

study conducted by Gill et all, (2011) has overtaken this study conducted in 2000. The researcher feels there is an urgent need to initiate a mechanism for documenting the impact of tTBAs in the health care system. Currently, there is no mechanism put in place to monitor and evaluate their impact. This study is the first of its kind to develop a mechanism for monitoring and evaluating the impact of tTBAs in the health care system. In rural areas, in a country like Zambia, there is a critical shortage of clinics and Skilled Birth Attendants (SBA). As a result, untrained personnel, general nurse–trained staff or environmental health technicians and even classified daily employees run these health centers. In such areas the TBAs fill in the gap by providing midwifery services to the rural communities to help reduce maternal and neonatal morbidity and mortality. Until such time as there are sufficient numbers of Skilled Birth Attendants (SBAs) to supervise the prenatal care and deliveries of all women, it is important to put up a transitional plan which would ensure that TBAs receive appropriate training, support and capacity to conduct safe and clean deliveries even if on emergency basis so that 'no woman dies while giving life'. Maimbolwa (1998), confirmed the critical shortage of skilled birth attendants in her evaluation study in the six districts of Zambia which included Chongwe, Kalomo, Katete, Masaiti, Serenje and Senanga. She noted that the health centers in rural areas offer midwifery services and that most trained midwives are reluctant to work in these rural health centers due to under – developed health-care infrastructure and poor incentives for them to maintain their school going children as well as have some sort of social life.

Most Literatures reviewed support the TBA training (Gill et al, 2011, Sharana et al, 2010, Day, 2004, Akutse, 2004,.Hazemba, 2003, Butlerys, 2002). Subsequent to the training, health care systems in developing countries should develop mechanisms to monitor the impact of tTBAs within their scope of practice. Sibley, et al (2009) strongly recommend the evaluation of training programmes. This study developed a monitoring tool for monitoring and documenting the impact of the trained TBAs in their various roles in rural settings (Appendix R , Tables i-xvi).

The researcher recommends that future TBAs need to be trained using this modified TBA training curriculum in-order to incorporate modern infection prevention measures. The monitoring and evaluation of the TBA training programme showed

that the tTBAs are accessible and acceptable in their communities where they provide their services.

As can be seen from the FGDs, their scope of practice now includes counseling, and health education on prevention of mother-to–child transmission of HIV virus. If the health system fails to retain the tTBAs, the untrained TBAs will have no option but to carry on with these timeless home deliveries So there is the need to monitor their practices and see that the untrained TBAs are not creeping back onto the scene. These study findings showed reduced infant and maternal morbidity rates as the gained knowledge and practices increased and improved the infection preventions scientific knowledge, and practices of the tTBAs. This improved knowledge has produced long term changes in the health status of the community by reducing the infant and maternal morbidity and mortality rates as well as improving the quality of life of the youth and families.

Following the Precede-Proceed theoretical model that guided this study, monitoring and supervising the tTBAs motivates the TBAs in their voluntary work. This motivation comes from the fact that as the supervisors visit them, they also go with some logistics and supplies which facilitate their work and inspires them to carry on. The monitoring and evaluation exercise showed that the tTBAs were given resources to help them in maintaining infection prevention measures as they carry out their roles. These are gloves, bowls, scissors and blades, forceps and cord clamps. They were also given pots to use for boiling their equipment while conducting deliveries. Anatomical models were used during the lecture demonstrations. These were donated through collaboration with stakeholders. These are the enabling factors in the model.

Several activities were carried out during the whole study. These ranged from the situation analysis to the designing and developing the monitoring and evaluation tool.

These were the enabling and reinforcing factors that were highlighted in the theoretical model. Highly motivated tTBAs will contribute to better health outcomes for mothers, babies and the youth in rural setting.

The evaluations also showed that this training programme was very relevant as a baseline showed the need among the community to conduct this training programme. This was justified due to the critical shortage of trained midwives. The community supported and accepted the programme through the Neighbourhood Health

Committees as it responded to their health needs. The evaluation showed that the TBA training programme was relevant as shown by the reduced infant and maternal morbidity rates.

The training programme was adequate as the number of the tTBAs is able to provide Safe Motherhood Initiative services in Chongwe district. They were able to access the services of the tTBAs. The programme was adequate because it catered for all the health centers in the District and produced good impact as demonstrated by the long term changes in the improved health status of the mothers and babies.

The TBA training was efficient and acceptable and satisfactory to the communities who have benefited from the programme. The training programme also achieved its goals of reducing the morbidity rates in the infants and their mothers. This was demonstrated by the impact of the training which showed reduced infant and maternal morbidity rates in the district.

The importance of the monitoring and evaluation programme is the sustainability of the training programme of TBAs. It involves finding ways of sustaining all the characteristics of the monitoring and evaluation programme eg the relevance, the effectiveness, the efficiency, the acceptability, the accessibility and the impact of the programme.

During the supervisory visits, the supervisors may see the need for a volunteer support Organisation or Association. This organization would put mechanisms to co-ordinate the various roles that the tTBAs perform in the district. This would pave the way to establishing a tTBA Volunteer Management System which so far is non-existent. The organization or association would develop a database of all the tTBAs within the SMAG membership. They will advocate for the rights and responsibilities of the tTBA volunteers to avoid them being abused.

5.10. Implications to the Health Care System

The results of this study has proven its objectives which are to compare the TBAs infection prevention knowledge levels, practices and attitudes between Mpanshya and Chongwe before and after training the intervention group with the modified MoH TBA Training curriculum. It has also established that the modified MoH TBA training curriculum does address the harmful socio-cultural, beliefs and traditional practices that relate to pregnancy, labour and delivery. As a result the improved infection prevention knowledge and practices have lowered the maternal and infant

morbidity rates. The study has also produced a modified MoH TBA Training curriculum and a monitoring tool for use in the health Care system. This will facilitate the documentation of the impact of the TBAs and thus contribute in the formulation of evidence-based policy in the health care system.

The findings from the study showed that there is an association between the infection rates among the neonates and the mothers delivered by the control TBAS trained using the old MoH TBA training curriculum and the intervention TBAs trained using the modified curriculum.

The findings of this quasi experimental study have implications on the training of TBAs using the modified MoH TBA training curriculum. The impact of their training highlighted significant increases in the knowledge, practice levels and attitude that produced the desired outcome of reducing infant and maternal morbidity rates in Chongwe district.

The study findings have demonstrated the need to use this training curriculum to conduct a randomised controlled study that would use scientifically-proven method in sample selection so as to reduce bias in medically and geographically disadvantaged rural settings The Research may bring out some issues to which the health system will respond by designing interventions that are sensitive to these issues. This will facilitate the country to achieve the 4^{th} and 5^{th} Millennium Development (MDG) targets of reducing the child and maternal mortality rates with the limited time-period to 2015.

It is worthy to note that the study did not record any infant morbidity in babies delivered by the intervention tTBAs in Chongwe compared to 1.5% of the babies that developed umbilical stump sepsis in the control TBAs in Mpanshya. This showed a 27% reduction in infant morbidity among the intervention TBAs and 25.5% reduction among the control TBAs in Mpanshya (Table 65a). This showed that the study respondents have understood and applied infection prevention principles in their practice as knowledge influences practice.

The study also showed reduced maternal morbidity rates in Chongwe District (Table 4. 65b). The monitoring and evaluation phase showed a 14% reduction in maternal morbidity in the intervention group and a 3.5% reduction in the control group in Mpanshya.

The base line assessment, which took place between March – October 2006, (Table 4.1b) showed that 21% of mothers had puerperal infections in Chongwe and 20% in Mpanshya.

The study findings showed the importance of hand washing in the TBAs practice. The study demonstrated the important reason behind the TBAs washing their hands before any client contact since it provided a scientific evidence of the presence of micro-organisms on hands as shown in Table 4.5. The study also showed the germ–free state of razor blades in clean delivery Kits as shown in Table 4.3

Improved infection prevention knowledge and practices were strengthened by the TBAs acquiring knowledge and practice of boiling the equipment they use during the birthing process. The study also showed that the intervention TBAs significantly demonstrated adequate knowledge and practice regarding bathing the baby a day after delivery (Table 4.41) in the care of the new born and clean cord care inclusive as shown in Table 4.42.

Another important finding in the study was that more than three quarters of the study respondents were ignorant about the policy which bars them from conducting vaginal examinations on their clients as this practice could create avenues for transmitting infections to their clients but afterwards the intervention TBAs became significantly more knowledgeable in this area than the control TBAs as demonstrated in table 4.14.

The study also showed that the intervention TBAs, compared to the control TBAs, significantly exhibited better knowledge in identifying the signs and symptoms of intrauterine infections following premature rupture of membranes, signs and symptoms of puerperal infections and other complications that may occur after delivery and to refer the clients to the next level of care.

The study results showed (table 4.46 & 4.47) best practices in both the control and intervention TBAs as there were no significant differences noted in their practices. Table 4.46 shows that during the pre-course and intervention there were no significant differences in the proportion of TBAs who advise their mothers on PMTCT. This showed that both groups are knowledgeable on PMTCT. This was demonstrated by most pregnant mothers opting for VCT at Outreach sessions. This demonstrated equity in health care provision. This best practice was also shown on their advice to

HIV positive mothers to continue breast feeding their infants exclusively after delivery both during the needs assessment and at the intervention phase of the study.
The FGD also showed that tTBAS also identify pregnant women in their neighbourhood and health educate them on better utilization of regarding the use of maternity services to their advantage as Butlery (2002) postulated in his study in Cameroun in West Africa.

The results of the FGD also showed the various roles that the TBAs perform in their communities like health education on personal hygiene practices, counseling school children on their sexuality, preventing teenage abortions and promoting male involvement in reproductive health- couple counseling resulting in peaceful partner notification environment.

This study finding corresponds with Butlerys (2002) who advocated for the training of TBAs so as to involve them in preventing perinatal transmission of HIV/AIDS from mother to child. The trained TBAs, like TB Treatment supporters, could also be used as ARV treatment supporters to directly observe the mother and the baby take their nevirapine to promote adherence.

Another study finding showed that compared to respondents in Mpanshya, respondents in Chongwe were 1.23 times (95% CI 0.92, 1.64) more likely to have acquired adequate knowledge of cultural practices after adjusting for age and education. This means that the TBAs are able to integrate the beneficial cultural and traditional beliefs and practices with modern obstetric practices. Integrating positive cultural beliefs and traditional practices with modern infection prevention practices necessitates that the TBAs embark on health educating their clients to ignore and abhor the harmful cultural practices that could cause infections in both mother and baby during pregnancy, labour and delivery while adhering to the positive ones which prevent disease and promote their health.
These findings in this study have implications for the health care system, practice, education and research and future training. This implies that this training curriculum can be used in another site for purposes of replication using a controlled study method that will reduce bias as it will use scientific methods in its sample selection (Chanda, 2001, Hazemba, 2002 Baez and Manzana, 2002, and Bulterys, 2002) have all emphasized on the importance of training TBAs in infection prevention to ensure safe

and clean deliveries and improve health outcomes for mothers delivered by tTBAs and help us achieve the 4th and 5th MDGs (MoH, 2009).

5.10.1. Implications to Nursing Practice.

The nurses are in majority of all health care providers in the country. The FGDs showed the various roles of the tTBAs. So it is incumbent for nurses to ensure that the TBAs are utilized fully where they can function within their scope of practice in-order to fulfill the equity principle in the primary health care approach in health care provision. .

With the current critical shortage of nurses, the nurses can do task shifting and knowledge transfer to the TBAs with the support of the administration and the Ministry of Health. The study findings have shown that the tTBAs applied their theoretical knowledge into their practice hence the achievement of the desired impact of reducing the infant and maternal morbidity rates in the district (JHIPHIGO, 2002)..

5.10.2. Resource Implications for the District Health Management (DHMT) Administration

The District Health Management Administration has to support the varied roles within the scope of practice of the tTBAs. The DHMT should see that the roles they support are responsive to the health needs and subsequent health problems of communities being served.

This support has cost implications in terms of human, money/ financial, material and time resources. The DHMTs have to consider the cost and benefits of training the TBAs using the modified MoH TBA training curriculum. Also important is for them to consider the opportunity cost of the TBAs leaving their homes and businesses to attend the training. This consideration necessitates giving them some allowances to cushion their opportunity costs.

The supervisors also need to have an orientation on what the tTBAs are supposed to be doing within their scope of practice.

The DHMT also needs to consider the cost implication of training the TBA supervisors on the use of the monitoring tool that has been designed in this study.

Another area for the DHMT to consider is developing a retention plan for the TBAs. This study has shown their impact in reducing infant and maternal morbidity rates in Chongwe district. Therefore, there is need to retain them with some incentivisation packages especially when they bring their reports to the health centers. Also the district can involve them during health programmes which offer allowances to all health workers like the Child Health week.

There is also cost implication in promoting health service delivery in rural settings. this will necessitate improving the referral system for obstetric emergencies identified by the tTBAs. Construction of health posts for use during Outreach sessions.

The DHMT should utilize the community funds in setting up of Safe Motherhood Action Groups (SMAG) which link services to communities through community partnerships. SMAG should be formed in all areas within Chongwe District as currently there is no SMAG in Chongwe area itself.

5.10.3. Implications to Nursing Education

The General Nursing Council which is the regulatory body for nursing and midwifery training should now endeavour to conduct critical assessment and analysis of the TBA training curriculum ensuring that it includes appropriate infection prevention content and method of delivery of this content using adult teaching methodologies. A systematic and sequential review of the relevant areas in infection prevention will ensure that the end product will contribute to the social development of our country by lowering the maternal and infant morbidity rates. The relevant TBA curriculum will increase the knowledge-base of the nurses and midwives on task-shifting and knowledge-transfer to the CBAs in rural settings. This process will ensure the integration of this valuable voluntary resource into the modern health care service delivery system. This will ensure 'equity of access to cost-effective robust and quality health care delivery as close as possible to the individual, family and the community'. Thence the availability of robust health service delivery to those who live in medically and geographically isolated rural settings.

The MoH has to complement the GNC's effort by ensuring that a uniform curriculum is used in the training of TBAs. So the MoH has to institute a Trainer of Trainers programme in the provinces. Those trained in the provinces will then be assisted by the midwives at the District during the TBA training sessions.

5.10.4. Implications for tTBA Practices

The theme that emerged in FGD Table 3.1 are related to the categories of direct practice of the TBAs under providing care to clients during pregnancy, labour, delivery and post partum period care of the mother and the baby. This includes care of the baby's cord and mother's vaginal and perineal wounds. This suggests that the tTBAs are applying infection prevention strategies that were included in the training to their practice. Although it is acknowledged that it is not possible from this study design alone to determine whether these practices were influenced by the training, the findings suggest that TBAs can learn to use infection control procedures and apply them in practice.

The findings also show that they are educating women against the use of harmful traditional practices during pregnancy, labour, delivery and during the post partum period when they provide direct care to both mother and baby. The findings also indicate that the tTBAs do a lot of counseling in schools in an effort to prevent infections in teenagers from infected abortions. So the findings suggest many positive roles of TBAs such as health education, counseling, and direct care. These implications to practice corresponds with Nyanzi, (2004) in Gambia whose study showed that "the roles of the tTBAs have expanded from applying infection prevention measures whilst delivering babies to include health education on personal hygiene practices to prevent infections, child spacing, family planning, prevention of STIs, HIV/AIDS, promotion of immunizations, breast feeding, the use of oral rehydration salts in the treatment and management of diarrhoea, infant resuscitation, nutrition, prevention of anaemia, and malaria." Thus the study has shown that training improves the practices knowledge and attitudes of tTBAs.

5.10.5. Implications to Research

The main theme that emerged from the FGDs is related to the categories and sub-categories of direct practice of the TBAs. It is seen that they provide care to clients during pregnancy, labour, delivery and post partum period of mother and baby. This suggests that the tTBAs are applying infection prevention cognitive domain to their practices. These findings have proven that mixed method research design really complements each other as the qualitative component of the study also confirmed the same findings

The researcher acknowledged that it is not possible from these focus group discussions to determine whether these practices were influenced by the training. But the findings suggest that TBAs can learn to use infection prevention procedures and apply them to their practices.

Findings show that tTBAs health educate mothers on the dangers of some harmful traditional practices relating to poor infection prevention practices during pregnancy, labour, delivery and during the post partum period when they provide direct care to both mother and baby. The findings also indicate that the tTBAs do a lot of counseling in schools in an effort to prevent teenage pregnancies and subsequent infections from abortions. So the findings suggest many positive roles of TBAs such as also contributing to health education, counseling, and direct care. These implications show that there is need to improve the capacity of these rural women (Asghar (1999) to serve their communities. Their services help to integrate positive indigenous knowledge with modern medicine for better health service utilization and better health outcomes (Onjoro, 2001). These implications have confirmed the expanded roles of tTBA (Nyanzi et al, 2004). Research is needed to confirm these roles.

- Therefore, it will be good to replicate the FGDs using homogenous groups.
- Future research is needed using observational methods to confirm the reported activities of the TBAs that emerged from the FGDs (e.g. observing their infection control practices, counseling and health education provided, etc.)
- There is a need for ongoing research to document the outcomes of TBA practices and of educational interventions designed to improve TBA knowledge, skills, and practice.

- This finding has an implication for future training. This means that this training curriculum for purposes of replication using a controlled study method in another site.

5.10.6 Implications of Age and Education

During the comparative analysis, Fig 4.1a and 4.1b show the age distributions at pre and post course.

At pre-course the majority 74 (31.09%) of the study participants were aged between 44 and 54 years in Chongwe while in Mpanshya, 55 (23.11) fell in the same age

group. This shows that the majority of the participants in that age group were in Chongwe.

At pre-course, respondents aged 30 – 43 years in Mpanshya stood at 26%, while in Chongwe respondents aged 33 – 43 stood at 15% since there was no participant aged less than 32 years in Chongwe. Therefore, participants aged 30 – 43 years at both sites stood at 41% at pre-course.

At post course, respondents aged 30 – 43 years in Mpanshya stood at 26%, while in Chongwe participants of the same age group stood at 14% totaling 40% of participants aged between 30 and 43 years of age at both sites.

Fig 4.2a showed that at pre course 40.3% in Mpanshya and 28'6% in Chongwe attained primary education while 30.3% in Mpanshya and 55.5% in Chongwe attained secondary education. 29.4% in Mpanshya and 16% in Chongwe had never been to school.

Fig 4.2b showed that at post course 74.8% in Mpanshya and 63% in Chongwe had primary education while 17.8% in Mpanshya and 33% in Chongwe attained secondary education only 7.5% in Mpanshya and 4% in Chongwe had never been to school. All the study respondents who had been to School could read and write in both English and local language.

Complementing the findings of the comparative analysis, the FGD Table 4.57 showed the age distributions and educational attainments of the respondents. The same table showed that 56.8% FGD respondents had primary school education, 37.8% had secondary level of education, 94.6% respondents were literate. They could read and write in their local and English languages. Only 5.4% were illiterates. The majority (59.5%) of the respondents were aged between 42 -51years. These suggest that previous image of TBAs as old and illiterate women who cannot read and write (Swai E, 2011) does not apply in this district today.

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5.11. What is New about this study?

The outcome of the data collection and its analysis has brought reflections on very important safe motherhood issues. The study showed poor infection prevention knowledge and practices of TBAs before the study which needed urgent improvement. This was attended to by conducting this study. The TBAs intensions to

provide health care services in their immediate neighbourhood is very good but if the methodology of doing this is wrong then the purpose of their service delivery is defeated. This study proposes the training of TBAs to practice safely in their varied roles in three stages.

Stage 1 is to train them in infection prevention and hygiene practices using the modified MoH TBA training curriculum. The tTBAs can apply their theoretical knowledge to practice as they provide care to their clients in their communities.

They need to be trained to identify and refer complications beyond their reach to the next level of care with logistical support from the DHMT.

Stage 2

This comprises the setting up of an efficient monthly regular supportive supervision of tTBAs so as to get a time to time update on their practices. This will help to perfect their infection prevention skill.

Stage 3

The third stage is to set up a monitoring and evaluation mechanism which would provide a tool to be use to monitor and evaluate the practices of the tTBAs. This would provide a scientific evidence-based mechanism for documenting the impact of the tTBAs in their communities. The tool will also help to provide information which will be used to consider the necessity for future training of TBAs in the District.

The tool will also help in strengthening the health care service delivery in the district and assist in reducing the maternal and infant morbidity rates in the District. The DHMT will also see how they are being integrated in the formal health care system and may be consider the need for expanding their roles.

5.12: Strengths of the Study

The objectives which directed the research were met. The needs of the clients were met due to improved quality of life they experience after delivery. The phases of the study were arranged logically and sequentially as the findings of each phase led to the next phase. The study also used a mixed method research approach which increased the quality of the study. The study illustrated some desired strengths mentioned below.

The study developed a monitoring and evaluation tool to be used for documenting the impact of the tTBAs in their communities.

The tool provided information that would be used to consider updating their practices by conducting Refresher courses for knowledge update.

5.13: Study Limitations

The limitations noted in this study are enumerated thus.

Firstly, the comparative analysis showed that it was not possible to ensure uniform demographic characteristics of the study respondents since this the quasi-experimental study used non-equivalent groups. So the study respondents were not randomized. There was a difference between the needs assessment group and the post-course groups. This could have affected the internal validity of the study.

This is because some of the study respondents who participated during the needs assessment dropped off due to a variety of social problems and hence the discrepancy in the ages and educational levels noted in the study. The study did not keep a detailed record of key demographic characteristics of those respondents who dropped off. This means that this training curriculum can be used in another site for purposes of replication using a controlled randomized study method. The study findings need further investigations in hardest-to-reach, geographically and medically disadvantaged, rural districts in Zambia.

Another suggested limitations in this study is on the basis that it only collected data in Chongwe district which constitutes one district out of 73 gazetted districts in Zambia, so the findings from this study cannot be generalized to other parts of the country.

This study was conducted in Chongwe District where there are a lot of International organizations who have brought in several health-related development projects which include infection prevention and as a result the TBAs could have been exposed to infection prevention measures more than other TBAs in other districts without this exposure. This could have affected the research findings in Mpanshya.

During the practice analysis, it was not possible to adjust for confounding factors of age and education dealing with practice because of small numbers. The finding was not significant on bivariate analysis and so it was not possible to proceed and conduct a multivariate analysis.

During the monitoring and evaluation phase, the researcher acknowledges that the study made the desired impact on one out of 73 gazetted districts in Zambia so inferences from the findings cannot be generalized onto the general population.
The researcher acknowledges the limitation of not using Likerts' scale for the attitude questions in the tool since it was already approved by the Research and Ethics committee of the School of Medicine.

In summary, in the earlier section above, the researcher showed from her results that the infection prevention knowledge, practices and attitudes gained from the training using the modified MoH TBA training curriculum reduced infant and maternal morbidity rates. This finding is not unique to my study as the findings correspond with other authors like Gill et all, (2011), Ghebrehiwet et al, (2010), Sibley and Sipe (2004). However, the researcher went further to provide scientific evidence of the absence of micro-organisms on razor blades found in the CDKs and the presence of micro-organisms on hands of TBAs despite them looking clean. The study also modified the existing MoH TBA Training curriculum following a desk review. It also developed a monitoring tool for documenting the impact of tTBAs in the health care system. These have not been done by other researchers before thus adding value to this study. The documentation of the tTBAs activities will encourage the district to motivate the tTBAs thus fulfilling the theoretical model that guided the study.
The researcher can conclusively say that the bedrock in TBA training in infection prevention practices is to create convergence point where the midwives at the district can train them in the community. The experienced tTBAs in the NHC can mentor and monitor the infection prevention practices of the upcoming TBAs for sustainability in medically and geographically disadvantaged rural geo-locations.

5.14. CONCLUSIONS AND RECOMMENDATIONS

5.14.1. CONCLUSION

The study sought to determine the impact of using a modified MoH TBA training curriculum on the infection prevention knowledge, practice and attitude of Traditional Birth Attendants in Chongwe District.
The most striking finding in this study is the reduction in maternal and infant morbidity rates among mothers and babies delivered by TBAs. The study showed that during the situation analysis, table 4.1 showed that 18 (27%) of babies delivered

by TBAs in Mpanshya and 32 (27%) in Chongwe developed infections within 14 days after delivery. But during the monitoring and evaluation phase, table 4.62a showed that only 2 (1.5%) of babies developed umbilical cord infections in Mpanshya while none of the babies in Chongwe developed infections**.** This was a 27% reduction in infant morbidity in the intervention group and 25.5% reduction in the control group in Mpanshya.

In addition, during the situation analysis, 13 (20%) of mothers had puerperal sepsis in Chongwe and 25 (21%) in Mpanshya. But during the monitoring and evaluation phase, 9 (6%) out of 147 mothers delivered by the intervention TBAs had puerperal infections in Chongwe compared to 23 (17.5%) out of 131 mothers delivered by control TBAs in Mpanshya. This showed 14% reduction in maternal morbidity in the intervention group and 3.5% reduction in the control group in Mpanshya.

The reduction in the maternal and infant morbidity rates in the study answered the research question affirmatively. This finding demonstrated that the intervention TBAs effectively applied knowledge from their cognitive domain to their psycho-motor domain hence the reduced morbidity rates. In addition, the null hypothesis that stated that there is no relationship between the infection rates among mothers and infants delivered by the control TBAs trained using the old MoH TBA training curriculum and the intervention TBAs trained using the modified MoH TBA training curriculum has been rejected. Also, the objectives which sought to determine the infection prevention knowledge, practice and attitude levels between the control TBAs and the intervention TBAs in Chongwe District have been met based on the reduced morbidity rates. The fourth objective which sought to establish if the curriculum addressed the harmful socio-cultural beliefs and traditional practices that relate to pregnancy, labour and delivery has also been met. The study confirmed that resident micro-organisms are on hands despite them looking clean.

The study showed that in this instance, education and age did not play any role in the acquisition of knowledge by the TBAs, so it can conclusively be said that the curriculum content that was used in training the TBAs does not require prior education of the TBAs. This finding has an implication for future training. This means that this training curriculum can be used in another site for purposes of replication using a randomized controlled study method. The study also proved that

the old belief that TBAs are old and illiterate women who cannot read and write does not apply in the district today.

The Study outputs included the Modified MoH TBA Training Curriculum and the Monitoring and evaluation tools.

The researcher states that the bedrock in TBA training is to create convergence point where the midwives at the district can train TBAs in the community using the modified MoH TBA training curriculum. The experienced tTBAs in the NHC and in the hardest-to –reach geo-locations can mentor these upcoming TBAs for sustainability. When some tTBAs rise in rural hierarchy and cannot perform their roles as tTBAs, there will always be tTBAs to continue their work in medically and geographically disadvantaged rural settings that are devoid of professional health workers until such a time that the health care system can provide skilled birth attendants in rural settings.. Their practices should be monitored and evaluated using the monitoring and evaluation tool developed during this study. This will facilitate the documentation of the impact of the tTBAs in the health care delivery system. The documented impact will facilitate evidence-based policy formulation in the health care system.

5.15: RECOMMENDATIONS

5.15.1. Recommendations to the Ministry of Health.

The recommendations have focused on the Ministry of Health as the policy-making body. The 4th National Health Research Conference, (NHRC, 2007) which advocated the translation of research findings into action in the health care system.

TBA Policy Brief and Dialogue

The researcher recommends the preparation of a Policy brief and dialogue through Zambia Forum for Health Research (ZAMFOHR) with all stake holders on the topic under study.

The researcher also recommends the finalization of the old MoH TBA training curriculum using the modified version as a working document.

The researcher also recommends the formation of a Community- based management System with Focal Point persons in the district who will ensure the use of the monitoring and evaluation tool as a mechanism to document the impact and outcome of the tTBAs practices in medically and geographically disadvantaged rural settings.

These recommendations will facilitate the achievement of the 4th and 5th millennium development goals by the year 2015.

5.16: Dissemination of the Study Findings

The researcher will submit bound copies of the study to the following institutions.

- University of Zambia Library
- The Medical library at the University Teaching Hospital
- Department of Nursing Sciences of the School of Medicine, UNZA.
- Directorate of Public Health and Research of the Ministry of Health
- Ministry of Community Development , Mother and Child Health
- Chongwe District Health Management Team
- Center for Infectious Diseases in Zambia (CIDRZ)
- United Nations Family Planning Association (UNFPA).
- General Nursing Council of Zambia.

In summary, in the earlier section above, the researcher showed from her results that the infection prevention knowledge, practices and attitudes gained from the training using the modified MoH TBA training curriculum reduced infant and maternal morbidity rates. This finding is not unique to this study as the findings correspond with other authors like Gill et all, (2011), Ghebrehiwet et al, (2010), Sibley and Sipe (2004). However, the researcher went further to provide scientific evidence of the absence of micro-organisms on razor blades found in the CDKs and the presence of micro-organisms on hands of TBAs despite them looking clean. The study–outputs also add value to the study. The researcher can conclusively say that the bedrock in TBA training in infection prevention practices is to create convergence point where a community-based management system at the district can mentor, monitor and supervise the practices of upcoming tTBAs for sustainability in medically and geographically-disadvantaged rural geo-locations.

REFERENCES

Achola, A & Bless, C. (1988): **Foundamentals of Social Research Methods, p.27. Government Printers, Lusaka.**

Ademuwagun Z. A. (1978): **The Yoruba Concept of Health (Implications for Health Education). International Journal of Health Education,** Vol.,21(2):89-97.

Ako, S., Fokoua, S., SinouT.M., & Leke R., (2008): **Reproductive Health in the Cameroons.**
http://www.gfmer.ch/Endo/Reprod_health/Cameroon/Net_Reproduction_Cameroun.htm. (Accessed on 16/9/2011).

Akutse A. (2004): **The Risks of HIV/AIDS Transmission by TBAs Practices in Villages.** 15th International AIDS Conference, Bangkok, Thailand.

Allahyar Jazayeri A., (2011): **Premature Rupture of Membranes**

http://emedicine.medscape.com/article/261137-overview (Accessed on 18/09/2011).

Alwar, J., Mtonga, V., and Sikatoye B., (2000**); Report on the Summative Evaluation of the Essential Obstetric Care Project in Mpongwe, Masaiti and Lufwanyama**. Zambia

Ana, J., & Harrison K.A., (2011): **Are Traditional Birth Attendants Good for Improving Maternal and Perinatal Health? Yes**
http://www.bmj.com/content/342/bmj.d3308.full BMJ; 342:d3310 doi: 10.1136/bmj.d3310. (Accessed on 16/09/2011).

Anderson, L. W. David, R., & Krathwohl, D. R., (2001**): A Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives**. Allyn & Bacon, Boston, USA.
https://www.google.co.zm/search?q=anderson+and+krathwohl+2001+a+taxonomy+for+learning&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a (Accessed on 05/04/2013).

Asghar R, J, (1999): **Obstetric Complications and the Role of the Traditional Birth Attendants in Developing Countries.** Journal of College of Physicians and Surgeons, Pakistan, Jan1999,Vol.,9 (1):55-57.

Averbuch B, Mazor M, Shoham-Vardi I, Chaim W, Vardi H, Horowitz S, & Shuster M., (1995): **Intra-uterine Infection in Women with Preterm Premature Rupture of Membranes: Maternal and Neonatal Characteristics. Eur J. Obstet Gynecol Reprod Biol., Vol., 62 (1): 259.**

http://www.ncbi.nlm.nih.gov/pubmed/7493703 (Accessed 18/09/2011).

Baez C., & Manzana, M, (2002): **A study to investigate the Knowledge level, Perceptions and Practices of TBAs in Relation to STI/HIV/AIDS and Assessment of their Potential Role as Health Educators.**

Balogun B. & Odeyemi K. (2010): **Knowledge and Practice of Prevention of Mother-to-child Transmission of HIV among Traditional Birth Attendants in Lagos State, Nigeria. Pan African Medical Journal, Vol., 5:7. PMCID. PMC 2984318**

Barriball, K.L.& While A.(1994): **Journal of Advanced Nursing. Vol., 19, 328-335. .**Library.wiley.com/doi/10.1111/j.1365-2648.1994.tb01088.x/abstract. (Accessed on 29/08/2012).

Bello M., Ambe, JP., Yahaya, SJ.,& Omotara BA. (2009): **Traditional Birth Attendants: Practices and Problems In Konduga Local Government Area of Borno State; North Eastern Nigeria,** http://www.ispub.cm/journalthe_internet_journal_of_tropical_medicine_volume_6_number. (Accessed on 28/03/2011).

Bergstrom A., Byaruhanga R. & Okong P.(2005): **The Impact of Newborn Bathing on the Prevalence of Neonatal Hypothermia in Uganda: a Randomized, Controlled Trial.** ActaPaediatr, Vol., 94(10): 1462-1467 (Pubmed).

Beun, M., Crook, B.,Coffey,P., & Vivien,T., (2001**): Use of the Clean Delivery Kits in Nepal districts of Siraha and Udayapur**
http://www.path.org/files/75_nepal_qual_report.pdf (Accessed on 24/04/2011).

Bloom, Engelhart, Furst, Hill, Krathwohl (1956**): Taxonomy of Education** al Objectives: Handbook 1, 'The Cognitive Domain'. Allyn and Bacon, boston, USA.

Boerma, T., Abou-Zahr, C., Bos E., Hansen P., Addal E., & Low-Beer D., (2010): **Monitoring and Evaluation of Health Systems Strengthening. An Operational Framework. Genev**a. Funded by WHO, World Bank, GAVI, Global Fund,

womennewsnetwork.net/.../doctors-campaign-for-safe-abortion-in-z. (Accessed on 31/07/2011).

Burns N. & Grove S.K. (2009): **The Practice of Nursing Research, 6th edition,** Westline Industrial Drive, St Louis, Missouri,

Butlerys M. Fowler MG, N. Shaffer, Tih PM, Greenberg AE, E. Karita, Coovadia H, & de Cock KM., (2002): **The Role of Traditional Birth Attendants in Preventing Perinatal Transmission of HIV.** BMJ Vol.324:222-225.

Central Statistical Office (Zambia), Central Board of Health (Zambia) and ORC Macro, **Demographic and Health Survey 2001-2002, Calverton, Maryland, USA; Central Statistical Office and Macro International Inc; 2003: 127-140.**

http://www.doctorguide.com/journal/trop-med-int-health).

Central Statistical Office (Zambia), Ministry of Health (Zambia), Tropical Disease Research Center, University of Zambia, and Macro International Inc, (2009), **Demographic and Health Survey, (2007); Calverton, Maryland USA. Central Statistical Office and Macro International Inc;**

Chanda, D. (2002)**; A study to Bridge the Practice-gap between Community-Based agents and Health Care Providers in Lusaka Urban, Zambia.**

Chanda, D., (2004): **An Infection Prevention Manual for Community and the Health Care Institutions in Developing Countries.** Maiden Publishing House, Lusaka, Zambia.

Chapman R., (2003): **Endangering Safe Motherhood in Mozambique: Prenatal Care as a Pregnancy risk.** Social Sciences and Medicine. Vol., 57, 355-374.

Chibombo District Health Management Board,(2005)**: MTEF Action Plan and Budget For 2005-2007**

Chulu C,.(2010): **As a traditional birth Attendant.** avillageinafrica.wordpress.com/2010/10/20/64/ (Accessed on 10/01/2013).)

Crane E., Szumowski D.,Alvarez F., Bhiromrut P.(1990): **Assessing the Acceptability of Norplant Implants in Four Countries: Findings from Focus Group Research, Studies in Family Planning:** Vol., 21: 92-103. (Cross Ref)(Med line) (Web of Science).

Cueto. M., (2004); **The Origins of Primary Health Care and Selective Primary Health Care.** American Journal of Public Health: Vol. 94, (11):1864-1874.

http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.94.11.1864 (Accessed on 03/03/2013)

Downe-Wamboldt, B. (1992), **Content Analysis Method, Application and Issues.** Health Care for women International, Vol.,13 (3):313-321. https://www.google.co.zm/search?q=downe+wamboldt+content+analysis&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a www.ncbi.nlm.nih.gov/pubmed/1399871 (Accessed on 05/04/2013).

Ekanem A. D., John, M. E., Ekott, M. E.,& Udoma, E.J.(2004): Post-partum practices among Women in Calabar, Nigeria.Trop. Doct, Vol., 34(2): 97-8.

http://www.ncbi.nlm.nih.gov/pubmed/15117138 / (Accessed on 30/04/2011).

Elinami V,S, (2005)**: The Role of TBAs in the Provision of Health Care Services in Tanzania from the Pre-colonial Period to the Present,: The Case of Chagga Women.** African Conference, African Health and Illness.

Falle, T. Y., Mullany, L.C., Thatte N. ,Khatry K, S., Leclerg, S. C. Darmstadt, G,L.,FronczakN, Arifeen SE,Moran AC, Caulfield LE, Baqui AH.(2007): **Delivery**

Practices of Traditional Birth Attendants in Dhaka Slums, Bangladesh.J health Popul Nuti,Vol., 25: 479-87 (PMC. Free article) (PubMed).

Family Health International,(1998): **Background and Impact of TBA Training in Ghana.** Research Triangle Park, North Carolina].

http://www.popline.org/node/533593. (Accessed on 05/04/2013)

Freire, Paulo, (1994): Emancipatory Education. http://books.google.com/books?Ir=&q=Paulo+Freire+rmancipatory+education&spell=I&oi=spell (accessed on 09/05/2011).

Fronczak, N., S.E. Arifeen, S. E., A.C. Moran,A. C., Caulfield, L. E. & Baqui A. H., (2007); **Delivery Practices of Traditional Birth Attendants in Dhaka Slums, Bangladesh.** J Health Popul Nutr.;Vol., 25(4): 479–487.

Gary L. Darmstadt 1, Joanne Katz1, & James M. T. (2009). Potential Role of Traditional Birth Attendants in Neonatal Healthcare in Rural Southern Nepal. . J Health Popul Nutr Vol., 27(1):53-61.
http://www.bioline.org.br/pdf?hn09007 (Accessed on 29/02/2012.).

Gender and Development Division of the Cabinet Office, (2006-2010): **The Fifth National Development Plan,** Lusaka, Zambia.

Gill J.C., Mazala G.P., & Guerina N., (2011): **Effect of Training TBAs on Neonatal Mortality(Lufwanyama Neonatal Survival Project): Randomized Controlled Study.** http://www.bmj.com/content/342/bmj.d346.full. (Accessed on 29/02/2012.).

Goodburn EA, Gazi R, & Chowdhury M (1995). **Beliefs and Practices Regarding Delivery and Postpartum Maternal Morbidity in Rural Bangladesh. Studies in Family Planning Vol., 26, 22-32.**
http://www.jsieurope.org/safem/collect/safem/pdf/s2933e/s2933e.pdf (Accessed on 12/02/2012

Graineham, U.H. & Lundman B., (2004) **'Qualitative Content Analysis in Nursing Research: Concepts, Procedures and Measures to Achieve Trustworthiness'** int.elsevierhealth.com/journals/nedt in Nurse Education Today. Vol., 24,105-112.

Green E. C. (1999): **Involving Healers. AIDS** ACTION (46) 3.

Gronlund, E.,(1981): **Measurements and Evaluation in Teaching. Macmillan, New York, USA.**

GRZ, (2005): **The Child Health Situation in Zambia. Lusaka, Zambia.**

GRZ-MOH, (2005): **A National Assessment of Emergency Obstetric Care Services in Zambia in Collaboration with the CBOH.**

Hawaii Department of education, desk review, (2011): **Programme and Fiscal Evaluation Desk Review.**

http://deskreviews.sao.k12.hi.us/STATE/SAO/DeskReviews.nst/10d1a575953d0e908a256c34001adab/a8f1c302a5a21b660a2575ac006814aa? (Accessed 31/05/2011).

Hazemba, A. & Siziya R. (2007): **Utilisation of Maternity Care Services Offered by Traditional Birth Attendants in Chongwe Rural District**. Medical Journal of Zambia, 34 (3):125-129.

Hill Z, Manu A, Tawiah-Agyemang C, Gyan T, Turner K, Weobong B, Ten Asbroek AH, & Kirkwood BR. (2008): **How Did Formative Research Inform the Development of a Home-based Neonatal Care Intervention in Rural Ghana?** J Perinatol. Suppl 2:38-45. **(Accessed 31/05/2011).**

Hill Z, Tawiah-Agyemang C, Okeyere E, Manu A, Fenty J, & Kirkwood B.(2010): **Improving Hygiene in Home Deliveries in Rural Ghana: How to Build on Current Attitudes and Practices.** Paediatr. Infect dis.j. 29(11):1004-8. www.ncbi.nlm.nih.gov/pubmed/20811311/ **(Accessed 31/05/2011).**

Horton R. (1995): **Infection and Bedside Nurse.** British Journal of Hospital Infection. Vol.24, 8.http://bmj.bmjjournals.com/cgi/content/full/324/7331/222

Humana, People To People Movement, (2006**): 2-day Workshop for TBAs. Zambia**

Inem ,V. Kanu, R. & Atere, A.(2008): **Nigerian Medical Practitioner,** Vol., 53 (6): 103-109).
www.ajol.info/index.php/article/View File/28936/38076 (Accessed on 4/09/11).

Izugbara C., Ezeh A., & Fotso J.C.,(2011): **The persistence and Challenges of Homebirths: Perspectives of Traditional Birth Attendants in Urban Kenya.** Oxford Journals Medicine. Health policy and Planning. Volume 24 (I) 36-45.
http://heapol.oxfordjournals.org/content/24/1/36.full (Accessed 18/04/2011)

JHPIEGO, (2002,): **Transfer of Learning: A Guide for Strengthening the Performance of Health Care Workers.** USAID, USA.

Jimoh, AAG., (2003): Women's Health and Action Research Center. African Journal of Reproductive Health. Vol., 7 (3): 49-54

Joint Committee on Terminology. (2001**): Report of the 2000 Joint Committee on Health Education and Promotion Terminology**. American Journal of Health Education, Vol., 32 (2): 89-103.

Jokhio, Abdul Hakeem; Winter, Heather R. & Cheng, Kar Keung, (2005): **Obstetrical & Gynecological Survey: Vol., 60 (10): 641-642.**

http://journals.lww.com/obgynsurvey/Abstract/2005/10000/An_Intervention_Involving_Traditional_Birth.11.aspx. (Accessed on 01/06/2011).

Jokhio A. H., Winter H.R., & Cheng K.K., (2005): **An Intervention Involving Traditional Birth Attendants And Perinatal.** N ENGL J MED; 352:2091-2099.

http://www.nejm.org/doi/full/10.1056/NEJMsa042830. (Accessed on 16/09/2011).

Kaluba, D. (2000): **Position Paper on Chongwe District Health Board,** Kabwe, Zambia.

Kamal,I. T. (1998): **The Traditional Birth Attendant: A Reality and a Challenge** International Journal **of** Gynecology & Obstetrics, Vol., 63, Supplement 1, (1): S43-S52

Katz, J., & Tielsch, J.M. (2009): **Potential Role of Traditional Birth Attendants in Neonatal Healthcare in Rural Southern Nepal.** J Health Popul Nutr.;Vol., 27(1): 53–61. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2650835/ (Accessed on 02/5/2011).

Kawanje B. (1995): **A Study to determine factors influencing Infection control among the auxiliary workers at the University Teaching Hospital, Lusaka, Zambia.**

Kitzinger J. (1994): **The Methodology of focus groups: the importance of interactions between research participants.** Sociology of Health and Illness; Vol., 16; 103-21.

Kruske S., & Barclay, L. (2004**): Effect of shifting policies on traditional birth attendant training** . Journal of Midwifery & Women's Health. Vol.,49,(4), 306-311 http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T7M-4C4FMND-42&_user=10&_coverDate=09%2F30%2F1985&_rdoc=1&_fmt=high&_orig=gateway&_origin=gateway&_sort=d&_docanchor=&view=c&_searchStrId=1743575622&_rerunOrigin=scholar.google&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=af47f8e7bd4c588d4d5b6c738aacc6ca&searchtype=a (Accessed on 07/05/2011)

Leedam, E., (1985): **Traditional Birth Attendants** International Journal of Gynecology & Obstetrics, 23(4):249-274

Lefeber-Mans, Yvonne H. F.(1994): Midwives Without Training: Practices, and beliefs of traditional birth attendants in Africa, Asia and Latin America. Van Gorcum & Comp. BV (PO Box 43, 9400 AA Assen, the Netherlands.

Libetwa, C. M.,(1997): **Knowledge, Attitude and Practice of Midwives on Infection Control in Maternity Units in Lusaka Urban Clinics,** University of Zambia, Lusaka.

Lindlof,T. R. & Taylor B.C. (2002): **Qualitative communication Research Methods. (2nd edition. Sage Publications. California**

Lindsay, AC., T Dubowitz, T. Andrade, FM., & Campos, JS., (2007**): Maternal Health Care Services in the State of Ceará, Northeast Brazil,** tspace.library.utoronto.ca, pristine publisher.

http://www.lusakatimes.com/2010/06/16/ministry-health-signs-fiveyear-multimillion-euro-contract-philips-electronics-detailed. (Accessed on 03/03/2013)

Madhivanan, P., Kumar, B. N., Adamson., & Krupp, P. K., (2010**): Traditional birth Attendants Lack Basic Information on HIV and Safe Delivery Practices in Rural Mysore, India. BMC Public Health Vol., 10:570**
http://www.biomedcentral.com/1471-2458/10/570 (Accessed 23/9/11).

Maimbolwa M. C. (1998): **National Evaluation of the Effectiveness of the TBA Training Programme in Achieving its Objectives Towards Meeting the National Safe motherhood Goals in six Districts (Chongwe, Kalomo, Katete, Masaiti, Serenje, and Senanga) of Zambia.**

Maimbolwa M. C. (2004): **Maternity Care in Zambia. With Special Reference to Social Support.** Reproprint AB,

Mambwe, E,(1996**): Teaching Zambian Traditional Birth Attendants to monitor growth of Infants: Evaluation of an Education Programme..http://www.deakin.edu.au/dro/view/DU:30023395.** (Accessed on 17/4/2011).

Mathole,T., Lindmark, G., & Ahlberg, B.M., (2004): **A Qualitative Study of Women's Perspectives of Ante natal Care in a Rural Area in Zimbabwe.** Midwifery 20:122- 132.

Mays N., & Pope C**. (1995): Rigour and qualitative research. BMJ; 311:109-12.**

Menown I. B et al Perinatal outcome and antenatal care in a black South African population.: ... of live infants had **booked** for antenatal care ...The Ulster Medical Journal,01 Apr 1993. http://en.dict.md/definition/booked

Ministry of Community Development and Social Services, (2003): **National Policy on Community Development,** Lusaka, Zambia. pg 5

Misago, C.,Kendall, C., Freitas, P., Haneda K., Silveira, D., Onuki, D., Mori, T., sadamori, T., & Umena, T., (2001): **From Culture of Dehumanization Of Childbirth' To 'Childbirth As A Transformative Experience': Changes In Five Municipalities In North-East Brazil.** International Journal of Gynaecology and Obstetrics. Vol.,75: 867-872.

http://www.tractionproject.org/sites/default/files/upload/respectful care/misago, 2001_Brazil'pdf. (Accessed on 24/4/2011)

MOH/WHO, (1991): **AIDSFACTS for Traditional Birth Attendants' Trainers. F**irst edition, Lusaka, Zambia.

MoH/WHO, (2005): **WHO Country Cooperation Strategy, ZAMBIA.**

MOH/CBOH/JHPIEGO/USAID, (2005), **Prevention of Medical Transmission of HIV- Injection Safety Project. Orientation for health Managers and Supervisors. Lusaka, Zambia.**

MoH, (2008): **Monitoring and Evaluation of Zambia's HIV/AIDS Response.** Reference Guide, Lusaka.

MoH, (2009): **Community Health Workers National Strategy,** MoH., Lusaka, Zambia.

MoH, NAC. WHO. & UNICEF, (2010**): National Protocol Guidelines: Integrated Prevention of Mother-to- Child Transmission of HIV. Ndeke House, Lusaka.**

MoH, (2011), **National Health Strategic Plan (2011-2015). Towards Attainment of Health-Related Millenium Development Goals and Other National Health Priorities in a Clean, Caring and Competent Environment, Lusaka.**

Mpembeni, R. M., Kilewo J.Z., & Leshbari, M. T., (2007): **Use Pattern of Maternal Health Services and Determinants of Skilled Care During Delivery in Southern Tanzania.**

Muchunu G. G & Bhengu B. R. (2004), **The knowledge and Attitudes of Traditional Birth Attendants towards HIV/AIDS and their Beliefs Related to Perinatal Care: a Study Conducted in KwaZulu Natal. Vol.,** 27(1):41-5.1

http://www.jsieurope.org/safem/collect/safem/pdf/s2933e/s2933e.pdf (Accessed on 12/02/2012)

Mugala, N., & Nwinga. K.,(2006): **Comparative Study in Integrated Management of Childhood Illnesses, Lusaka.**

Mulder S. (1995**): Midwifery in Rural India: A Study of traditional birth attendants in Tamil Nadu, India.** Aust Coll Midwives Inc J 1995, 8(1):24-30. http://www.biomedcentral.com/1471-2458/10/570. (Accessed 23/9/11).

Mwiinga , B. M.(2009), **A study to Determine the Knowledge, Attitude in Infection Prevention and Control among Trained Traditional Birth Attendants in Mongu District of Zambia**

Naish J., Brown J., & Denton B.(1994): **Intercultural Consultations: Investigations of Factors that Deter non-English speaking Women from Attending their General Practitioners for Cervical screening,**. BMJ; 309:1126-8

National Population Fund, (2003): VBA Report on Obstetric Fistula Needs Assessment Report findings. http://www.unfpa.org/fistula/docs/fistula-needs-assessment.pdf 6 (Accessed on 2 /01/2013).

Neeloy AA, Sharmin T, Ali N, Darmstadt G, Winch P, Bazzano A, Hill Z, Tawiah C, Kirkwood BR, Iyengar SD, Gary Darmstadt, Vishwajeet Kumar, Ranjana Yadav, Mathuram Santosham, Peter Winch, Diarra H, Ouattara D, Tony F, Kayo A, Sidibé D, Morrison J, Osrin D, Manandhar D, Costell A, Mohan P, Wall S, Bahl R, Martines JC: (Collaborators) (2008): **How Did Formative Research Inform The Development of a Home-Based Neonatal Care Intervention in Rural Ghana? [J Perinatol. PMID: 19057564 [Pubmed - Indexed For MEDLINE].**

Ngoma, C. M. A., (2010): **Sexual Behaviour and HIV and AIDS knowledge among Women in Zambia. University of South Africa.**

Ngoma,M.P.S., (2007); The Potential to Save Newborn Lives in Rural communities of Zambia: Results of a Randomised control Study in Mpongwe and chongwe, Zambia.
www.hciproject.org/node/2766

Ngomane S., Mulaudzi, F. M.,(2010**): Indigenous beliefs and practices that influence the delayed attendance of ante natal clinics by Women in the Bohlabelo district in Limpopo, South Africa.** Midwifery,doi:10,1016/j.midw.Vol.,11,002

Nyanzi S. (2004**): Empowering Traditional Birth Attendants in the Gambia: A Local Strategy to Redress Issues of Access, Equity and Sustainability?** CODESRIA,2. http://www.codesria.org/IMG/pdf/Chap17.pdf (Accessed on 09/05/2011).

Ofili A. N. and Sogbeson S.O. (2003): **Knowledge and Practice of Universal Precautions Among Student Nurses at a Nigerian Teaching Hospital.** African Journal of Nursing And Midwifery, Vol 5:39-43

Onjoro, E,A, (2001): **The Integration of Knowledge in Development: The Relative Authority of Western and Indigenous knowledge in TBAs Health Practices in Rural Kenya among the Luo of Migori District in Kenya.**

Patel A, Goudar S, Geller S, Kodkany B, Edlavitch S, Wagh K, (2010☺ **Where There are Few Trained Birth Attendants.** http://archvahini.org/health/training-traditional-birth-attendants. (Accessed on 04/06/2011).

Patriquin, G., (2010): **Puerperal Infection.** http://sharinginhealth.com/conditions_and_diseases/puerperal_infection.html (Accessed on 16/09/2011).

Paulo Friere, (1994), **Emancipatory Education.** http://books.google.com/books?lr=&q=Paulo+Freire+emancipatory+education&spell=1&oi=spell

Pearson, J.F., (1982**): Is Early Antenatal Booking So Important?** Br Medical Journal; Vol., 284:1064-5.

Peltzer, K., Phaswana-Mafuya, N., & Treger L.(2009): **Use of Traditional and Complementary Health Practices in Prenatal, Delivery and Postnatal Care in the Context of HIV Transmission from Mother to Child (PMTCT) in the Eastern Cape, Port Elizabeth 1, South Africa.** Afr J Tradit Complement Altern Med.; Vol., 6 (2): 155–162.

Pigg, S.L., (1973): **Authority in Translation: Finding, Knowing, Naming and Training Traditional Birth Attendants In Nepal.** Grhf: South Asia's e-journals: reproductions number. Vol.,1:70, Authority in Translation.

Pocock S. J. (1982): **Statistical Aspects of clinical trial design: The Statistician, Practical Advice in Various Issues in Study Design.**

Polit, D.F. & Hungler B.P. (1995): **Essentials of Nursing Research Methods. Appraisal and Utilisation.** Lippincott, Philadelphia.

Powney J., (1988): **Structured Eavesdropping. Research Intelligence** (Journal of the British Educational Research Foundation Vol., 28: 10-12.

Quirk R, (2003): Longman Dictionary of Contemporary English. Pearson Education limited, Harlow, England, UK..

Ransom, E. I. &. Yinger, N.V. (2002): **Making Motherhood Safer, Overcoming Obstacles on the Path.**

Sambo G,L, (2005): **African Traditional Medicine; Contributing to preventing HIV infection."** Message of the WHO Regional Director, on the Occasion of the Third African Traditional Medicine Day. http://www,afro.who.int/regional director/speeches/rd20050831.html

Sharana, M, Ahmed, S., & Ghebrehiwet, M.,(2010): **Costs And Cost-Effectiveness Of Training Traditional Birth Attendants To Reduce Maternal Mortality. Learning Lessons From a Traditional Midwifery Workforce In Western Kenya.** Royal Tropical Institute. **extranet.kit.nl/-/EXT/73/728.html http://www.google.co.zm/url/?** (Accessed on 26/01/2013).

Sharana, M, Ahmed, S., & Ghebrehiwet, M.,(2011): **To Determine whether Traditional Birth Attendants Trained via the SMART Dai were Effective in Coping with Shortage of Staff, High Work Load, Low Salaries and Insufficiency of Working Equipment. International Journal of Gynecology & Obstetrics**.

Sibley, L.M, & Sipe T.A, (2004): **Training TBAs linked to small but significant reduction in newborn mortality,** Journal of Midwifery., Vol., 20 51-60, Elsevier Science Publishers. London, England.

Sibley L.M & Sipe T.A, (2006): **Transition to Skilled Birth Attendance: Is There a Future Role for Trained Traditional Birth Attendants?** J Health Popul Nutr.vol., 24 (4): 472–478.

Silupumbwe, J., (2006): **THPAZ: Building Health Equity Through the Involvement of Traditional Healers and Remedies in Prevention and Care for HIV/AIDS Traditional Health Practitioners.**

Stamatopoulou, (2007): **Cultural Rights in International Law.** pp 258 ISBN 978900415721: Leidon, Boston.

Swai, E., (2011), **Forgotten Voices, Knowledge Creation and Gender Relation in Tanzania**

http://www.general.assembly.codesria.org/IMG/pdf/Elinami_Swai.pdf (Accessed on 01/03/2012).

Sule S. S, & Onayade A. A,(2006): **Community-based Antenatal and Perinatal Interventions and Newborn Survival. . Niger J Med; Vol., 15 (2):108-14.**

Swai E.V.S, (2005)**: The Role of TBAs in the Provision of Health Care Services in Tanzania From the Pre-Colonial Period to the Present: The Case of Chagga Women.** African Conference, 2005: African Health And Illness.

Swai, E., (2011), **forgotten Voices, Knowledge Creation and Gender Relation in Tanzania. http://www.general.assembly.codesria.org/IMG/pdf/Elinami_Swai.pdf**

(Accessed on 01/03/2012.

Swist J. (2004): **Conducting a Training Needs Assessment. AMX International Incorporated, USA. http://wwwamxi.com/amx_mi30.htm** (Accessed 11/10/2004).

TashkoriA. & Crewell,J. (2007).The new era of mixed methods. Journal of Mixed Method Research: Vol., 1: 3-7.

Syed U, Khadka N, Khan A, Wall S(2008): **Review Care-seeking Practices in South Asia: Using Formative Research to Design Program Interventions to Save Newborn Lives. . J Perinatol. Vol; 28 Suppl 2:S9-13.**

Tashkori & Creswell, (2007); foundations of Mixed method Research. SAGE Publications Inc, Thousand Oaks, California,USA. http://books.google.co.zm/books?hl=en&lr=&id=XvMAYYvS1rEC&oi=fnd&pg=PT1&dq=Tashakkori+%26+Creswell,+2007+Mixed+method+research.&ots=hMxoHJ3pMr&sig=5sgiDItNpYI6WwlFMbh8w1JaR0w&redir_esc=y (Accessed on 03/03/2013)

Thatte, N.,Mullany, L. C., Khatry, L.C., Tielsch, J. M., & Darmastadt G.L. (2009): **Traditional birth Attendants in Rural Nepal: Knowledge, Attitudes and Practices about Maternal and Newborn Health.** Global Public Health:Vol; 4(6): 600-17.
http://www.ncbi.nlm.gov/pmc/articles/PMC2762492/ (Accessed on 23/04/2011).

Trollope-Kumar K: (2002): **The Traditional Birth Attendant in Garhwal, India: Towards a Culturally Relevant Training Program.** Canadian Journal of Midwifery Research and Practice. http://www.biomedcentral.com/1471-2458/10/570 (Accessed 23/9/11)

Tura,G.,(2007): **Antenatal Care service Utilisation in Metekel. Ethiopia.** Journal of health Sciences, Vol., 19..(2): 111-117. http://www.ejhs.ju.edu/admin/Volume-19-2/ANC%20corrected%5B1%5D,pdf. (Accessed on 23/04/2011).

Umar U.S, Olumide E. A & Bawa S. B, (2003): **Village Health Workers' and Traditional Birth Attendants' Record Keeping Practices in Two Rural LGAs in Oyo State, Nigeria.** Afr J Med Med Sci. Vol., 32 (2):183-92.

United Nations Population Fund. (1996): **Evaluation of findings, Office of Oversight and Evaluation. Support to Traditional birth Attendants.**

UNICEF. (2004): **What works for children in South Asia. Newborn Care: An Overview. www.unicef.org/rosa/Newborn.pdf** (Acessed on 04/09/2011).

Verderese, M.D.& Turnbull L.M., (1975): **The Traditonal birth Attendant in Maternal child health and Family Planning: A Guide to Her Training and Utilisation.** WHO. Geneva. http://wholibdoc.who.int/offset/WHO_OFFSET_18.pdf/ (Accessed on 1/05/2011).

Walraven G. & Weeks A, (1999): **The Role of Traditional Birth Attendants with midwifery skills in the reduction of maternal mortality.** Tropical Med Int. Health Vo., 4:527-529

Wanyu, B.A., Diom,E., Mitchel, P., Tih, P. M. & Meyer, D.J., (2007): **Birth Attendants Trained in "Prevention of Mother-to-Child HIV Transmission" Provide Care in Rural Cameroon, Africa.** J Midwifery Womens Health Vol., 52:334–341. **T**he American College of Nurse-Midwives.
http://www.cbchealthservices.org/html/JMWH%20LAP%20PMTCT%20Pub..pdf (Accessed on 02/05/2011)

Warzazi E. H., (1991): **Economic and Social Council. Report of the United Nations Seminar on Traditional Practices Affecting the Health of Women and Children,** Ouagadougou, Burkina Faso, Vol.,12 and Vol.,46 .(E/CN.4/Sub.2/1991/48)

Warzazi E. H., (1991): **Economic and Social Council. Report of the Working Group on Traditional Practices Affecting the Health of Women and Children.** 4 February Vol., 50. (E/CN.4/1986/42)

Warzazi E. H., (1991): **Economic and Social Council. Study on Traditional Practices Affecting the Health of Women and Children; Final Report by the Special Rapporteur**, Vol., 39 (E/CN.4/Sub.2/1991/6).

Whaley, L. F., & Wong, D.L.(1985**): Essentials of Paediatric Nursing**,

WHO/UNFPA/UNICEF Statement, (1992): **Traditional Birth Attendants. Geneva, Switzerland. Pg 1-17.**

World Health Organisation, (1998): **Care of the Umbilical Cord. A Review of the Evidence. WHO Reproductive Health (Technical Support). Maternal and Newborn Health/ Safe Motherhood, Geneva.** https://apps.who.int/rht/documents/MSM98/4/MSM-98-4.htm. (Acessed on 24/04/2011).

WHO, (2008), **Draft Checklist for Developing a Monitoring and Evaluation Plan for Malaria Control: Malaria Control Unit, Division of AIDS, Tuberculosis and Malaria, Geneva.**

WHO, (1998): **List of Basic Terms. Health Promotion Glossary.** (pp. 4).http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf (Accessed on 17/04/2011).

WHO, (2003): **Pregnancy, Childbirth, Post partum and Newborn Care** http://www.who.int/Reproductive Health (Accessed on 28/04/2011).

WHO, & Evans T. (2004): **Towards a Scientific Basis for Health Systems:** World Report for Knowledge on Better Health.

WHO, (2007): **WHO Guidelines on Hand Hygiene in Health Care** (http://www.who.int/patientsafety/information_centre/Last_April_versionHH_Guidelines%5B3%5D.pdf. (Accessed on 28/04/2011).

WHO, (2011); **Statistical Information System,** Geneva, Switzerland. http://www.who.int/whosis/indicators/2007MortNeoBoth/en/index.html (Accessed on 28/05/2011).

Williams,M., (1986): **Training Local Midwives. Guidelines for Health Workers in Developing Countries. Catholic Institute for International Relations. London, England.**

Yousuf, J., Mulatu T., Nigatu, T.,& Seyum D., (2010): **Revisiting the Exclusion of Traditional birth Attendants from the Formal Health sector.** AMREF Discussion paper series, N0:003/.
http://www.amref.org/silo/files/amref-discussion-paper-0032010.pdf (Accessed on 09/05/2011).
http://sites.google.com/site/tcsdcurriculumcenter/home/from-deb-s-desk-1 (Accessed on 09/05/2011).

Yinger N.V. & Ransom E. I., (2002): **Making Motherhood Safer: Overcoming Obstacles on the Pathway to Care.** Population Reference Bureau, Measure Communication, Washington.

Zambia Demographic Health Survey, (1992); University of Zambia, Central Statistics Office, Demographic and Health Surveys Macro International Inc, 1993 Columbia **Maryland USA.**

ZIHP (2000**): Traditional Birth Attendants Training Curriculum,** Lusaka, Zambia.

Zimmerman M., Haffey J, Crane E, Szumowski D, Alvarez F, Bhiromrut P, Brache V, Lubis F, Salah M, & Shaaban M, (1990**): Assessing The Acceptability Of Norplant Implants In Four Countries: Findings From Focus Group Research, Studies in Family Planning**: Vol.,21: 92-103. (Cross Ref)(Med line) (Web of Science).

APPENDIX A:

ABSTRACT

THE IMPACT OF USING A MODIFIED MINISTRY OF HEALTH TRADITIONAL BIRTH ATTENDANT TRAINING CURRICULUM ON THE INFECTION PREVENTION KNOWLEDGE, PRACTICE AND ATTITUDE OF TRADITIONAL BIRTH ATTENDANTS IN CHONGWE DISTRICT OF ZAMBIA.

By Dorothy O. Chanda.MPH., BScN., RM, RN. (March, 2013).

Introduction

Poor infection prevention practices have been reported among Traditional Birth Attendants (TBAs) in Lusaka province in Zambia. High maternal and infant infection rates of 20% and 27.3%, respectively, among deliveries by TBAs were reported in Chongwe. Meanwhile, in Mpanshya, maternal and infant infection rates were 21% and 27%, respectively. These infection rates can be reduced if TBAs are well-trained. The objectives of the study were to compare the impact of a modified Ministry of Health TBAs training curriculum on the infection prevention knowledge, practice and attitude of TBAs on the infant and maternal infection rates before and after the intervention in Chongwe District.

Material and Methods

The study design was a quasi-experimental study. Both qualitative and quantitative data were collected. Focus group discussions were used to collect qualitative data, while a semi-structured interview schedule was used to collect quantitative data. The study was conducted between 31st January 2008 and 6th March 2009. Data analyses included running frequencies, determining associations using the Pearson's Chi-square, and conducting a multivariate logistic regression analysis. The level of statistical significance was set at 5%.

Results

Totals of 238 study participants at baseline and 207 during the intervention phases were enrolled into the study. Results showed that approximately 98 (41.1%) of the study participants were aged 30-43 years. The study showed that 36 (30.3%) and 66 (55.5%) of the participants in Mpanshya and Chongwe, respectively, attained

secondary education during baseline (P<0.001), while 33 (33%) in Chongwe compared to 19 (17.8%) in Mpanshya attained secondary education during the training phase (p=0.032).

At pre-course, a higher proportion of participants 38 (31.9%) in Chongwe had inadequate knowledge than 2 (1.7%) in Mpanshya (p=0.001). However, after the post course, a higher proportion of participants in Chongwe 76 (76.0%) had excellent (62-82 correct responses) infection prevention knowledge compared to 0 (0%) in Mpanshya (p=0.001).

At pre-course, a higher proportion of participants in Mpanshya had satisfactory practice than in Chongwe (p=0.017). However, after the post course, a higher proportion 32 (32%) of participants in Chongwe had significantly (p=0.001) excellent practice (49-59 correct responses) more than the participants in Mpanshya where no participants had excellent practice.

At both pre and post course all the study participants had good attitudes (measured by scoring 4-8 correct responses) towards the care of the mothers and the babies and after the intervention only 1 (0.9%) of participants in Mpanshya had poor attitude while the rest in Mpanshya and all of them in Chongwe had good attitude.

During pre-intervention, 32 (26.7%) of the 120 babies in Mpanshya had infections compared to 18 (27.3%) of the 66 babies in Chongwe. However, during the monitoring and evaluation phase, 2 (1.5%) of the 131 babies in Mpanshya had infections (p<0.001), while no infections were recorded among 147 babies in Chongwe (p<0.001).

About 1 in 5 mothers in both sites had infections before the intervention 25 (20.8%) of 120 mothers in Mpanshya, and 13 (19.7%) of 66 mothers in Chongwe). However, during the monitoring and evaluation phase, the maternal infection rates reduced to 23 (17.5%) of 131 mothers in Mpanshya (p=0.618), and to 9 (6.1%) of 147 mothers in Chongwe (p=0.006).

Conclusion:

The increase in infection prevention knowledge, good practices and attitudes among the intervention TBAs may have been due to the impact of the training intervention. The infant infection rates reduced in both sites during the study. While no significant change in rates of maternal infection before and after the intervention was observed in Mpanshya, there was a significant reduction in maternal infection rate in Chongwe. This may have been due to the impact of training the intervention TBAs using the modified MoH TBA training curriculum. Although training the intervention TBAs using the modified MoH TBA training curriculum reduced maternal and infant morbidity rates in Chongwe district, it remains to be seen how it would perform in other settings.

APPENDIX B

The University of Zambia

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Telephone: 260-1-290258 Ext 2208
Fax: +260-1-290258
E-mail drgs@unza.zm

P O Box 32379
Lusaka, Zambia

30th August, 2012

Mrs. Dorothy Osigwe Chanda
School of Medicine
Department of Community Medicine
P. .O. Box 32379
LUSAKA

Dear Mrs. Chanda,

LETTER OF COMMENDATION

On behalf of the Directorate of Research and Graduate Studies, am pleased to congratulate you for b awarded a prize as second best Poster presenter (Doctor of Philosophy category) at the Postgrad Seminar Week held on 21st March, 2012 at the University. The topic of the presentation was " **The Impa Modified the Ministry of Health Traditional Birth Attendant (TBA) Training Curriculum on the Infe Prevention Knowledge, Practice and Attitude of Traditional Birth Attendants in Chongwe District of Zamb**

You should keep up the good work.

Prof. I. A. Nyambe
DIRECTOR

cc Dean, School of Medicine
Assistant Dean (Postgraduate), School of Medicine
Head, Department of Community Medicine
Assistant Registrar (Graduate Studies)

APPENDIX C

MEDICAL JOURNAL OF ZAMBIA
Published for Health

Editorial Office
Department of Medicine
Head of Department
University Teaching Hospital
Lusaka
Email: medjzambia@yahoo.com / medjzambia@unza.zm

3rd August 2012

Mrs Dorothy O Chanda,
Department of Nursing Sciences,
School of Medicine,
University of Zambia,
Lusaka.

Dear Mrs Dorothy O Chanda,

RE: THE PROCESS OF PRODUCING THE MODIFIED MINISTRY OF HEALTH (MOH) TBA TRAINING CURRICULUM

This serves to inform you that article titled **"THE PROCESS OF PRODUCING THE MODIFIED MINISTRY OF HEALTH (MOH) TBA TRAINING CURRICULUM"** has been published in Volume 37 Number 3, 2010 of the *Medical Journal of Zambia.*

We thank you for your support to the *Journal.*

Yours sincerely,

Dr. John S. Kachimba,
EDITOR- IN-CHIEF- *MEDICAL JOURNAL OF ZAMBIA.*

C.c file

APPENDIX D

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

Telephone: 252453
Telegrams: UNZA. LUSAKA
Telex: UNZALUZA 44370
Fax: +260-1-250753
E.mail: dchandaa@yahoo.com

P.O. Box 50110
Lusaka, Zambia

20/07/05

The District Director of Health
Chongwe District Health Management Board
P. O. Box 25
Lusaka.

ufs. Head of Department
Dept of Community Medicine
School of Medicine,
UNZA.

Dear Sir,

REQUEST FOR PERMISSION TO COLLECT DATA AND TRAIN TBAs FOR A STUDY
on 'THE IMPACT OF A MODIFIED TBA TRAINING MODULE ON INFECTION PREVENTION KNOWLEDGE, PRACTICE AND ATTITUDE OF TRADITIONAL BIRTH ATTENDANTS IN CHONGWE DISTRICT.'

I am a PHD student at the school of Medicine, Department of Community Medicine of the University of Zambia.

I am required to carry out a study for the fulfilment of the award of the PHD Degree in Community Health /Public Health.

My topic is as stated above The study population will be women who have delivered other women at home in the last six months in Mphanshya and Chongwe. Iam , therefore requesting for your permission to commence this study in your District.

The Research and Ethics committee of the School of Medicine of the University of Zambia has approved the above study on the 07/08/07.. This letter serves to inform

you that I intend to start collecting data as well as training the Traditional Birth Attendants chosen by their Communities.

Thanking you in advance for your kind co-operation.

Yours Sincerely,

Dorothy Chanda (Mrs.)

APPENDIX E

APPENDIX E

All Correspondence should be addressed to the Permanent Secretary
Telephone: +260 1 253040/5
Fax: +260 1 253344

REPUBLIC OF ZAMBIA
MINISTRY OF HEALTH

In reply please quo

No.....

NDEKE HOU
P. O. BOX 302
LUSAKA

26/06/08

Dr. Mwinga,
Center for Disease Control,
Lusaka,
Zambia.

Dear Dr. Mwinga,

Re: MRS. DOROTHY CHANDA'S STUDY ON THE IMPACT OF A MODIFIED MOH TBA TRAINING CURRICULUM ON THE INFECTION PREVENTION KNOWLEDGE, PRACTICES AND ATTITUDE OF TBA IN CHONGWE DISTRICT.

This serves to confirm that the Ministry of Health is in full support of the above study as it impacts on the Ministry's Reproductive Health Program. The MoH has sponsored one group of the Training of the TBAs in-order to show our commitment to the above study.

Yours Faithfully,

Dr. Victor M. Mukonka
Director Public Health and Research
For/PERMANENT SECRETARY
MINISTRY OF HEALTH

APPENDIX F

THE UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICENE

DEPARTMENT OF COMMUNITY MEDICINE

QUESTIONNAIRE (INTERVIEW SCHEDULE)

BASELINE DATA ON POSTPARTUM INFECTION AMONG MOTHERS AND BABIES IN CHONGWE DISTRICT.

Date of interview_____

Serial number_____

INSTRUCTIONS TO THE INTERVEWER

1. Introduce yourself
2. Explain purpose of interview
3. Ensure no names or address of respondents will be written down
4. Ensure respondents are free when answering questions throughout the interview and explain assurance of confidentiality and anonymity.
5. Tick in the space provided and fill in the space provided according to responses.

1. How old are you?

.15 – 19 years

20 – 29 year

30 – 39 years

40 – 49 years

2. How old where you on your last birthday?

_____

3. How many children do you have?

1.1 – 2

2. 3 – 4

3. 5 – 6

4. Others , specify _____

4. How old is your last child?

1. 1 – 2 months
2. 3 – 4 months
3. 5 – 6 months

5. Who assisted your delivery on the last child?

1. Trained traditional birth attendant
2. Non trained traditional birth attendant
3. Self

6. Are you related to the person who assisted you?

1..Yes

2. No

7. If the answer to question 6 is yes, what is the relationship?

1.Grandmother

2.Aunty

3. Sister

4. mother

5. others, specify _____

8. Did you experience any problems after delivery?

1.Yes

2.No

9. If the answer is yes to question 8, what problems did you experience?

1.Lower abdominal pain on and off

2.fever

3.constant lower abdominal pains

4.foul smelling discharge

5.others, specify

---

10. How long did it take for you to start experiencing the problem?

1.1 - 4 days after delivery

2. 5 – 8 days after delivery

3. 9 -12 days after delivery

4.. 13 days and over _____

11. Did the baby experience any problems?

1.Yes

2. No

If the answer is yes to question 11, what problems did the baby experience?

1. Redness at the umbilicus
2. Purulent discharge from the umbilicus
3. Fever
4. Eye infection

5. Others, specify

12. How long did it take for the baby to start experiencing the problem?

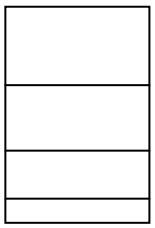
1.1 - 2 days after delivery

2.3 – 7 days after delivery

3. 8 – 14 days after delivery

4.15 -21 days after delivery

5. Others, specify _____



END OF QUESTIONNAIRE

THANK YOU

APPENDIX G

THE UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICENE

DEPARTMENT OF COMMUNITY MEDICINE

QUESTIONAIRE NUMBER _____

NAME OF INTERVIEWER_____

DATE OF INTERVIEW _____

LOCATION_____

_____

_____

CLINIC/CATCHMENT AREA _____

INSTRUCTIONS

- Explain the purpose of the study in the local language to the respondent.
- Do not write the name of the respondent on the questionnaire
- Guide the respondent to answer all the questions
- Put the letter 'x' in the box (es) next to the respondents choice
- Use pencil in marking in the box (es) provided
- Explain that all responses will be held in the strictest confidence.
- Ask the questions provided and write down the answers
- Do not suggest answers or criticize whatever the respondent says

- Be flexible.
- One question may lead to other questions, which are not listed.

Demographic Data

1. What is your age? ☐

2. What is your educational level?

1.Never been to school ☐

2.Primary ☐

3.Secondary ☐

4.Tertiary ☐

3.Can you read and write in English and your local language?

1 Yes ☐

2. No ☐

4. Where do you live? _____

5. What is the name of your village? _____

6. Are you married? 1. Yes ☐

2. No ☐

7. How many children do you have? ☐

8. Are you a grandmother?

1. Yes ☐
2. No ☐

9. Are you a tTBA?

1. Yes ☐
2. No ☐

10. Have you ever delivered a baby at home?

1. Yes ☐
2. No ☐

11. Who did you deliver?

1. A daughter ☐
2. A niece ☐
3. A neighbor ☐
4. A friend ☐
5. An aunt ☐
6. A sister in law ☐
7. A daughter in law
8. Others specify _____

12. How many house holds are there in your community ☐☐☐

13. How many women of child bearing age are in your community ☐☐☐

14. How many women do you deliver in a week? ☐☐

15. How many women do you deliver in a month? ☐☐

16. How many women do you deliver in a year? ☐☐

17. Do you have any other jobs besides delivering babies in the village?

1.Yes ☐

2. No ☐

18. If yes, what else do you do? _____

_____

19. How does the community reward you for the job you do?

_____

20. Does your husband support you working as a TBA?

1.Yes

2.No ☐

21. If yes, state how? _____

_____

22. If no, give reasons?

_____

_____

_____

_____

Pre-and Post Course Questionaire

Interview Schedule for TBAs

Knowledge questions

23.Do you boil any of the equipment you use while delivering a woman in labour

1. Yes ☐
2. No ☐

24.Why do you boil the equipment you use when delivering a woman in labour

_____

_____

_____

25. Why do you decontaminate and clean the equipment before boiling them. (ku paya na kuchosa tu doyo to leta matenda),

_____

_____

_____

26. For how long should the equipment be boiled?

1 minute, ☐

10 minutes ☐

20 minutes ☐

30 minutes ☐

27. Describe how the equipment should be cared for after boiling

by ticking the correct answer.

1.Store away after washing

2. Dry and store in a covered dish and boil again before use.

28.Describe how you would keep the equipment free from germs

28a before boiling_____

_____

_____

28b after boiling_____

_____

_____

_____

29.Do you know the cultural practices that are related to pregnancy, labour and post partum period?

1.Yes

2.No

30.If yes, describe the cultural practices related to:

Pregnancy_____

_____

_____

_____

_____

Labour/delivery_____

_____

_____

_____

Postpartum_____

_____

_____

_____

31.Do you know that some women may drink some herbal concoctions before labour starts to facilitate labour?

1.Yes ☐

2.No ☐

32.If yes, at what stage in their pregnancy do they start taking this herbal drink?

1.6 months ☐

2.7 months ☐

3.8 months ☐

4.9 months ☐

33. In your local language, list the contents of what they drink?_____

_____

34.What are the dangers that may occur during pregnancy?

1.Bleeding ☐

2..Breaking of the bag of waters ☐

35.Why is bleeding during pregnancy dangerous?_____

_____

_____

36.What are the types of bleeding that may occur during pregnancy?

1.Spontaneous bleeding ☐

2.Induced bleeding ☐

37.What dangers are associated with bleeding during pregnancy?

1.May cause death of mother and baby ☐

2.May cause uterine infections if the TBA does the vaginal ☐

examinations through which she may introduce germs

38.As a TBA, do you know that the Reproductive Health policy does not allow you to do vaginal examinations so as to prevent introducing infections in the mother?

1.Yes ☐

2. No ☐

39.Why is the "bag of waters" important for both the mother and the baby?

1.It gives baby water to drink ☐

2.It absorbs shock from the outside ☐

3.It protects mother and baby from germs ☐

40. What may happen to the mother and the baby if the "bag of waters" break before term?

1.Baby will not have waters to drink ☐

2.The mother will become dehydrated ☐

3.The mother may go into shock ☐

4.The cord may prolapse ☐

5.Infections may go inside the mothers uterus

41. How many hours you can wait for the birth of the baby after the water bag breaks before you may refer your client to the next level of care?

1. After 4 hours ☐

2. do not know ☐

42. How you can tell when the "bag of waters" become infected?

1.Abdominal pains ☐

2.Fowl smelling vaginal discharge ☐

3.Back pain ☐

43. Do you know how to prevent infection before the mother goes into labour after the water has broken before the delivery of the baby?

1.Yes ☐

2.No ☐

44.Do you know that the baby's cord can get infected after delivery?

1.Yes ☐

2.No ☐

45.Describe the advice you will give the mother about how to care for the umbilical cord after delivery?

1. Put cow dung on it ☐
2. Put baby powder on it ☐

Clean with boiled cooled water in the absence spirit or gentian violet and leave it exposed ☐

3. Clean with water and leave it exposed. ☐

46..State the number of days the cord takes to dry and fall off if it is not infected?

1. 1-3 days ☐
2. 4-7 days ☐
3. Over 9 days ☐

47 Do you know how an infected umbilical cord looks like?

1.Yes ☐

2.No ☐

48.If yes, describe the signs of an infected umbilical cord_____

_____

_____

_____

49..Do you know that you should refer a mother whose baby's cord is infected to the health center?

1.Yes ☐

2. No ☐

50. Do you know what to do when an umbilical cord is infected

1.Yes ☐

2. No ☐

51. Can a perineal tear get infected after delivery?

1.Yes ☐

2. No ☐

52.How does a perineal tear get infected in your client?

1. Yes ☐

2. No ☐

53.Do you know how to care for a baby who did not breath properly at birth?

1. Yes ☐

2. No ☐

54.Describe what you know and do in case a baby did not breathe properly?

1. Shake the baby ☐
2. Turn the baby upside down ☐
3. Put gauze over baby's mouth and blow air into its mouth ☐
4. Stroke the soles of the baby's feet to stimulate breathing ☐

55. Do you know how to care for the baby after it has been delivered?

1.Yes ☐

2. No ☐

56. Are you aware that you can pass on some infections to the baby by carrying out this procedure on the baby?

1. Yes ☐

2. No ☐

57.List the five infections you know that a TBA can pass on to the baby?_____

_____

_____

_____

_____

58.Do you know that the uterus can get infected after delivery?

1.Yes ☐

2. No ☐

59.If yes, why do you think the uterus gets infected?

_____

_____

_____

60. List the signs and symptoms of Puerperal infection.

1.Constant lower abdominal pain ☐

2.High fever ☐

3.Abdominal pain that comes and goes ☐

4.Very bad back pain

5. Dark coloured vaginal discharge ☐

6. Pus

7.Burning sensation during urination.

8.Continued bleeding

61. Do you know the traditional practices and customs that can put the mother at risk of infections during labour, delivery and post partum period.

1.Yes ☐

2. No ☐

62. If yes, circle the right answers

1. By inserting herbs into her vagina after delivery ☐

2.By sitting in cold water with herbs that are not properly cleaned ☐

63.Circle which of these infections may occur during the puerperal period

1.Swelling on both legs with pain ☐

2..Pain or bleeding when passing urine ☐

3.Very bad pain in the back ☐

4.High fever ☐

5..Severe abdominal pain ☐

6..Fowl smelling vaginal discharge ☐

7..burning sensation when passing urine ☐

8..Swelling and tenderness in one leg ☐

64.Do you know that women can get easily infected during the early post partum period because the cervix is still open and so bacteria can easily enter the uterus and cause infection?

1.Yes ☐

2.No ☐

65.If yes, tick the correct answer (s)

1..By having sexual intercourse within 6 weeks after delivery ☐

2.By using dirty clothes as pads after delivery ☐

3.By not changing the cloth frequently after delivery ☐

4..By sitting in cold water from infected shallow wells ☐

66. Can the breast get infected after delivery?

1.Yes ☐

2.No ☐

67. If yes, describe how you can tell when the breast gets infected?

_____

_____

_____

_____

Practice questions

68a. Did you wash your hands before utting on your gloves, delivering your client and afterwards?

1.Yes ☐

2. No ☐

68b Did you help the client to deliver the baby fast by pushing out the baby by putting your foot between your clients' legs?

1.Yes ☐

2. No ☐

69. Describe how you helped your client to deliver the baby?

_____

_____

_____

_____

70. what do you use to tie the cord after delivery?

1.Use of cord ties in the CDK ☐

2.Cut pieces from chitenge material ☐

3.Use of local tree bark ☐

71. What did you use to cut the cord?

1.New blade which was not boiled ☐

2.New blade which was boiled ☐

3.Old blade which was not boiled ☐

4. Old blade which was boiled ☐

5.Old scissors, which was not boiled ☐

6. Old scissors, which was boiled ☐

7. Umbilical cord scissors, which was not boiled from the CDK ☐

8. Umbilical cored scissors, which was boiled from the CDK ☐

72.Did you care for the cord after the baby was born?

1. Yes ☐

2. No ☐

73.If yes, describe what you did.

_____

_____

_____

74.What did you do to the cord that was still attached to the "after birth".

1.Left it hanging ☐

2.Left it touching the floor ☐

75.From experience, how long does "after birth" take to deliver after the birth of the baby? _____

76.What do you do to deliver the "afterbirth" _____

77.How do you help your client to deliver the "after birth"?

1.Put a cooking stick in her mouth, which makes her want to vomit. ☐

2.. Make her go on her knees and then advice her to cough ☐

3. Make her go on her knees and sit on her back and slide down on her back. ☐

Others specify_____

78. What do you do with the “after Birth” after it is delivered?

1. Throw it into the bush ☐
2. Throw it down pit latrine ☐
3. Bury it in the ground ☐
4. Burn the placenta ☐

79. Do you clean your client after the “after birth” comes out?

1. Yes ☐
2. No ☐

80. If yes, describe how you clean her.

_____

_____

_____

_____

81a. Describe what you do when an instrument you use for delivery falls down.

1. Pick it up and use it again ☐
2. Pick it up, wash it clean it with spirit and use it again ☐
3. Pick it up, wash it, boil it, cool it with boiled cooled water and use it again ☐

81 b. when the bag of water breaks and splashes on your face and eyes

1. Wipe it with a chitenge ☐
2. Wipe it off with your hands ☐
3. Wash your eyes with cooled boiled water ☐
4. Wash eyes and report to the nearest health center. ☐

82.Do you check for perineal tear, which may occur during the delivery?

_____

_____

_____

83. How do you advice her to keep her birth canal clean after delivery?

1.Bath once a day and wash in between her legs ☐

2. Bath twice or three times a day and wash in between her legs ☐

3.Wash in between her legs with cold water and added salt ☐

84..When was the baby bathed after delivery?

1.Immediately after delivery of the baby ☐

2.After the delivery of the placenta ☐

3.After the cleaning of the mother after the delivery ☐

4.The next day after the baby was delivered ☐

85.Did you cover the baby with clothes after it was born?

1.Yes ☐

2.No ☐

86..If yes, give reasons for your answer?

_____

_____

_____

87.What do you advice your clients to use as pads to use after delivery?

1.A sanitary towel ☐

2.A piece of improvised cloth ☐

3.A piece of towel ☐

4.Others specify ☐

88.If your client uses a piece of cloth as a pad, describe how you advise them to keep it clean and hygienic

_____

_____

_____

89.As a TBA, what would you do to your client with infection after delivery?

1.Leave her to rest at home ☐

2. Take her to the traditional healer who is a woman ☐

3.Massage her with warm water ☐

4. Give her water to drink or other foods ☐

5.Give her home made medicine to drink ☐

6.Refer her to the nearest clinic

90. What advice would you give your clients on breast-feeding after delivery?

1.Express the first milk and throw it away ☐

2.Put baby on breast as it makes the uterus hard and encourages blood clots to come out ☐

3.It also encourages bonding between mother and baby ☐

91.Do you advice your mother against prevention of mother to child transmission of HIV/AIDS?

1.Yes ☐

2.No ☐

92.Describe what you tell her? _____

_____

_____

_____

_____

93.What advice would you give the mother regarding breastfeeding the baby if she is HIV positive?

1.Stop breastfeeding ☐

2.Put baby on bottle feeds if you can afford it ☐

3.Continue breast feeding as usual ☐

94.Give reasons for the advice you give?

_____

_____

_____

_____

95.Do you visit your clients the day after delivery?

1.Yes ☐

2. No ☐

96.If yes, list the reasons you visit them

1. Check if they are bleeding too much ☐

2. Check if she has fever ☐

3. Check if she is resting according to tradition ☐

4. Advise her to abstain from sex for up to 4 weeks after delivery ☐

5. Advise her to attend post natal clinic after 6 days, and 6 weeks. ☐

6. Advise her on the importance of breast-feeding the infant ☐

7. Counsel them on PMTCT

97.List what you carry when you visit your client who has had a baby.

_____

_____

_____

_____

_____

_____

98.Describe the things you do when you are checking the new born baby

_____

_____

_____

_____

_____

99..What would you do if you find the baby is

- Taking quick and shallow breadths or struggling to breadth

_____

_____

- The baby has a sunken or depressed fontanel

_____

_____

- The baby has a swollen fontanel

_____

_____

- The baby's umbilicus is bleeding

_____

_____

_____

- The umbilicus is red, swollen, is discharging pus or is foul smelling

_____

_____

- The baby is stiff or is fitting or has tight clenched jaw

_____

_____

- The new born baby is sleeping for a long time

Attitude Questions

100. Describe what you think and feel if you do not get called for a delivery for a long time

Happy ☐

Sad ☐

Feel like not being used ☐

101. Describe your feelings when you get called for a delivery?

_____

_____

_____

_____

102. What do you believe is the importance of you being called to deliver a mother in an emergency.

_____

_____

_____

_____

103. How do you intend to prepare mothers to make arrangements for their deliveries

_____

_____

_____

_____

104.After delivery, do you mind the length of hours you stay with your client?

1.Yes ☐

2.No ☐

105..If yes, state how long you intend to stay with them after delivery.

1.1-3 hours ☐

2. 4-6 hours ☐

3. over 7 hours ☐

106. Do you believe that you can improve the health of the mothers and the babies you deliver?

1 Yes ☐

2 No ☐

107 If yes describe how you intend to achieve this belief.

_____

_____

_____

Appendix H

FGD Guide for, TBAs, TBA clients, health center staff-(the t TBA Supervisors midwife, nurse- midwife),

For tTBAS

1a. Discuss the work that you do in your village.

b.. Describe the traditional, cultural practices and norms relating to the care of the puerperal woman?

c. Do you keep any records of the work that you do?

d. Who supervises your work in the village?

e. Do you face any difficulties as you carry out your work?

For TBA clients

2. What can you say about the way the tTBA looked after you after delivery?

Thank you for a fruitful discussion.

Appendix I

Research Budget

Item and quantity	**Unit cost**	**Total Cost**
Training		
Visual Aids		
A flexible obstetric doll (foetus) x 3	K4,200,000 x 3	K12,600,000
A gynaecoid pelvis x 3	K600,000 x 3	K1, 800,000
Placenta with cord	K200,000 x 3	K600,000
Development process of uterus x 3		
____Subtotal_____		**K15,000,000____**
****Visual AIDS may be donated**		
TBA Curriculum Development workshop		**K5,000,000**
Training materials		
Flip Chart Stands x 2	K375,000	K750,000
___Subtotal_____		**K5,750,000_____**
Personnel		
Lunch Allowance		
Research Assistant x 2	K50, 000 x 17 days	K1,700, 000
Researcher x 1	K50, 000 x 17 days	K850, 000
Transport		

Research Assistants x 2	K50, 000 x 17 days	K1,700,000
Researcher x 1	K100,000 x 40 days	K4,000,000
Statistician x 1	K100,000 x 2 days	K200,000
Sub Total		**K8,450,000**

Training Allowance

Research Assistants x 2	K80,000 x 2 days	K 320,000
TBAs x 107x 2	K100,000x 35 days	K7,000,000
TBA trainers x2	K250,000x 35 days	K17,500,000
Subtotal		**K24,820,000**

Stationary

Interview Schedule

a. 14pages x 214 TBAS

= 2996 pages +14pages for Researcher

= 3010 **papers**

Focus Group Discussion

b. 3 pages x 15 members

= 45 papers

Total = 3010 + 45 pages

= 3055 papers

= 7 Reams of paper	K25,000 x 1 ream	K175, 000
Pens x 109	K500 x 1pen	K54,500

Pencils x 109	K,1000 x1 pencil	K109,000
Eraser x 109	K1,500 x1 eraser	K163,500
Note Books x 109	K2,500 x 1 book	K545,000
Tippex x 3pkts	K8,500 x 1 pkts	K25,500
Staplers x 2	K20,000 x 1	K60,000
Staples x 2 boxes	K5,000 x 1	K10,000
Scientific Calculator x1	K80,000 x1	K80,000
Flip Charts x 10	K40,000 x 1	K400,000
Markers x 2 boxes	K18000 x1	K 36,000
Bostick x 2	K7000	K14,000
USB 2 GB	K800,000	K800,000
Bags x 109	K40,000	K1,520,000
Subtotal		**K3,854,000**

Communication

Radio Recorder x1	K250,000 x1	K250,000
Tapes x 5	K8,000 x 1	K40,000
Phones and calls	K4,500,000	K4,500,000
Sub Total		**K4,790,000**

Secretarial services

17 pages questionnaire & FGD	K3,000/page	K51,000
Photocopying 3055 pages	K200x1 page	K611,000
Photocopying Training		
Curriculumx 200pagesx3	K200x 1page	K120,000

Typing finished Report x200 pages	K3,000/page	K600000
Photocopying Finished Report x 5	K200/page	K2,000,000
Typing Revised Curriculum x300pages	K3,000/page	K900,000
Photocopying Revised Curriculum x 5	K200/page	K3,000,000
Sub total		**K7,282,000**

Binding of Proposal

Photocopying proposal x 100pagesx	K20,000x1 copy	K100,000
Binding Final Reportx 7	K 70,000x1copy	K490,000
Sub Total		**K590,000**
Artist Charges x1	K10,000,000	K10,000,000
FGD x 15	K10,000	K150,000
Sub total		**K10,150,000**
Modified CDK x 224	K215,000/pk.	K48,160,000
Data Entry Clerk	**K2,000,000**	**K2,000,000**

Monitoring

Research assistants x2x72 days	K50,000/day	K3,600,000
Researcherx1x72 days	K50,000/day	K1,800,000
_ Sub total		**K55,560,000**
Total		**K138,246.000**
Contingency 10%		**K13,824,600**
Grand Total		**K152,070,600**

Budget Justification

- **Personnel**

Research Assistants, the TBA trainers, statistician, health center staff, NHC membership and community women.

The two research assistants will be needed for data collection and during the monitoring phase of the study. They will need lunch allowance during their training, data collection and monitoring phase of the study

The TBA trainers, Researcher, statistician and the TBAs, health center staff, community women need to be motivated during the training with some lunch allowance and honoraria.

- **Secretarial services**

A secretary will be needed to type the Research Proposal as well as organize for the photocopying. Stationary will be needed for the typing and photocopying and binding of the interview schedules, FGD Guides, research proposal and final copies of the findings of the study and the modified training manual. The study participants will need to carry their books, files, pens and pencils in bags that will be provided. A 2GB USB will be used to store the proposal, the modified TBA training module and the final Report. The USB will provide an electronic copy of the study for publication purposes

- **Contingency**

The prices of items in the budget reflect the current market rates, hence the need for the contingency which will cover any unforeseen expenses. The contingency will also cover for any price increases in the listed items

Appendix J: Marking Key to Knowledge Questions

Question numbers	Responses	Scores
23.Do you boil any of the equipment you use while delivering a woman in labour	Yes	1
24.Why do you boil the equipment you use when delivering a woman in labour	To kill the germs	1
25. Why do you decontaminate and clean the equipment before boiling them. (ku paya na kuchosa tu doyo to leta matenda),	To kill any HIV virus on them so they are rendered safe to handle	1
26. State how long you should boil the equipment for?	For 20 minutes	1
27. Describe how the equipment should be cared for after boiling?	Keep them dry in a covered dish on a clean surface and boil again before use.	1
28.If yes, do you know how to keep them free from germs before and after	Store them dry in a sealed plastic bag	1

29.Do you know the cultural practices that are related to pregnancy, labour and post partum period?	1.Yes	1
30.If yes, describe the cultural practices related to: Pregnancy Labour Delivery Post partum Period	Pregnancy- Pregnancy should be seen not told to anyone for fear of being bewitched Do not inform anyone when you go into labour for fear of witchcraft During labour insert 'delele ya ngombe' to prevent perineal tear During post partum period Use cloth material as sanitary Pad. No sexual intercourse for at least 4 weeks after delivery Seclusion	6 marks
31.Do you know that some women may drink some herbal concoctions before labour starts to facilitate labour?	1.Yes	1
32. If yes, at what stage in their pregnancy do they start taking this herbal drink? 6 months 30 months 31 months 32 months	2. 7 months	1

33. In your local language, list the contents of what they drink?		1
34.What are the dangers that may occur during pregnancy? a.Bleeding b.Breaking of the bag of waters c.infections	1.Bleeding 2..Breaking of the bag of waters 3. infections	3
35.Why is bleeding during pregnancy dangerous?	Bleeding can cause infections in the mother and the death of the baby through abortion.	1
36.What are the types of bleeding that may occur during pregnancy? Spontaneous bleeding Induced bleeding	1.. Spontaneous bleeding 2.Induced bleeding	2
38.As a TBA, do you know if you are allowed by the reproductive health Policy guideline to conduct vaginal examinations?	1.Yes	1

39.Why is the "bag of waters" important?	It protects mother and baby from infections	1
40 Do you know what may happen to the mother and the baby if the "bag of waters" break more than 12 hours before labour begins? a.Baby will not have waters to drink b.The mother will become dehydrated c.The mother may go into shock d.The cord may prolapse e.Infections may go inside the mothers uterus	4..The cord may prolapse 5.Infections may go inside the mothers uterus	2
41.Do you know how many hours you can wait for the bath of the baby after the water bag breaks before you may refer your client to the next level of care? a.after 4 hours b.do not know.	After 4 hours. This is because the tTBA cannot give her client antibiotics, so she should refer her client to the health center four hours after rupture of the bag of waters.	1
42. How can you tell when the bag of waters become infected?	Fever Pain in the abdomen Purulent foul smelling amniotic fluid or vaginal discharge	1

43. Do you know how to prevent infection before the mother goes into labour after the water has broken before the delivery of the baby?	Yes	1
44.Do you know that the baby can get infected through the cord after the delivery of the baby? Yes No	1.Yes	1
45.Describe the advice you will give the mother about how to care for the umbilical cord after delivery?	Clean with boiled and cooled water	1
46..Do you know how many days the cord takes to dry and fall off if it is not infected?	4 -7 days	1
47.Do you know what an infected umbilical cord looks like?	1.Yes	1

48..If yes, describe the signs of an infected umbilical cord	The cord may look greenish, very dirty and smells	2
49. Do you know that you should refer a mother whose bay's cord is infected to the nearest health center	Yes	1
50. Do you know what to do when an umbilical cord is infected	1.Yes	1
51.Do you know that perineal tears can occur after delivery? Yes No	1.Yes	1
52.Do you know that germs can enter a perineal tear and cause infection in your client?	1.Yes	1
53.Do you know how to care for a baby who did not breath properly at birth?	1.Yes	1
54.Describe what you do	Remove the mucus from the baby's	1

in case a baby did not breathe properly?	nostrils and mouth.	
55. Do you know how to care for the baby after it has been delivered?	1.Yes	1
56. Are you aware that you can pass on some infections (germs to the baby while carrying out this procedure on the baby?	Yes	1
57.List the five infections you know that a TBA can pass on to the baby?	Any five infections in the mouth, tongue throat, cold, pneumonia	5
58.Do you know that the uterus can get infected after delivery?	1.Yes	1
59.If yes, why do you think the uterus gets infected?	Poor infection prevention practices during labour and delivery	5
60. List the signs and symptoms of Puerperal infection. a.Constant lower abdominal pain b.High fever c.Abdominal pain that	1,2,3,4,5,6,7,8.	8

comes and goes d.Very bad back pain e.Dark coloured vaginal discharge f Pus g.Cracked nipples h.Continued bleeding		
61.Do you know how your clients can get infected during labour, delivery and post partum period.	1.Yes	1
62. If yes, circle the right answers a.By inserting herbs into her vagina after delivery b.By sitting in cold water with herbs that are not properly cleaned	1. By inserting herbs into her vagina after delivery 2.By sitting in cold water with herbs that are not properly cleaned	2
63.Circle which of these infections may occur after delivery a.Swelling on both legs with pain b.Pain or bleeding when passing urine c.Very bad pain in the back d.High fever	2,3,4,5,6, 7.	6

e.Severe abdominal pain f.Fowl smelling vaginal discharge g.Swelling or tenderness in one or both breasts h.Swelling and tenderness in one leg		
64.do you know that women can get easily infected during the early post partum period because the cervix is still open and so bacteria or germs can easily enter ther uterus and cause infections in the mother?	Yes	1
65.If yes, tick the correct answer (s) a.By having sexual intercourse 4 weeks after delivery b.By using dirty clothes as pads after deliver c.By not changing the cloth frequently after deliver d.By sitting in cold water from infected shallow wells	1,2,3,4.	4
66. Do you know that the breast can get infected after delivery?	1.Yes	1

67. If yes, describe how you can tell when the breast gets infected?	The breast will be swollen, (engorged) and painful. Some nipples can be cracked	2
Total scores		82

Rating of scores

62 – 82 Excellent Knowledge

41 –61 Good Knowledge

20- 40 Poor knowledge

<19 Inadequate knowledge

Appendix K : Marking Key for practice questions

Question numbers	**Responses**	**Scores**
68a. Did you wash your hands before delivering your clients?	1. Yes	1
68b. Did you help the client to deliver the baby fast by by putting your foot between your clients' legs to push out the baby.	2.No	1
69. Describe how you helped your client to deliver the baby?	Lying down or Squatting	1
70.How did you tie the cord after delivery? a.Use of cord ties in the CDK b. Cord ties or when none pieces from washed and clean chitenge materials cut between the two tied knots measured from my gloved finger c.Use of boiled local tree bark called (ulushishi) in Bemba	1..or 2., or 3.	1
71. What did you use to cut the cord? a.New blade which was not boiled b.New blade which was	1 or 2 or 4, 6, or 8	1

boiled c.Old blade which was not boiled d.Old blade which was boiled e. Old scissors, which was not boiled f…Old scissors, which was boiled g..Umbilical cord scissors, which was not boiled from the CDK h..Umbilical cord scissors, which was boiled from the CDK		
72. did you care for the cord after the baby was born?	Yes	1
73.If yes, describe what you did.	Clean with boiled cold water if gentian violet and spirit gauze are not available.	1
74.What did you do to the cord that was still attached to the "after birth". 1..Left it hanging 2..Left it touching the floor 3. Put in the dish	3	1
75.From experience, how long does "after birth" take to deliver after the birth of the baby?	30 minutes	1

76.What do you do to deliver the "afterbirth"	To rub up a contraction and deliver the placenta by controlled cord traction	1
77.How do you help your client to deliver the "after birth"? a1.Put a cooking stick in her mouth, which makes her want to vomit 2.Make her go on her knees and then advice her to cough 3.. Make her go on her knees and sit on her back and slide down on her back 4. To rub up a contraction and deliver the placenta by controlled cord traction	4	1
78..What do you do with the "after Birth" after it is delivered?	Put the placenta on both palms and examine it for completeness.	1
79. Do you clean your client after the "after birth" comes out?	Yes	1
80. If yes, describe how you clean her	Clean the vulva Bath the client Sit her on a bowl of cold water with added salt.	3
81 Describe what you do when an instrument you use for delivery falls down	Pick it up, wash it boil it again.	3

82.Do you check for perineal tear, which may occur during the delivery?	1.Yes	1
83. How do you advice her to keep her birth canal clean after delivery? 1.. Bath once a day and wash in between her legs 2.Bath twice or three times a day and wash in between her legs 3Wash in between her legs with cold water and added salt because it contracts the uterus	3	1
84..When was the baby bathed after delivery? 1 .Immediately after delivery of the baby 2. .After the delivery of the placenta 3. After the cleaning the mother post delivery d.The next day after the baby was delivered	3.	1
85.Did you cover the baby with clothes after it was born?	1.Yes	1
86..If yes, give reasons for	Covering the baby after delivery	1

your answer?	stops the baby from catching cold.	
87..What do you advice your clients to use as pads after delivery? 1.A sanitary towel 2.A piece of washed air dried cloth improvised for the purpose. 3..A piece of washed and air-dried towel. 4..Others specify	1or 2 or 3.	1
88.If your client uses a piece of cloth as a pad, describe how you advise them to keep it clean and hygienic	When wet, wash it and air dry it.	2
89.As a TBA, what would you do to your client with infection after delivery? 1.. Leave her to rest at home 2. Take her to the traditional healer who is a woman 3.massage her with warm water 4.give her water to drink or other foods 5.Give her home made medicine to drink 6.Refer her to the nearest	6	1

clinic		
90. What advice would you give your clients on breast-feeding after delivery? a.Express the first milk and throw it away b.Put baby on breast as it makes the uterus hard and encourages blood clots to come out c.It also encourages bonding between mother and baby	B,c.	2
91..Do you advise your mother against prevention of mother to child transmission of HIV/AIDS?	1.Yes	1
92.Describe what you tell her?		1
93.What advice would you give the mother regarding breastfeeding the baby if she were HIV positive? 1..Stop breastfeeding 2.Put baby on bottle feeds if you can afford it as well as maintain the hygiene. 3.Continue exclusive breastfeeding breast feeding as usual	3..	1

94.Give reasons for the advice you give?	Breast feeding is still the best method of feeding the baby	1
95.Do you visit your clients the day after delivery?	1.Yes	1
96.If yes, list the reasons you visit them a. check if they are bleeding too much b. check if she has fever c. check if she is resting according to tradition. D.advise her to abstain from sex for up to 4 weeks after delivery e. advise her to attend post natal clinic after 6 days, and 6 weeks. f. advise her on the importance of breast-feeding the infant g. counsel them on PMTCT	1,2,3,4,5.6.	6
97.List what you carry when you visit your client who has had a baby.	A chitenge to lie the baby on CDK kit with cotton wool, salt to be added in boiled cooled water for cleaning the cord.	3
98.Describe the things you do when you are checking the new born baby.	1 – 14	14

1.Sweep the floor mop it, Wash your hands 2.Spread the chitenge across your lap, 3.lie baby on your lap, 4.Cover the baby to prevent baby from catching cold 5.Check if baby is bleeding from the umbilicus 6.Check if the fontanel is depressed or bulging 7.Check the skin for any skin rashes 8.Ask mother the following questions is baby breastfeeding ok ? 9.Is baby sucking well,? 10.Is baby sleeping well? 11.Has baby opened his bowel? 12.Is baby passing urine? 13Is baby constipated? 14.Is baby crying a lot ?		
99..what would you do if you find the baby is a.Taking quick and shallow breadths or struggling to breadth b.The baby has a sunken or depressed fontanelle.	Refer the baby to the nearest health facility.	1

c.The baby's umbilicus is bleeding d.The umbilicus is red, swollen, is discharging pus or is foul smelling e.The baby is stiff or is fitting or has tight clenched jaw f.The new born baby is sleeping for a long time		
Total scores		59

Rating of scores

49 – 59= Excellent practice

38- 48 = Good practice

27-37 = Satisfactory

<26 Unsatisfactory / poor practice

Appendix L: Marking Key for Attitude Questions

Question numbers	**Responses**	**Scores**
100. Describe what you think and feel if you do not get called for a delivery for along time		1
101.Describe your feelings when you get called for a delivery?		1
102. What do you think about being called to deliver a mother in an emergency.		1
103. Do you think that you can suggest ways to make mothers to make arrangements for their deliveries		1
104.After delivery, do you mind the length of hours you stay with your client? Yes No	No	1
105..If yes, state how long you will mind staying with them	4	1

11-3 hours 2..4-6 hours 3.over 7 hours 4..None		
106 Do you believe you can improve the health of mothers and babies you deliver?	**Yes**	**1**
107 Describe how you can achieve this		**1**
Total Scores		**08**

Rating of Scores

4- 8 scores good attitude

<4 scores poor attitude

Appendix M : GHANT CHART FOR PHD RESEARCH (2006-2008)

TASK	**2006**				**2007**				**2008**			
	1	2	3	4	1	2	3	4	1	2	3	4
Phase 1 Field work –baseline data collection												
Phase 2 Desk Review Data Collection												
Phase 3. Needs Assessment and Proposal writing												
Presentation of Proposal to Post Graduate Research committee												
Approval of Research Proposal by the UNZA Research and Ethics Committee												
Phases 4 and 5 **FGD.** Analysis of Pre training interview schedule.												
Phases 6 and 7. Mainstreaming IP components into TBA Training Curriculum followed by Training the Intervention group												

of TBAs. and administering post training interview schedule												
Phase 8 **Mo**nitoring phase.												
Phase 9 **Processing, Analysis and PHD thesis Writing.**												
Phase 10 Preliminary submission of Draft Copy of PHD Thesis. Collec Draft and bind												
Workshop Dissemination of Findings. Knowledge Translation with community Groups.												

Appendix N: Research Work plan

Task to be carried out	Scheduled date	Personnel	Expected Duration
Literature Review	Continuous	Special Research Fellow/Supervisor	Continuous
Research Proposal	April – 30th September 2006	Special Research fellow	Five months
Presentation of data to Graduate Proposal Presentation Committee forum(GPPF)	October 2006	Special Research Fellow	1 day
Clearance from Research and Ethics Committee	November to December 2006	Special Research Fellow	2 Months
Training of Research Assistants	January 2007	SRF/Supervisor	1day
Pilot Study	January 2007	SRF /Research Assistant	1-2 weeks
Desk Review	January – 2007	SRF	2 weeks
Collection of data And sampling of home environment.	February – March 2007	SRF/ Research Assistants	1 month
Focus Group Discussion x2	March 2007	As Above	2 days
Analysis of Data	March- April 2007	SRF/Statistician/ Supervisor	1 month
Intervention by TBAs training	April – December 2007	SRF/TBA Trainers/Supervisor	9 months
Supervision by	January –	SRF/ HC staff/	3 months

HC staff	**March 2008**	**NHC/DHMT staff**	
Monitoring using Check list	**March – June 2008**	**As above**	**4-6months**
Second Analysis of data	**July 2006**	**SRF/ Statistician/Supervisor**	**1 month**
Draft Report to Dept of Community Medicine	**August 2008**	**As above**	**1 month**
Final Report Writing	**September 2008**	**SRF/ Supervisor**	**1 month**
Dissemination of Reports	**October- /November 2008**	**Researcher / Supervisor**	**1 day**

Appendix O : Pre And Post Test Results for Mupanshya Final Group Training in Mpanshya.

S/No.	Name of Participants	Pre Test Result Out of 10	Post Test Result Out of 10
1		4	8
2		6	9
3		6	9
4		4	9
5		6	9
6		5	9
7		5	10
8		5	10
9		4	10
10		6	10
11		4	10
12		5	9
13		3	9
14		5	9
15		7	9
16		4	8
17		5	7
18		4	7
19		6	10
20		6	9
21		5	8
22		6	10
23		4	8
24		5	8
25		7	10

Appendix P: Results of pre and post test results for the fourth group of intervention TBAs in Chongwe (total marks-60) without the participants names.

S/#	Pretest result	Post test result
1	22	51
2	31	50
3	27	59
4	31	58
5	18	58
6	24	49
7	28	55
8	26	57
9	39	60
10	16	48
11	37	60
12	23	49
13	19	51
14	21	48
15	17	49
16	32	53
17	39	60
18	28	57
19	17	44
20	23	45
21	31	48
22	25	55
23	37	60
24	16	41
25	18	46

Appendix Q

TBA trainings in Chongwe District

Summary of all the TBA Training Reports in Chongwe District from 31/01/2008 – 06/03/2009 is appended.

The training of TBAs was held in-order to train the TBAs using the newly Modified Training Manual. The trainings were held at St Luke's Mission Hospital in Mpanshya and Chongwe Council Guest House from 31/01/2008-13/02/2009. A total of eight groups of trainings were held in Mpanshya and Chongwe which were the study locations. TBAs. The highlights of the trainings are stated below.

The participants were drawn from nine health centers within Chongwe District while all the trainers were drawn from Chongwe Referral Health center.

Official Opening

The workshop which took place from 02/02 -14/02/2009 was officially opened by the District Director of Health, Dr. Msiska while Mr. P.C. Choongoh, the Manager planning and Development for the District opened the training which took place from 25TH May to 7TH June 2008. They both spoke on behalf of the entire District health Office. They urged all the participants to use the knowledge gained to make their communities better in terms of safe motherhood and child health. All the facilitators were drawn from Chongwe Reference Health centre. He emphasised on the importance the District attaches to the TBA training as the TBAs add value to the health care provision within the community. They said that the training wouldl equip the participants with the best practices in the current concepts in Reproductive Health. He hopes that the participants will utilise their acquired knowledge in alleviating the health problems and complications that women undergo during pregnancy, labour, delivery and during the post natal period

The training took a total of twelve full learning days.

Establishing Pre course knowledge levels

Pre course tests were conducted before the trainings to obtain their knowledge levels before the actual training took place. The post course tests were done after the trainings to establish if learning occurred. The post course results were very impressive as shown in annexes 12a and 12b.

Teaching Methodologies Used

The method of teaching was mainly lecture discussion, demonstrations; return demonstrations took place at the Chongwe district Referral Health center. and role plays. The practicals of four weeks duration took place in the various clinics where the TBAs came from. The Control TBAs were trained using the old MoH TBA training curriculum while the Intervention TBAs were trained using the modified MoH TBA training curriculum.

Part of the first day was spent on getting to know each other, course expectations, from the participants as well as the course Objectives.

Topics Covered

- What is infection prevention?
- Why is it important in the TBA practice?
- Micro-organsms (germs) that can cause infections in mother and baby
- Identifying the harmful traditional and cultural beliefs and practices during pregnancy, labour, delivery, puerperal period and care of the baby that may lead to infections in the mother and baby.
- The practice of universal infection prevention measures. Health education on Infection prevention practices during pregnancy, labour, delivery, and the puerperium
- TBAs Preparation for the delivery environment
- Boiling and storing of water that the TBA uses during delivery.
- Boiling and storing of equipment that the TBA uses during delivery
- Storage of the equipment after use.
- Modes of transmission of the HIV virus in TBA practice.
- Impact of HIV/AIDS on TBAs Practice.
- Prevention of Mother to Child Transmission

New Topics and Current Concepts covered Include

- Application of infection prevention practices in relation to harmful traditional and cultural practices
- Health education on Prevention of Communicable Diseases: This topic brought out all the concerns on Infection prevention issues regarding the communities' concepts of health.
- Care of the Birthing Environment both before and after the delivery in terms of cleaning the environment of delivery both before and after the birthing process.
- Hand washing practices
- Putting on gloves for infection prevention
- TBAs waste management
- Care for the TBAs and handling burnout.
- Integrated Management Childhood Illnesses (IMCI),

  The tTBAs are expected to be health educating mothers on care of babies as advocated in Integrated Management Childhood Illnesses (IMCI), e.g. the use of zinc supplement once severe dehydration has been corrected in the treatment of children suffering from severe diarrhoea, infant resuscitation practices, referring HIV positive pregnant women to clinics.
- Prevention of Mother-to Child Transmission (PMTCT) of the HIV virus,
- Male circumcision and prevention of Cancer of the cervix
- Infection prevention against the acquisition of blood-borne pathogens like hepatitis B. C, HIV/AIDS viruses.

Infection Prevention was a major component of the training for the intervention TBAs in Chongwe. Methods of Prevention of infections were mainstreamed into the existing topics wherever the need to do so was identified during the modification. The TBAs were taught that germs on their hands and the environment can cause infection in both the mother and baby that they deliver so preventing infection can protect and save the lives of both mother and babies. They were taught on how micro-organisms can enter the body and that anyone can carry micro-organisms including themselves. This was proven by the results of the swabs which were taken from their hands and sent to UTH for laboratory analysis. The TBAs were taught that delivering

a baby is not a dirty process. They were also taught methods of preventing transmission of infection from one person to the other, from the TBA to the mother and her baby or from the client to the TBA by keeping germs away. Germs can be kept away by them washing their hands clean for some 2-3 seconds before and after examining their clients. They were taught how to put on and remove gloves and they were advised to put on plastic aprons over their clean chitenge clothing and tie scarf over their hair. They were also taught to clean the environment of delivery. Also emphasized was the importance of boiling the equipment they use for delivery for 20 minutes. The TBAs were also taught on proper waste management after delivery following cultural norms when disposing of the placenta after delivery. They were taught on how to dispose of the used swabs and razor-blade by throwing them down the pit latrine. Emphasis was made on proper waste management in the community. .This will prevent the people in the community from getting infections from the germs which are on the blades and the swabs as well as all the body-fluids from the delivery.

Other topics covered included communication, counseling, male and the female reproductive system, Traditional practices and their effects on women before pregnancy, during pregnancy, labour and delivery. The good aspects of these traditional practices were identified during the group discussions. These were encouraged while advice was given against the harmful traditional practices after a consensus was reached during the group discussions.

Most of the participants expressed a lot of interest on this topic. The TBAs highlighted the importance of having Clean Delivery Kits always at their disposal in-order to help them to prevent transmission of infections as they conduct deliveries in the community. They listed some of the items they expect to be included in the Clean Delivery Kits. Fortunately, all these items have been included in the modified Clean Delivery kit.

Other topics discussed were antenatal care, nutrition during pregnancy, malaria during pregnancy as well as the danger signs in pregnancy. The modified training curriculum also highlighted the danger signs in the first, second and third stages of labour and the urgent need to refer any affected mother to the nearest health facility.

New Concepts: (Prevention of Mother-to-child transmission of HIV and AIDS)

A comprehensive discussion on the Prevention of Mother to Child Transmission (PMTCT) later followed. Here the participants requested to have a demonstration on how HIV Testing is done and how they can differentiate a reactive result from a non-reactive one. This was done using a Video Presentations.

The training also covered care of the new born and post natal care. This included topics like breast feeding options for both the HIV negative and positive mothers, complementary feeding, management of babies suffering from diarrhoea, importance of immunisations as well as the role of the TBA during immunisation sessions. Family Planning was taught using lecture discussion as well as demonstration especially on the new Family Planning method known as Jaddelle. An emphasis was made on the importance of family planning especially after a spontaneous abortion because this is usually the period when most women do not see the need to be on family planning, infant resuscitation, male circumcision and Integrated Management of Childhood Illnesses (IMCI). The last topic was on Record Keeping and making referrals. The TBAs complained that there was no proper format and logistics to effect proper referrals. They indicated that they usually experience some problems when referring some clients to the next level of care but they never get any feedback.

Methods of Teaching

The method of teaching included lecture discussions, group work, demonstration and role plays in local languages.

They also expressed satisfaction on all the planned lectures, demonstrations and practicals that they were given they said they were very happy that all the teachers kept time and gave them all the lectures and demonstrations. The outcome indicators showed that the TBAs demonstrated excellent knowledge and practices in infection prevention measures as the results of the post-course showed.

Practical Experiences

Practicals were conducted at Chongwe Rural Health Centre. TBAs observed and experienced how to conduct health education, group and individual which covered the component of communication skills. The TBAs also did return demonstrations on how to examine a pregnant woman. Practicals were also conducted in the labour

ward where they observed deliveries. They expressed satisfaction at how they were supervised while gaining their practical experiences in the health center.

Comments from TBAs after the trainings

On any other issues, the TBAs requested if the District could procure some bicycles through the co-operating partners. The bicycles would be used to follow-up their clients in their homes as they also conduct home visits of their clients within 6 hours, 6 days and 6 weeks after delivery. They also requested for touch lights, gumboots and raincoats to be used during the rainy season and during the night calls.

Way Forward

- **HIV Rapid Testing for TBAs**

The TBAs can be taught HIV Rapid Testing when the Ministry of Health approves this Policy. TBAs in Camerouns are already conducting HIV Rapid Testing. With the enthusiasm and intelligence that the TBAs exhibited during the training, the Principle Investigator is sure they will learn and acquire proficiency if they are taught.

- **Purchase of Clean Delivery Kits by the Chongwe District Health Team.**

The health centers need to purchase CDKs for the TBAs which should be sold to the clients at an affordable price in the communities. The price of the CDKs should be decided by the respective community. The funds generated will help the TBAs to replenish their stocks as well as act as a little incentive towards their work.

- The district is to come up with the plan on the procurement of bicycles and other essential requirements for the TBAs.

Conclusion

These trainings have come at an opportuned time for lowering the infant and maternal morbidity rates. The trainings were very beneficial to the TBAs. The Chongwe District Health office hopes that CIDRZ will continue to sponsor more of these trainings and extends their warm gratitude to CIDRZ for the sponsorship.

Appendix R: Table 1: The Monitoring and evaluation Tool for Counseling the youth, teenagers, women in their reproductive age and families.

Entry point Before pregnancy	**Practice Areas to be monitored and evaluated within their scope of practice**	**Areas to be evaluate**	**Very good**	**Good**	**Satisfactory**
Teenagers	**Has the tTBA, within the last three months, worked with Safe Motherhood Action Group if it exists in her area or if not carried out the following on her own accord:** **Counseling the Youth** -Conducted at least five(5) Counseling sessions per month for the youth/teenagers, school-going children and families in their environments of schools, villages and homes for the three months. - Counseled the school going children on the importance of abstinence and the use of youth-friendly services at the nearest health center. -Building confidence in them to learn to say 'No' to sex before marriage. -Preventing teenage pregnancies, abortions and saving their lives, -Improving mother /daughter relationships. - Refusal to early marriages - Promoting family dialogue. -Prevention of HIV among the youths in their communities. **Couple counseling** - Conducted, at least, five couple counseling sessions for families per month in their homes/ health post.	Conscientiously carried out her role in schools by counseling the school children in their schools on relevant topics as stipulated under practice areas. Conducting counseling sessions for couples in the villages. Maintains records on the dates and number of of sessions held.	5	4	3

Total	**Evaluate the tTBA out of 135 marks which is the possible maximum score in this area for three months (45 marks /month)**				**135**
Care of women in their reproductive Age	**Has the tTBA, within the last three months, worked with Safe motherhood Action Group if it exists in her area or if not, carried out the following role on her own accord.** Conducted, at least five (5) Health education talks /month to women in their reproductive age group in their homes/villages on the following topics for the three months. **- Infection prevention practices** -Personal hygiene practices, bathing daily, brushing the teeth with locally-available plants. -Caring for the hair - Washing and wearing clean clothes **Maintenance of Environmental sanitation** -Ensured that the community digs refuse pits for proper refuse disposal .-Sweeping the environment **Maintaining healthy life style** - Abstaining from alcohol abuse. - Exercising daily --Half yearly medical Examinations to detect the early onset of cervical cancer. -Breast self Examination Health education against Gender-based Violence. **Record Keeping** Record of her activities carried out	Conscientiously carried out her role in health education on the topics mentioned to mothers in the villages, homes and health posts. Maintains records of the dates and health education topics given.	5	4	3
Total	**Evaluate the tTBA out of 45 marks for three months (15/month) which is the possible maximum score in this area.**				45
Male Involvement	**Has the tTBA, within the last three months, worked with Safe motherhood Action Group if it exists in her area or if not worked with male members in the NHC and carried out the following role of sensitizing the male on the following:** **Conducted , at least five (5) health education talks with the male members for the three months on the importance of:** -**Male circumcision** which helps in	Conscientiously carries out her role within SMAG on health educating men on the importance of male involvement in safe motherhood	5	4	3

	HIV infection prevention and cervical cancer **Male involvement during wives'** pregnancy, - Labour, - Delivery, - Involvement in house work - Involvement in Family Planning,	initiatives among families and at health posts			
Total	**Evaluate the tTBA out of 30 marks for three months (10 marks/month) which is the possible maximum score iin this area.**				**30**

Appendix R Table 2: The Monitoring and Evaluation Tool during Early pregnancy. Health educating pregnant mothers on infection prevention measures in the home and during the Ante Natal period.

Period	Practice Areas to be monitored and evaluated within her scope of practice	Areas to be evaluate	Very good	Good	Satisfactory
During Early Pregnancy	**Has the tTBA, within the last three months, worked with Safe Motherhood Action Group if it exists in her area or if not carried out the following:** Conducted, at least five(5) health education talks to pregnant mothers during the three months on the following. **Antenatal clinic attendance** - The importance of early antenatal booking during the first trimester of pregnancy. -Harmful socio-cultural and traditional beliefs and customs like 'pregnancy should be seen and not heard' and others that can cause infections in pregnant mothers during pregnancy, labour and delivery. - The importance of attending, at least, four ante natal clinics during the pregnancy period. -–1st visit –around 12 – 16 weeks -2nd visit- 20-26 weeks, -3rd visit – 28-36 weeks -4th visit- 38 weeks and over. -Activities to be carried out when they attend the ANCs: -Urine and blood tests. -Blood pressure checks -Physical Exams. -Tetanus toxoid vaccinations during pregnancy - Avoiding alcohol consumption and using tobacco and other herbal traditional medicines to hasten delivery. -To avoid eating soil as this may lead	Ability to apply theoretical knowledge to practice by conscientiously health educating pregnant mothers on the topics mentioned. among families and at health posts. Maintains records on the dates and health education topics given.	**5**	**4**	**3**

	to worm infestations. - Eating good nutritious diet to prevent anaemia during pregnancy**.** **-Observing personal hygiene practices** - Having daily baths, brushing the teeth, washing and wearing clean clothes, caring for the hair, etc -The importance of hand washing after using the toilet. --The importance of hand washing before food preparation. **Maintenance of proper environmental sanitation at home.** -Ensured that the men dig pit latrines for use. -Ensured that family members use the pit latrine for defaecation purposes. - **Prevention of malaria, and diarrhea**. -Taught mothers on the use if insecticide treated mosquito-nets. -Taught mothers on how to prepare ORS for the treatment of diarrhoea at home and the –Ingredients and method of preparing ORS at home. (See page 253 of the TBA curriculum). -Taught mothers on the danger signs in pregnant mothers **Birth preparedness** - Involved the NHC membership in preparing mothers for the birth of the baby by buying Clean Delivery Kits at subsidized rates from the DHMTs. -Advised mothers that she will refer them to the 'mother's shelter' at the nearest health center in late pregnancy at her convenience for delivery **Post natal clinic attendance** - Attending post natal clinics after the delivery of the baby. **Record Keeping** -Maintained a record of the number of				

	danger signs identified in her clients and number of referrals made to the next level of care for the three months or per month.				
Total	**Evaluate the tTBA out of 90 marks for three months or 30 marks/month which is the possible maximum score.**				**90**
Period	**Practice Areas to be monitored and evaluated within her scope of practice**				
During Mid – pregnancy	**Has the tTBA, within the last three months, worked with Safe Motherhood Action Group if it exists in her area or if not carried out the following health education role on safe Motherhood Initiatives for the Prevention of mother to child transmission of the HIV virus (PMTCT** Conducted, at least five (5) health education talks to pregnant mothers for the three months on the following: **Prevention of mother to child transmission of the HIV virus (PMTCT):** **Voluntary Counseling and Testing** -On voluntary counseling and testing for the prevention of mother to child transmission (PMTCT) of the HIV virus: - The importance of undergoing HIV Testing. -Couple counseling **HIV Prophylaxis During Pregnancy**. -Reminded mothers to take their HIV AIDS prophylaxis and HAART Treatment as advised by the clinic staff. **Male Involvement** -Male involvement promotes adherence to HAART or ARV prophylaxis for HIV positive women. **Breast Feeding Practices**	Health educating mothers on PMTCT. Maintains records of the dates and health education topics given on PMTCT.			

	- Exclusive breast feeding - Breast feeding options for HIV positive mothers. **Record Keeping** Recorded the number of health education talks given for the three months.				
Total	**Evaluate the tTBA out of 45 marks for three months or 15 marks /month which is the possible maximum score**				**45**

Appendix R Table 3: The Monitoring and Evaluation Tool During Late Pregnancy

Period	Practice Areas to be monitored within her scope of practice.	Areas to be evaluated	Very good	Good	Satisfactory
During late pregnancy.	**Has the tTBA, within the last three months, worked with Safe Motherhood Action Group if it exists in her area or if not efficiently looked after her clients in the late stages of their pregnancy by carrying out the following roles:** Conducted, at least five(5) health education talks to pregnant mothers in their late pregnancy for the three months on the following: **Health Facility Deliveries** - Health educates mothers on health facility delivery and arranges for access to mothers shelter during late pregnancy. - Recorded number of women that she had referred to Mother's shelter for health facility delivery -Recorded number of women referred with emergency obstetric conditions. **Birth preparedness for mothers who cannot access health facility deliveries for various reasons.** -Arranged for fire wood for boiling water -Preparation of the environment for delivery -Prepared containers for storing cooled boiled water.. -Acquired modified CDK kit for the delivery. -Advised clients against insertion of 'delele' into the birth canal. Arranged for a relative to help her in running errands. -Provided soap, jug for water and basin for hand washing -Arranged for a lamp or touch light. -Ensured that the bicycle is in good	Conscientiously carried out her role among families and at health posts by health educating mothers on the birth preparedness and the importance of health facility deliveries and thus applying what she learnt in class in her practice. Maintains a record of dates and health education topics given to mothers in the last trimester of their pregnancy.	5	4	3

	working order. -Ensured the availability of the items for use for maintaining infection prevention. • Soap, soap dish • Gloves • Plastic apron • Cotton aprons • Uniforms • CDK and its contents • Water proof elastoplasts for covering cuts and bruises. • Plastic containers for stored boiled-cooled and firewood(in rural communities). **Record Keeping** - Had an exercise book for recording her deliveries and referrals made for the three months. Recorded the number of health education talks given to mothers on the above.				
Total	Evaluate the tTBA out of 45 marks which is the possible maximum score				45

Appendix R Table 4:The Monitoring and Evaluation tool during Labour

Period	Practice Areas to be monitored and evaluated within her scope of practice.	Areas to be evaluated	Very good	Good	Satisfactory
During Early labour	**Has the tTBA successfully looked after her clients in early labour by carrying out her roles in the past three months.** **Cared for at least one to three clients in labour, per month for three months.** **Care during Early Labour** -Ensured a clean environment for delivery -Involved family members in preparing the environment for delivery by sweeping, mopping the floor and laying down the plastic mackintosh on the floor. - Fed the mother during labour and did not starve her clients. -Health educated clients against drinking herbs to hasten labour. -Allows her client to drink nutritious drinks during labour if desired. -Listened to the baby's heart beat frequently. -Allowed clients to walk about. -Maintained good inter personal communications with client and involved family members where need be. **Record of deliveries conducted** **Outcome of the deliveries conducted** -Mother alive and well -If died, -the cause of death -baby alive and well -if died , the cause of death	Conscientiously demonstrated ability to apply her knowledge into practice in providing direct care to her clients during early labour in the neighbourhood and at health posts and clinics. Maintains Records of women under her care.	5	4	3
Total	**Evaluate the tTBA out of 30 marks for three months (10 marls/month) which is the possible maximum score**				**30**

Care of an HIV positive mother During early labour	**In the past three months has the tTBA, carried out the following roles in providing care to an HIV positive mother in early labour within her scope of practice.** : **Cared for, at least, one to three HIV positive clients in labour and conducted** **Health education on all the above and also including:** - Prevention of mother –to child – transmission of HIV (PMTCT. -- Adherence to drinking her ARV drugs during labour. -Refers mother to the nearest health center if possible. **Record Keeping** Record of HIV positive mothers she had cared for. **Record of women she cared for. deliveries conducted** **Outcome of the deliveries conducted** -Mother alive and well -If died, -the cause of death -baby alive and well -if died , the cause of death	Conscientiously carried out her health education role on the prevention of mother-to child transmission of HIV/AIDS role among her clients in the neighbourhood and at health posts and clinics Maintains appropriate records of dates and health education topics given	5	4	3
Total	**Evaluate the tTBA out of 30 marks for three months and 10 marks /month which is the possible maximum score.**				30
During Established labour	**In the past three months has the tTBA prepared the environment for safe and clean delivery by carrying out the following activities within her scope of practice.** **Cared for, at least, one to three clients and conducted safe and clean deliveries.** **Clean Birthing Environment** -Ensured the environment of delivery is safe and clean for her and her client.	Conscientiously carried out her role among her clients in established labour in the neighbourhood and at health posts and clinics by maintaining a clean and comfortable environment for the client during	5	4	3

	-Made fire which is kept far away from the client if during the cold season and ensured the environment is warm enough and comfortable for her client. -Did not allow client to drink any traditional medicines to hasten labour and quicken the birthing process. -Placed the 'mpasa' on the floor, spreads the plastic over it to provide for a clean surface for delivery. -Encouraged the presence of a relative for social support. -Put on her plastic apron, washed her hands and put on the gloves properly before starting the delivery process.. - listened to the baby's heart beat. **Record of deliveries conducted** **Outcome of the deliveries conducted** -Mother alive and well -If died, -the cause of death -baby alive and well -if died , the cause of death	established labour. Maintains records with dates of all the deliveries she conducted.			
Total	**Evaluate the tTBA out of 30 marks for the three months and 10 /month which is the possible maximum score.**				**30**

Appendix R Table 5 :The Monitoring and Evaluation tool during Delivery

Period	**Practice Areas to be monitored within her scope of practice.**	Areas to be evaluated	Very good	Good	Satisfactory
During Normal Delivery.	**In the past three months has the tTBA efficiently looked after one to three clients during delivery by carrying out the following activities:** **Clean Birthing Environment** -Once more maintained a safe and clean environment for delivery -Did not allow client to drink any traditional medicines for 'a quick delivery' **Clean and Safe delivery by o**bserving infection prevention practices by doing the following: -Wore her apron, washed her hands and put on her gloves properly. -Boiled water and stored it in the container and used the water in the jug, soap and basin for hand washing. -Washed her hands before and after touching the woman in labour. -Did not conduct any vaginal examinations -Placed the 'mpasa' on the floor, spread the plastic over it. -Delivered client on clean surface and a plastic sheet from the CDK. -Did not push her foot in-between the perineum to aid delivery. -Reported any splashes of amniotic fluid into the mucous membranes of her eyes and mouth when the bag of waters broke if conducting the delivery at the health center. -Removed her gloves. Washed her hands, eyes and mouth with the boiled cooled stored water. -Wore another pair of sterile or clean	Conscientiously carries out her activities/ role among her clients in the neighbourhood and at health posts and health centers by applying infection prevention theoretical knowledge to practice during the birthing process. Reports and accompanies mother to the health center after the deliveries. Maintained adequate Records with dates and outcome of the deliveries.	5	4	3

	gloves. -Maintained the 'hands off the perineum' policy during the delivery. - Supported the fetal head during delivery. - Wiped both eyes after the delivery of the head. -Delivered the baby in a correct manner. **Care of the Cord During the Birthing Process** -Tied the cord in three places and cut the umbilical cord using the razor blade and not grass or any dirty sharp instrument. -Did not leave the cord hanging and touching the floor. -Put the end of the clamped cord in a bowl. **Delivery of the Placenta** -Watched out for the signs of the separation of the placenta (bleeding) and the lengthening of the cord. -Initiate breast feeding by putting baby on mother's breast after delivery. It aids in contracting the uterus and the expulsion of the placenta and also prevented post–partum haemorrhage**.** It also initiated bonding and breast-feeding. -Delivered the placenta by controlled cord traction. - Used the bowl to receive the placenta. Examined the placenta after delivery for completion. -Examined the baby for any abnormalities. Cleaned the perineum and checked for any perineal tear **Health educated mother on** -PMTCT, encouraged her clients to continue with their prescribed drugs. -Exclusive Breast feeding for mothers. - Breast feeding options for HIV positive mothers.				

	.Care of the perineal tears after delivery. **Maintenance of Clean Environment after Delivery** -Cleaned the delivery environment. -Properly disposed of the generated waste material from the delivery e.g the placenta the used gloves, cotton wool balls etc by throwing down the pit latrine or burning. **Post natal care** -Reminded mother that she will be escorting her to the health center six hours after the delivery for proper examination. Visited client 6 hours, 6 days and 6 weeks after delivery. **Record of deliveries conducted** **Record of any referrals made** **Outcome of the deliveries conducted** -Mother alive and well -If ill, the cause of the illness -If died, -the cause of death -Baby alive and well -If ill the cause of the illness. -If died , the cause of death				
Total	Evaluate the tTBA out of 105 marks for three months or 35 which is the possible maximum score marks per month.				105

Appendix R Table 6: The Monitoring tool for the Care of the baby during and after Delivery

Period	Practice Areas to be monitored and evaluated within her scope of practice.	Areas to be evaluated	Very good	Good	Satisfactory
Care of the Neonate	**In the past three months, has the tTBA efficiently provided direct care to the baby during the birthing process or prevented the baby from acquiring any other infections during and after delivery by carrying out the following activities within her scope of practice.** **Cared for, at least, one to three babies after delivery, per month for three months.** **Direct Care to the Neonate** -Delivered the baby properly. -Wiped baby's eyes and face when the baby,s head was born. - Told mother the sex of the baby - Wiped baby dry and clean after delivery.. --Wrapped baby in a clean towel or 'chitenge.' -Ensured baby cried after delivery. -Did not smear the baby with maternal blood according to tradition. -Washed her hands. **Record keeping** Record of deliveries conducted Record of any referrals made Reason for referrals **Outcome of the deliveries conducted** -Mother alive and well -If ill, the cause of the illness -If died, -the cause of death -Baby alive and well -If ill the cause of the illness. -If died , the cause of death	Successfully delivered and cared for the the baby without baby developing any infections Successfully initiated breast feeding and bonding between mother and baby. Health education on PMTCT. .Post natal Examinations. Maintains records of deliveries conducted.	5	4	3
Total	Evaluate the tTBA out of 33 marks for the three months or 11 marks/ month which is the possible maximum score.				33

Appendix R Table 7: The Monitoring and Evaluation Tool for the Care of the baby during the intra partum period.

Period	Practice Areas to be monitored within her scope of practice.	Areas to be evaluated	Very good	good	Satisfactory
Intra partum care of the cord	**Has the tTBA, within the last three months, cut the cord properly during the birthing process by carrying out the following activities:** **Cut the umbilical cord properly of, at least, one to three babies after delivery, per month for three months without any complications.** -Used the cord ties in the CDK and tied the first cord by measuring with her gloved first finger from the baby's umbilicus. -Left same distance from the first tie and tied the second cord-tie using another cord tie. - Left the same distance from the third tie and tied the third tie with another cord tie. - Cut the cord between the second and third cord ties. -Cleaned the cord stump with spirit or gentian violet from the CDK. If none available cleaned with cooled boiled water. -Wrapped the baby and initiated breast feeding. **Record keeping** Documented the babies delivered during the past three months Record of any referrals made Reason for referrals **Outcome of the deliveries conducted** -Baby's cord clean without any signs of infection. -Baby alive and well -If ill the cause of the illness. -If died , the cause of death	Safe and clean handling of the baby's cord during the intra partum period to avoid infections of the cord in the homes in the villages and the at the health posts by applying theoretical knowledge to what she learnt in class. Maintains records of all her deliveries.	5	4	3
Total	Evaluate the tTBA out of 15 marks for three months or 5 marks /month which is the possible maximum score.				15

Appendix R Table 8: The Monitoring and Evaluation Tool for the Care of the baby's Cord during the post partum period.

Period	Practice Areas to be monitored Within her scope of practice.	Areas to be evaluated	Very good	Good	Satisfactory
Post partum period Care of the Cord	**Has the tTBA, within the last three months, properly cared for the cord by preventing umbilical cord sepsis while carrying out the following activities.** **Cared for baby's umbilical cord stump properly of, at least, one to three babies after delivery, per month for three months without any infections.** **Post partum period Care of the cord** -Checked on the cord for bleeding after delivering the baby and during visitation after six hours of delivery. -Demonstrated the care of the cord to mother. -Requested for a return demonstration. -Advised mother to clean cord with spirit or gentian violet if available or if not to clean the cord with boiled, cooled water using provided cotton wool from the CDK and to leave the cord exposed. -Monitored the cleanliness and dryness of the cord. -Health educated mother on washing the hands with soap and clean boiled cooled water and drying the hands before cleaning the cord. Cleaned the base of the cord with spirit or gentian violate if available owith boiled cooled water when not available. Left the cord exposed ie not covering it with the 'maebele' (napkin). -Advised mother to report any sign of infection like swelling, pain, dark or	Demonstrated application of her theoretical knowledge by diligently caring for the cord until it dropped off without any umbilical cord sepsis. -Health educated mother on the care of the cord after delivery -Cared for the baby's cord and left it exposed. The cord	5	4	3

	greenish coloration of the cord, or pus discharge from the umbilical stump -Informed mother that the cord should drop off within the first week of delivery if not infected **Record keeping** Record of deliveries conducted Record of any referrals made due to infected cord Reason for other referrals made. **Outcome of the baby's cord.** -Cord healing well with no signs of infection -Baby alive and well -If ill the cause of the illness. -If died , the cause of death	was not covered by the 'matebele' (napkin). Maintains good Records on the outcome of the mother and baby.			
Total	Evaluate the tTBA out of 36 marks for three babies delivered 12 marks/month which is the possible maximum score.				18

Appendix R Table 9: The Monitoring and Evaluation Tool for the Care of the Mother's Perineum Post Partum.

Period	Practice Areas to be monitored According to scope of practice	Areas to be evaluated	Very good	Good	Satisfactory
Care of the mother's perineum	**Has the tTBA, within the last three months, properly cared for the mother's perineum after delivery without it getting infected by carrying out the following activities:** **Prevented perineal infections in, at least, one to three mothers she delivered per month for three months by doing the following.** **The Care of the perineum post partum** -Prepared a clean surface for the mother to lie on. -Washed and dried her hands. - Put on her gloves before cleaning the perineum -Cleans the perineum with savlon in the CDK or if not available, to clean with boiled cooled stored water without added salt and checks for lacerations. -Advised mother to empty her bladder. -Cleaned both sides of the perineum with cotton wool dipped in savlon and throw the cotton wool into a plastic bag -Cleaned the middle part and discard the cotton wool in the plastic bag. -Dry the perineum with dry cotton wool. - Advised mother to clean her perineum after using the toilet until the wound heals. -Provided mother with clean pads and – -Advised mother to change the pad whenever it gets quite wet. -Advised mother to wash, clean and dry	Ability to prevent perineal infections after home deliveries or at the heal post or health center by applying her theoretical knowledge to practice. - Maintained a Record of the outcome of her deliveries.	5	4	3

	the perineum three times a day with the cooled boiled stored water with no added salt until the wound heals. -Advised mother to use washed, cleaned and, ironed improvised 'pads'. -Accompanies mother to the clinic six hours after delivery for proper examination by the clinic staff. **Record keeping** Record of deliveries conducted Record of post natal clinic attended with the mother. Record of any referrals made due to infected perineal wounds. Reason for other referrals made. **Outcome of the deliveries conducted** -Mother alive and well -If ill, the cause of the illness -If died, -the cause of death				
Total	Evaluate the tTBA out of 54 marks which is the possible maximum score or 18 marks/month.				54

Appendix R Table 10: The Monitoring and evaluation Tool for Immediate Care of the mother Post delivery.

Period	Practice Areas to be monitored within her scope of practice.	Areas to be evaluated	Very good	Good	Satisfactory
Immediate post partum care of the mother.	**Has the tTBA, within the last three months, properly cared for the mother within six hours of delivery without any complications by carrying out the following activities:** **Proper Immediate Direct Care provided to the mother after delivery for, at least, one to three mothers delivered, per month for three months.** **Immediate post partum care of the mother.** -Ensured mother rested immediately after the delivery and cleaning of the perineum. -Bathed the mother. -Observed the mother for any bleeding which may be due to retained products of conception. -Health educated mother to take her tablet of mesoprostol' (if she was given at the clinic) which prevented post partum haemorrhage -Documented the delivery in her exercise book. -Provides food to mother and local drinks e.g. munkoyo -Encouraged mother to eat after delivery. -Health educated mother on the importance of and maintenance of good nutrition, and personal hygiene practices. -Health educated mother on the following: -PMTCT, Advised her clients to continue on their antiretroviral prophylaxis and HAART Treatment if HIV positive. -Health educated mother on Breast	Successfully cared for the mother without any complications within six hours of delivery thus demonstrates ability to apply theoretical knowledge to practice. - Maintained a record of mothers she escorted to the health center 6 hours after delivery.	5	4	3

	feeding options for HIV positive mothers. -Accompanied mother to the nearest health center six hours after delivery for thorough check-up. -Health educated mother about attending post natal clinic. **Record keeping** Record of deliveries conducted Record of post natal clinic attended with the mother. Record of any referrals made. Reason for other referrals made. **Outcome of the deliveries conducted** -Mother alive and well -If ill, the cause of the illness -If died, -the cause of death -Baby alive and well -If ill, the cause of the illness - If died, the cause of death.				
Total	Evaluate the tTBA out of 54 marks which is the possible maximum score or 18 marks/month.				54

Appendix R Table 11: The Monitoring and Evaluation Tool for the Care of the Mother and Baby During the Puerperal Period.

Period	Practice Areas to be monitored within her scope of practice.	Areas to be evaluated	Very good	Good	Satisfactory
Care of the mother during the puerperal Period.	**Has the tTBA, within the last three months, efficiently cared for the mother during the puerperal period without any puerperal sepsis by carrying out the following activities:** **Cared of the mother during the puerperal Period for, at least, one to three mothers delivered, per month for three months by providing the listed activities** **First Post natal visit at the nearest clinic during the first six hours after delivery.** **Examination of the mother** -Visited the mother six hours after delivery. -Put on her apron - Washed her hands and air dried them on arrival at client's home -Checked on the perineum and the lochia. -Washed her hands and removed her gloves and washed her hands again. -Prepared mother for the visit to the clinic to report the delivery and for proper checking of the mother by the clinic staff and for 'Birth Notification and BCG Vaccine administration. --Visited the mother periodically during the first week of delivery. -Washed her hands before carrying out any procedure on the mother. -Checked on the baby -Checked on the baby's cord. -Showed mother to clean cord with provided cotton wool, with boiled cooled water with no added salt. -Left the cord dry and exposed.	Able to apply acquired knowledge to practice by successfully cared for the mother without any puerperal sepsis. -Maintains a record with dates of mothers she escorted for post natal examinations to the health center.	5	4	3

	-Advised mother that the cord should fall off within one week of delivery. Washed her hands and air- dried them. -Asked mother if the baby had passed meconium and urine. Health educated mothers on -PMTCT, advised morher on continued therapy to continue with her Antiretroviral prophylaxis and HAART Treatment -Advised mother on proper fixing of the baby on the breasts and to continue breast feeding baby depending on her breast feeding options for HIV positive mothers. -Health educated mother on avoiding harmful traditional practices that may cause infections in the mother.				
Six days post partum	**Post natal examination after six days** Took mother to the nearest clinic for all the above. -Checked mother and baby for any infections. -Demonstrated ability to recognise the signs of an infected umbilical cord stump. - Discussed the use of lactational amenorrhoea as a family planning method with client. Health educated mother on alternative family planning methods.				
Baby's outcome	**Direct Care provided to baby during the puerperal period.** -The tTBA checked on the baby's outcome after delivery: -Put on her apron -Washed her hands and air-dried them Checked the baby for the following -Any umbilical sepsis? -Fever? -Skin rash? -Eye infection -Mouth infection? -Ear infection? -Infections on the toes ? -Established the baby's outcome.	Establish baby's outcome.			

	-Alive and well -Dead -If dead, the cause of death				
Six weeks puerperal period	**Post Natal Visit after six weeks of delivery.** -Accompanied mother to clinic for Post natal visit to the nearest clinic. -Demonstrated knowledge of puerperal sepsis in the mother	Post natal visit after six weeks of delivery to rule out puerperal sepsis			
	Mother's outcome after the delivery, -Alive and well, -dead? -If dead state the cause of death	Maintains good records with dates. -			
Total	Evaluate the tTBA out of 45 marks or 15 marks /month which is the possible maximum score				45
Record Keeping	**Has the tTBA, within the last three months, diligently kept records of all her deliveries and referrals in her exercise book by carrying out the following activities** • Recording the number of all deliveries she has conducted • Recorded the number of infections or any complications if any in the baby from birth to up to 28 days after delivery. • Recorded the number of infections and any other danger signs if any in the mother from the date of delivery to up to 28 days after delivery. - Documents the number of referrals she has made within the last three months. -Documents how the referrals were made to the health center. -Discusses the problems she encounters while referring the clients, e.g. states the distance from where she stays to the nearest health facility.	Maintains good records.	5	4	31
Total	Evaluate the tTBA out of 150 marks for the three months or 30 marks /month which is the possible maximum score				150

Appendix R Table 12: The Monitoring and Evaluation Tool for Care of the Environment Post delivery

Period	Practice Areas to be monitored within her scope of practice.	Areas to be evaluated	Very good	Good	Satisfactory
Post Delivery Waste disposal and management	**Has the tTBA, within the last three months, properly disposed of the waste generated from her deliveries in pit latrines by carrying out the following activities:** **Properly disposed of waste generated after all her deliveries for the three months without causing environmental hazards in the village. by carrying out the above activities.** **Waste disposal** -Discussed about the disposal of placenta with mother and family members -Mentioned that the placenta can be burnt, or buried or thrown down the pit latrine following the family's decision. -Collected all the soiled items including the plastic mackintosh, used blade and used cotton wool balls and bags them in a plastic bag and threw them down the pit latrine. -Washed her gloved hands. -Removed the used gloves and put them in a plastic bag and threw them down the pit latrine. -Finally washed her hands with soap and water and air -dried them..	Able to apply acquired knowledge to practice by proper disposal of the waste generated from the deliveries.	5	4	3
Total	Evaluate the tTBA out of 90 marks for three months or 30 marks /month which is the possible maximum score				90

Appendix R Table 13: The Monitoring and Evaluation Tool for the availability of Resources needed by the tTBAs.

Resources	Practice Areas to be monitored within her scope of practice.	Areas to be evaluated	Always available	Sometimes	Rarely
Items required to conduct safe and clean deliveries.	**Has the tTBA, within the last three months, got all she needed to conduct her safe and clean deliveries like the CDKs?** **Availability of Resources Required during the Birthing Process.** -Discussed about the availability or non availabiltyof soap for hand washing and the soap dish. - Discussed about the availability or non –availability of CDKs , methylated spirit, savlon, gentian violet, and plastic containers for storing water and how their lack affected her work. During the last three months - Discussed about the availability or non-availability of Plastic aprons, umbrellas, lamp or touch and batteries and how their lack affected her work during the last three months. - Discussed about the availability or non-availability of Cell phone and Talk Time, canvas shoes, bicycle and spares and how their lack affected her performance during the last three months.	Availability of items required to conduct safe and clean deliveries.	5	4	3
Total	Evaluate the tTBA out of 60 marks for three months or 20 marks/month which is the possible maximum score				60

Appendix R Table 14: The Monitoring and Evaluation Tool for the Supervision of the tTBAs at the Health center level

DHMT Supervision.	Practice Areas to be monitored within her scope of practice	Areas to be evaluated	Always	Occasionally.	Never
Items required to conduct safe and clean deliveries.	**Ask the tTBA where she has received the most beneficial supervision at the health center level within the last six months while carrying out her roles by:** **Was properly supervised by the health center midwife during visitations at least once per month for three months.** • Giving health education to ante natal mothers at the nearest health center to her home • Weighing children at the under-five children's Clinics at the nearest health center to her home.	Level of supervision by the health center midwife (team Leader). Documents the dates of the supervision at the health center the from the Team leader.	5	4	0
Total	Evaluate the tTBA out of 30 marks for three months or 10 /month which is the possible maximum score				6

Appendix R Table 15: The Monitoring and Evaluation Tool for the Supervision of the tTBAs at the Health Post level

DHMT Supervision.	Practice Areas to be monitored within her scope of practice	Areas to be evaluated	Always	ocasionally	Never.
Items required to conduct safe and clean deliveries.	**Ask the tTBA to express where she has received the most beneficial supervision at the health post at the community level within the last three months while carrying out her role of:** **Was properly supervised by the health center midwife during visitations at least once per month for three months.** • Giving health education to ante natal mothers at the Health Post. • Weighing children at the under-five children's Clinics. • Conducting deliveries in the absence of midwives due to the critical shortage of midwives.	Level of supervision by the health center midwife (team Leader). Documents the dates of the visits from the Team leader.	5	4	0
Total	Evaluate the tTBA out of 45 marks for three months or 15 marks/month which is the possible maximum score				45

Appendix R Table 16: The Monitoring and Evaluation Tool for the Supervision of the tTBAs at the Village level

DHMT Supervision.	**Practice Areas to be monitored within her scope of practice**	Areas to be evaluated	Always	Occasionally	Never
Items required to conduct safe and clean deliveries.	**Ask the tTBA to express whether she has received the most beneficial supervision while carrying out the following activities at the village level in the past three months.** **-Was properly supervised by the health center midwife during visitations at least once per month for three months.** -Giving health education to pregnant mothers on the importance of attending ante natal care at the clients' homes • Health education against negative traditional beliefs like a baby who presents with the buttocks is perceived to be a future chairman, a leg – a future great footballer and other danger signs like bleeding which is seen as the husband's unfaithfulness. This leads them to go looking for herbs while the mother can bleed to death in the villages. • Health education on PMTCT and male involvement during their wives' pregnancy, labour and delivery in the villages • Discussing birth plans in terms of saving money to buy food during labour and delivery, transport for referral to the next level of care at clients' homes. • Counseling mothers to improve relationships between mothers and their daughters in cases of teenage pregnancies and abortions at clients' homes.	Level of supervision by the health center midwife (team Leader). Documents the dates of the visits from the Team leader.	5	4	0

	• Conducting deliveries in the clients' homes or the tTBAs homes due to distance, trust in the tTBAs, lack of funds to buy baby's layette, jik, spirit etc that are required at the health center. • Health education on danger signs during delivery and the post partum period at the clients' homes or the tTBAs homes. • Health education on the importance of attending post natal clinics and for Family planning and under-five Children's Clinics at the villages. • Records of deliveries conducted. • Health education topics given • Outcome of the deliveries conducted. • Mother and baby alive and well. • If ill, the cause of the illness. • If died, the cause of death.				
Total	Evaluate the tTBA out of 120 marks for three months or 40 marks/month which is the possible maximum score				120

Total performance score is 903-171 (Supervision score) = 732 (interval is 146).

Distinguished Performance 586-732

Excellent Performance 439-585

Good Performance 292-438

Satisfactory Performance 145-291

Unsatisfactory Practice <145

APPENDIX S

THE UNIVERSITY OF ZAMBIA

RESEARCH ETHICS COMMITTEE

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Ridgeway Campus
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Lusaka, Zambia

Assurance No. FWA00000338
IRB00001131 of IORG0000774

7 August, 2007
Ref.: 005-05-07

Mrs Dorothy Osigwe Chanda
Department of Post Basic Nursing
School of Medicine
University of Zambia
LUSAKA

Dear Mrs Chanda,

RE: RESEARCH PROPOSAL ENTITLED: **"IMPACT OF MODIFIED MINISTRY OF HEALTH (MOH) TBA TRAINING MODULE IN INFECTION PREVENTION KNOWLEDGE, PRACTICES AND ATTITUDE OF TRADITIONAL BIRTH ATTENDANTS IN CHONGWE DISTRICT"**

The above research proposal was presented to the Research Ethics Committee meeting held on 6 June, 2007 where changes were recommended. We would like to acknowledge receipt of the corrected version with clarifications. The proposal has now been approved.

CONDITIONS:

- This approval is based strictly on your submitted proposal. Should there be need for you to modify or change the study design or methodology, you will need to seek clearance from the Research Ethics Committee.
- If you have need for further clarification please consult this office. Please note that it is mandatory that you submit a detailed progress report of your study to this Committee every six months and a final copy of your report at the end of the study.
- Any serious adverse events must be reported at once to this Committee.
- Please note that when your approval expires you may need to request for renewal. The request should be accompanied by a Progress Report (Progress Report Forms can be obtained from the Secretariat).

Yours sincerely,

Prof. J. T. Karashani, MB, ChB, PhD
CHAIRMAN
Date of approval: 7 August, 2007 **Date of expiry**: 6 August, 2008

APPENDIX T

THE UNIVERSITY OF ZAMBIA

BIOMEDICAL RESEARCH ETHICS COMMITTEE

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Ridgeway Campus
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Lusaka, Zambia

5 April, 2008
Ref.: 005-05-07

Mrs Dorothy Osigwe Chanda
Department of Post Basic Nursing
School Of Medicine
University of Zambia
P.O. Box 50110
LUSAKA

Dear Mrs Chanda,

RE: **PROGRESS REPORT ON THE "IMPACT OF MODIFIED MOH TBA TRAINING CURRICULUM IN INFECTION PREVENTION KNOWLEDGE, PRACTICES AND ATTITUDE OF TRADITIONAL BIRTH ATTENDANTS IN CHONGWE DISTRICT"**

We acknowledge receipt of your progress report form dated 2 April, 2008.

We are glad to note that the study is on course.

Yours sincerely,

Dr James C. Munthali
SECRETARY