CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND INFORMATION

Cotrimoxazole or Trimethoprin/Sulfamethoxazole is a broad spectrum antibiotic used in the treatment of a variety of bacterial, fungal and protozoal infections. It consists of one (1) part trimethoprim to five (5) parts Sulfamethoxazole(WHO, 2006). The drug has been marketed worldwide as generic preparations and under multiple brand names, including Sepra (GSK) and Bactrim (Roche). Cotrimoxazole is generally considered bactericidal although its components are individually bacteriostatical. Its actions are antifolate in nature, inhibiting both novo folate biosynthesis and metabolism. Cotrimoxazole is on World Health Organisation list of essential medications (WHO, 2013). Cotrimoxazole has a high incidence of adverse effects including allergic reactions; its use has been restricted in many countries to very specific circumstances where its improved efficacy has been demonstrated.

Cotrimoxazole is used to treat a variety of infections that include lower and upper respiratory tract infections such as pneumonia, bronchitis ear, renal, urinary tract infections, gastrointestinal infections (WHO, 2006). It is also used to treat traveller diarrhoea, skin and wound infections, septicaemia and other infections caused by sensitive organisms. The global problem of advancing antimicrobial resistance has led to a renewed interest in the use of cotrimoxazole. For instance, Cotrimoxazole antibiotic is an important preventive element of HIV care.It is highly effective for the treatment and prevention of *Pneumocystis Jiroveci P*neumonia (PCP). In HIV infected children it also offers protection against other infections, Cotrimoxazole prophylaxis remains important even with increasing access to ARV treatment.

Cotrimoxazole prophylaxis is a well tolerated and cost- effective intervention for people living with HIV(WHO, 2006). It should be implemented as an integral component of the HIV chronic care package and a key element of pre-antiretroviral therapy care. Cotrimoxazole prophylaxis needs to continue after antiretroviral therapy is initiated until there is evidence of immune recovery. All HIV exposed infants born to mothers living with HIV must receive cotrimoxazole

prophylaxis commencing at 4-6 weeks of age (or at first encounter with health care system) and continued until HIV infection can be excluded (WHO, 2006)

Care for the HIV exposed infant centers around 3 goals:

i. Identifying the HIV infected child: Virological testing will help distinguish which HIV-exposed infants are HIV-infected.
ii. Preventing opportunistic infections: all HIV-exposed infants should receive prophylactic cotrimoxazole to prevent Pneumocystis pneumonia (PCP). Isoniazid preventive therapy can reduce the risk of tuberculosis.
iii. Maximizing family health and wellbeing: enhanced healthcare services for infants born to HIV positive women on ART programmes can lead to improved health outcomes for both HIV-infected and HIV-exposed, uninfected children (MoH,2011).

To maximize the benefits of cotrimoxazole prophylaxis, it should be started before HIV infection can be confirmed and prior to the development of HIV-related signs or symptoms.

In Zambia, the national guidelines for care of HIV exposed infants state that Cotrimoxazole prophylaxis should be given to all HIV exposed children (children born to HIV infected mothers) at 6 weeks till 12 months of age and to any child identified as HIV-infected with any clinical signs or symptoms suggestive [of HIV, regardless of age or CD4 count.

Cotrimoxazole prophylaxis is included in child health services (including IMCI), PMTCT services, TB services and HIV ART treatment services (facility based and community based). Monitoring of progress towards achieving this include:

i. Monitoring the provision of cotrimoxazole prophylaxis to children and adolescents within existing care services (including, paediatric HIV care, home based care and IMCI).

ii. Documenting the proportion of HIV-exposed infants in PMTCT programs who receive cotrimoxazole interventions until confirmation of HIV infection status.

iii. National monitoring of antimicrobial resistance of pneumonia, dysentery and malaria in children is recommended because cotrimoxazole is widely used for other clinical indications (WHO, UNAIDS and UNICEF 2004; Chintu et al, 2004)

However, greater advocacy for the use of cotrimoxazole prophylaxis in children is urgently required (WHO, UNAIDS and UNICEF 2004: Chintu et al., 2004.

According to UNAIDS (2008:33) over 90% of children with HIV live in sub-Saharan Africa, where sero-prevalence rates among women of reproductive age remain high. Women of child bearing age constitutes 60% of HIV infected individuals in Sub-Saharan Africa (UNAIDS 2010). Zambia has a population of 13 million+ people and HIV prevalence in adults 14.3% (CSO 2007), antenatal HIV prevalence 16% (2008 ANC sentinel surveillance), number of PLWHA 1, 100, 000, Children 0 - 14 yrs living with HIV 80,000 – 120,000 average (95,000) (UNICEF, 2007)

Perinatally exposed infants per year 80,000 infants, HIV Pregnant women 87, 272 (UNAIDS, 2012)

The vast majority of these infants were infected *in utero*, during delivery or after birth through breastfeeding. For infants infected during pregnancy or delivery, HIV disease progression is particularly rapid, with mortality rates exceeding 50% in the first year of life, (UNAIDS 2008). Access to cotrimoxazole prophylaxis and early Anti Retroviral Therapy (ART) is life-saving for such infants.
HIV/AIDS impacts children in many ways; increased infant and childhood mortality, increased number of orphaned children, increased deprivations in various forms like mental, psychological and school drop outs as well as abuse which could be physical or sexual (MoH, 2011)

1.2 STATEMENT OF THE PROBLEM

Cotrimoxazole prophylaxis can reduce morbidity and mortality among HIV exposed infants if used consistently (WHO, UNAIDS and UNICEF 2009; Chintu et al, 2004).
Despite the existence of national policies for cotrimoxazole prophylaxis and the fact that it is inexpensive, lifesaving, widely available, safe and theoretically easy to deliver there are very few children who have been initiated on it.

However, most mothers whose children have been prescribed Cotrimoxazole prophylaxis do not comply with the treatment despite the benefits of cotrimoxazole. For example, available data at

Chikankata Maternal and Child Health (MCH) clinic for a 5 years period from 2008 to 2013 (see table1) revealed that 588 HIV positive mothers were prescribed cotrimoxazole prophylaxis for their babies at 6 weeks postpartum and only 155 mothers came back for subsequent re-supply giving a 26% compliance rate. This is despite the Information, Education Communication given to mothers/caretakers of HIV exposed infants and outreach programmes in the Heath posts/centres.

Table 1: Compliance with Cotrimoxazole Prophylaxis from September 2008 to November 2013.

YEAR	6 WEEKS	SUBSEQUENT SUPPLY	NON-COMPLIANCE
Sept -2009	98	28	70
Sept.-2010	117	35	82
Sept.-2011	138	39	99
Sept.-2012	106	24	82
Sept-2013	129	29	100
Total	**588**	**155**	**433**

Source: HMIS/Chikankata Hospital Records

It was not clear as to why these mothers did not come for the subsequent re-supply of cotrimoxazole. It is for this reason that the investigator conducted a study to establish factors associated with low cotrimoxazole use on women with HIV exposed infants in PMTCT strategy.

1.4 JUSTIFICATION OF THE STUDY

Cotrimoxazole prophylaxis is a well tolerated and cost- effective intervention for people living with HIV (WHO, 2006). It should be implemented as an integral component of the HIV chronic care package and a key element of pre-antiretroviral therapy care. Greater advocacy for the use of cotrimoxazole prophylaxis in children is urgently required (WHO, UNAIDS and UNICEF 2004: Chintu et al., 2004.

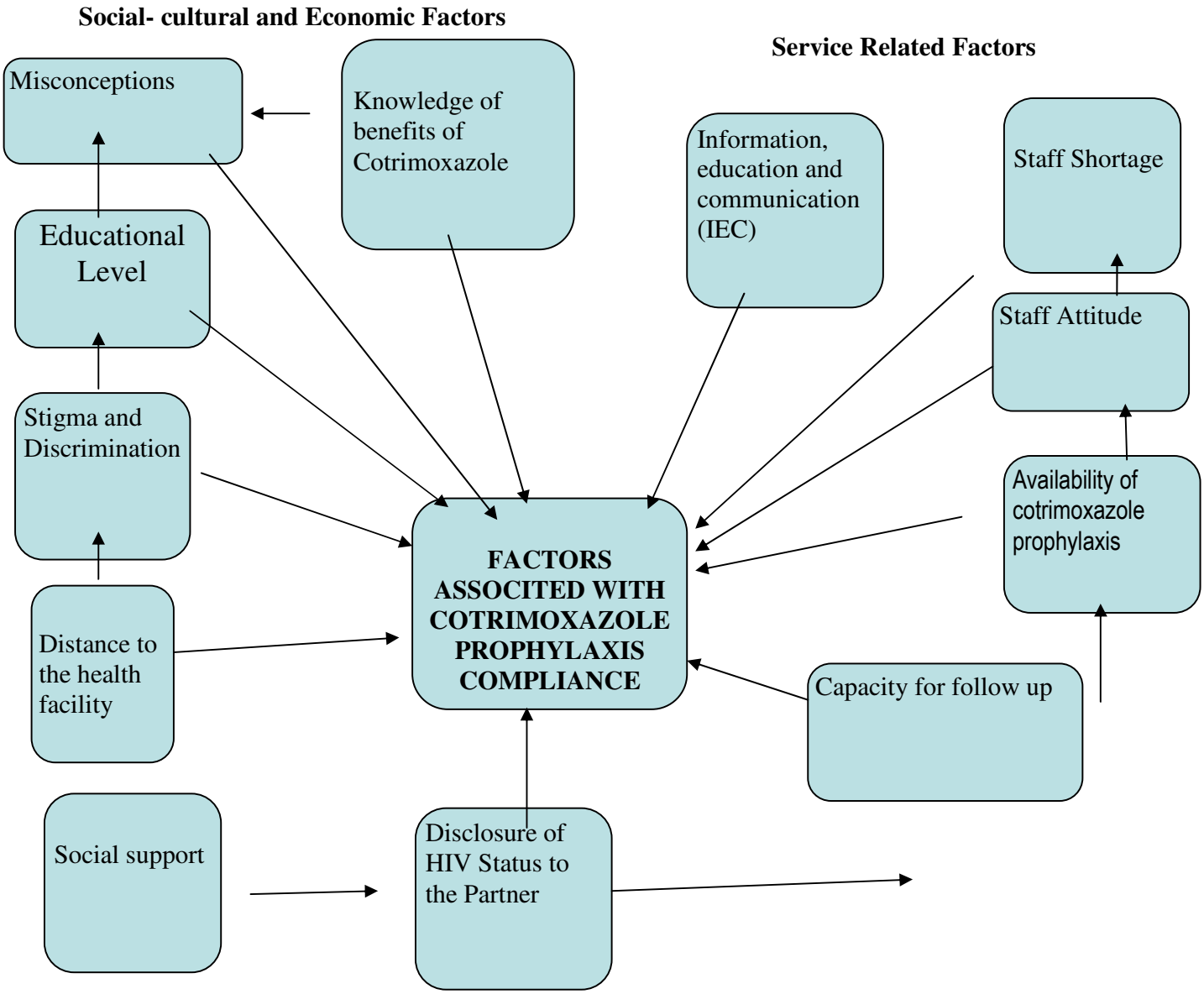
In Zambia, the national guidelines for care of HIV exposed infants state that Cotrimoxazole prophylaxis should be given to all HIV exposed children (children born to HIV infected mothers) at 6 weeks till HIV is excluded and to any child identified as HIV-infected with any clinical signs or symptoms suggestive [of HIV, regardless of age or CD4 count. Cotrimoxazole

prophylaxis is included in child health services (including IMCI), PMTCT services, TB services and HIV ART treatment services (facility based and community based)

In Zambia, no study has been conducted on factors associated with cotrimoxazole compliance among HIV exposed infants. The investigator therefore conducted this research in order to provide baseline data that would help in policy implementation in PMTCT strategy on cotrimoxazole prophylaxis. It is therefore important the research is undertaken to help in the identification of other critical barriers and explore possible strategies to further scale up cotrimoxazole prophylaxis.

The results of the study serves as preliminary findings that can be used as a basis to build on other similar studies that will eventually help policy makers to arrive at a better understanding and assessment of the community's opinion concerning cotrimoxazole use. This will help policy makers to design evidence based policies that have the support of the grassroots. The findings of the study also could be used by Chikankata District and Hospital Management to design potential strategies to increase uptake of cotrimoxazole by infants of HIV positive mothers.

FIGURE 1: PROBLEM ANALYSIS DIAGRAM OF FACTOR ASSOCIATED WITH COTRIMOXAZOLE PROPHYLAXIS COMPLIANCE HIV EXPOSED INFANTS



1.5 THEORETICAL FRAMEWORK

A framework is an abstract, logical structure of meaning that guides the development of the study and enables the researcher to link the findings to nursing's body of knowledge (Burns et al. 2005). A study framework can be expressed as a map or a diagram of the relationship that provide the basis for a study or can be presented in narrative format. The following model was used to predict the health seeking behavior of the HIV positive mothers for their infants.

1.5.1 HEALTH BELIEF MODEL

The Health Belief Model is a tool that scientists use to try and predict health behaviours. Originally developed in the 1950s by Rosenstock and updated that in the 1980s by Becker (Basavanthapa, 2008). The theory has six (06) main constructs that influence people's decisions to take an action to prevent/ screen for and control illness/ condition. The constructs state that people are ready to act if they have knowledge of the disease

1.5.1.1 PERCEIVED SUSCEPTIBILITY: People will not change their health behaviors unless they believe that they are at risk. Mothers/Caretakers who do not believe that cotrimoxazole compliance has benefits on their infants in reducing morbidity and mortality (having opportunistic infections or not) are unlikely to come to the health facility for re-supply of cotrimoxazole and comply to its use..

1.5.1.2 PERCIEVED SEVERITY: The probability that a person will change his/her health behaviors to avoid a consequence depends on how serious he or she considers the consequences to be for example if an exposed infant has no opportunistic infection or has had no opportunistic infection complication mothers/caretakers are unlikely to comply to cotrimoxazole prophylaxis just because they have minor illnesses though the infants could be feeling quiet unwell. On the other hand, they probably would choose to comply if they have had serious opportunistic infection and lost a baby.

1.5.1.3 PERCIEVED BARRIER: One of the major reasons people do not change their health behaviors is that they think that doing so is going to be hard. Sometimes it's not just a matter of physical difficult, but social difficulty as well. Changing one's health behaviors can cost effort,

money and time. If most mothers/caretakers of HIV exposed infants from long distant locality have had no opportunistic infection (complication free), it may be very unlikely for her to come for cotrimoxazole prophylaxis re-supply at the health institution.

1.5.1.4 CUES TO ACTION: Are things that help move someone from want to make a health change to actually making the change. These are external events that prompt a desire to make a health change. For example, they can be anything from essential knowledge gained from Information, Education and Communication (IEC) during health facility attendance on home self- care and cotrimoxazole compliance to seeing a mother/caretaker 's reasonable confidence and skill in giving cotrimoxazole prophylaxis to the infant to having a relative's infant die following home care and none use of cotrimoxazole prophylaxis.

1.5.1.5 SELF-EFFICACY: Looking at a person's belief in his / her ability to make a health related change. It may seem trivial but faith in one's ability to do something has an enormous impact on his/her actual ability to it. Thinking that he/she will fail will almost make certain that he/she does.

A mother/caretaker of HIV exposed infant 's belief that she can convince community –based support group to escort her to a health facility for re-supply of cotrimoxazole, against their desire that they would prefer to offer her advice on home care.

1.5.1.6 PREDICTED RELATIONSHIP: When the knowledge of HIV exposed infants' mothers/caretakers on the benefits of cotrimoxazole prophylaxis increases their attitudes/ practices will become positive.

1.6 CONCEPTUAL DEFINITIONS

Culture: The whole complex of distinctive, spiritual, material, intellectual and emotional attributes that characterize a society or social group

HIV exposed: A baby born from an HIV positive woman or anyone who had close contact with an HIV infected person's blood product.

Knowledge: amount of insight clients have on the HIV /AIDS and cotrimoxazole (being able to state correctly the benefits of cotrimoxazole)

Attitude: the way clients think about and behave towards cotrimoxazole treatment for their infants.

Compliance: in this study compliance refers to when a mother /caretaker gives cotrimoxazole prophylaxis as described by the clinician. Compliance was measured by asking the mothers/caretakers on how often they gave cotrimoxazole to their children

Knowledge levels on the benefits of cotrimoxazole; Mothers/caretakers knowledge levels on the benefits of cotrimoxazole refers to

In this study knowledge level on the benefits of cotrimoxazole were measured by two knowledge questions with a score of 3. The variable was further categorized into 2 groups namely high and low levels of knowledge. A respondent with a score 2-3 was regarded as having high knowledge levels and a respondent with a score below 2 had low knowledge levels.

1.7 RESEARCH QUESTION

What factors are associated with cotrimoxazole prophylaxis compliance by HIV exposed infants.

1.7.1 GENERALOBJECTIVES

Todetermine factors associated with compliance to cotrimoxazole prophylaxis by HIV exposed infants.

1.7.2SPECIFIC OBJECTIVES

1) To establish the HIV positive mothers/caretakers level of compliance with cotrimoxazole prophylaxis
2) To assess the HIV positive mothers/caretakers' level of knowledge on the benefits of cotrimoxazole prophylaxis.
3) To establish whether service related factors influence HIV positive mothers' infants to comply with cotrimoxazole prophylaxis.
4) To investigate whether socio-cultural factors influence HIV positive mothers' infants to comply with cotrimoxazole prophylaxis.

5) To assess whether there is an association between HIV mothers/caretakers' knowledge levels and compliance to cotrimoxazole prophylaxis.

1.8 HYPOTHESIS

There is no association between compliance with cotrimoxazole prophylaxis by infants of HIV positive mothers and the following:

I. Distance to the health facility
II. Availability of cotrimoxazole prophylaxis
III. Knowledge levels the benefits of cotrimoxazole use.
IV. Disclosure to partner about HIV Status
V. Education level.
VI. Age
VII. Information, Education and Communication (IEC)
VIII. Economic status
IX. Staff Shortage
X. Capacity for follow up
XI. Social support
XII. Stigma and Discrimination
XIII. Misconceptions

1.9 VARIABLES

1.9.1DEPENDENT

The dependent variable for this study is cotrimoxazole prophylaxis compliance among HIV exposed infants.

1.9.2 INDEPENDENT VARIABLES

The independent variables for this study are:

I. Distance to the health facility
ii. Availability of cotrimoxazole prophylaxis
iv. Knowledge levels the benefits of cotrimoxazole use.
v. Disclosure to partner about HIV Status

vi. Education level.

vii. Age

viii. Information, Education and Communication (IEC)

ix. Economic status

x. Staff Shortage

xi. Capacity for follow up

xii. Social support

xiii. Stigma and Discrimination

xiv. Misconceptions

TABLE 2 (a): VARIABLES INDICATORS AND CUT OFF POINTS

VARIABLES	INDICATOR	CUT-OFF POINTS	QUESTION NUMBER
DEPENDENT VARIABLES			
Compliance with Cotrimoxazole prophylaxis	• Yes • No	Mothers/caretakers give cotrimoxazole prophylaxis' as prescribed by the clinician or doctor. Mothers/caretakers do not give cotrimoxazole prophylaxis' as prescribed by the clinician or doctor.	20
INDEPENDENT VARIABLES.			
Age of mother/caretaker	• Below 18years • Middle (18-35) • Above 35 years	• Too young • Favorable • Too old	**4**
Education level	• High • Medium • Low	• College/University • Secondary level • Primary level	6
Economic status	• **H**igh • Medium • Low	• **M**ore than K600.00 monthly income • K150-K600 monthly income • Less than K150.00 monthly income	7, 8
Knowledge of cotrimoxazole prophylaxis and its benefits	• Low • High	• A score of below 2 on knowledge questions • A score of 3-2 on knowledge questions	17, 18
Distance to the Health Centre	• Near • Far	• Within 5Km radius (1hour or less walk) • More than 5Km radius (more than 1 hour walk)	24, 25 ,27
Information, education and communication (IEC)	• Yes • No	Given Not given	15, 16

Table 2 (b): VARIABLES INDICATORS AND CUT OFF POINTS

VARIABLES	INDICATOR	CUT-OFF POINTS	QUESTION NUMBER
Staff Shortage	At least 2 or nurses are present on duty Only one nurses present on duty	Adequate Inadequate	26
Staff Attitude	Not welcoming Welcoming	Negative Positive	28
Availability of cotrimoxazole prophylaxis	Cotrimoxazole is available for mothers to collect at each review. Cotrimoxazole is not available for mothers to collect at each review.	Available Not available	21-23
Capacity for follow up	Health workers conduct follow up on defaulters all the time Health workers conduct follow up on defaulters all the time	Conducted Not conducted	29
Disclosure of HIV Status to the Partner	Discloses HIV status to partner Does not disclose HIV status to partner	Yes No	34
Social support	Support group available in the community Support group is not available in the community	Available Not available	32
Misconceptions	Myths and misconceptions are present in the community Myths and misconceptions are not present in the community	Present Not present	33

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1. INTRODUCTION

Data regarding the current need for and uptake of cotrimoxazole prophylaxis globally for both HIV exposed and -infected infants are difficult to obtain as many countries have only recently begun to collect and report data on this intervention. UNICEF and WHO, however, are working with countries to develop systems that support more accurate reporting on this in the future. Data regarding *initiation of cotrimoxazole prophylaxis in HIV-exposed infants* were first reported in 2007. Approximately 1.4 million women with HIV gave birth in low- and middle-income countries and all of these children should have been initiated on cotrimoxazole prophylaxis by four to six weeks of age. However, 2008 estimates reveal that only about 8% of infants needing cotrimoxazole prophylaxis had been started on it by two months of age (UNAIDS, 2008).

2.2. AVAILABILITY OF THE HIV DRUGS AND SERVICES

Globally, in 2007, about 2 million children below the age of 15 years were living with HIV. In that year alone, 370 000 children were newly infected with HIV, more than 90% of them as a result of mother-tochild transmission (MTCT) of HIV, and 270 000 children died of HIV-related causes. While HIV care and treatment services for HIV-infected children are slowly expanding in resource-constrained settings, they are still very limited and lag behind treatment services available for adults(WHO and UNICEF 2007; Zachariah et al, 2007,)

WHO and UNICEF, (2008), and Zachariah et al. (2007), further allude to the fact that an important component of the HIV care and treatment package for children is the provision of cotrimoxazole prophylaxis. This widely available, inexpensive antibiotic is recommended for HIV-exposed or -infected children to prevent the development of serious, often fatal, Opportunistic Infections, notably *Pneumocystis jiroveci* pneumonia (PCP) in young HIV-infected infants.

Many infections in children born to mothers with HIV, regardless of the infant's eventual HIV status, can be prevented by timely initiation of cotrimoxazole prophylaxis.

To maximize the benefits of cotrimoxazole prophylaxis, it should be started before HIV Infection can be confirmed and prior to the development of HIV-related signs or symptoms. Preventing opportunistic infections in HIV exposed and HIV infected children still remains a challenge. Due to their weak immune systems, children living with HIV are very vulnerable to opportunistic infections, and need to be provided with drug prophylaxis to prevent such illnesses. For children who have no access to ARVs, treatment for opportunistic infections may delay the need for antiretroviral treatment.

Chintu et al. (2000), revealed in the only Random Controlled Trial done in children was in HIV-infected Zambian children aged 1–14 years, which found a highly significant benefit of cotrimoxazole in improving survival and reducing hospitalizations and pneumonia, any of the studies showing benefit have been in communities where in-vitro cotrimoxazole resistance to common bacterial isolates is already high.

If infants are not given the drug or complying with cotrimoxazole prophylaxis, they are highly likely to develop opportunistic infections and concurrently premature mortality ensues thereby negatively impacting on childhood HIV infection and mortality trends. This view is supported by the following studies; Chintu et al. (2004), randomized CHAP study that revealed that it reduced mortality by 43%, hospital admissions by 23%. Mulenga et al (2004), showed 43% reduction in mortality, and reduced hospital admissions by 20%. Mermin et al. (2004) revealed reduction in mortality by 46%, reduction in hospitalization by 31%, reduction in diarrhoea by 35% and malaria reduced by 72% as cited in (WHO, 2006).

Cotrimoxazole, an antibiotic that is included in PCP prophylaxis and can help to prevent other infections such as TB, was shown to reduce AIDS-related mortality by 43% and hospital admission rates by 28% among children with HIV in a major trial in Zambia by Chintu et al. (2004). Based on this trial and other evidence, experts agree that cotrimoxazole should be widely provided to all children living with HIV, especially where ARVs are not available. It is also recommended that all children born to HIV-positive mothers should be provided with cotrimoxazole until tests confirm that they are HIV-negative. Cotrimoxazole prophylaxis can be

given to a child from 4 to 6 weeks of age. As well as being effective, cotrimoxazole is cheap, costing as little as US$0.03 a day to provide. However, provision is extremely low with just 8% of infants born to pregnant women with HIV in 2008 initiating cotrimoxazole prophylaxis by two months of age (UNAIDS, 2010).

In addition to the clinical benefits of cotrimoxazole prophylaxis for the prevention of OIs associated with HIV disease, other benefits include the following:

i. It can be delivered to children at levels of the heath-care system that cannot yet offer ART.
ii. It can be provided through a family-based approach as the benefits of cotrimoxazole prophylaxis are important for both adults and children.
iii. It encourages drug adherence behaviours before initiation of ART.
iv. It can reduce the burden of communicable diseases in the index case and other family members and It can prevent malaria. Finally, cotrimoxazole prophylaxis is a low-cost intervention, with a unit cost of only about US$ 0.03 per child per day, or about US$ 10 per year.

Focus could be placed on the following: a national coordination mechanism that is inclusive of all major actors; a district and facility-based scale-up plan that includes a clear definition of needs, targets, and required budgets; and a system of monitoring the number of adults and children accessing cotrimoxazole, which will be needed for forecasting drug orders (Zachariah et al. 2007). This is the more reason why the research should be conducted so as to help identify the gaps.

Problems with cotrimoxazole drug supply and monitoring continues to be a challenge. Cotrimoxazole drug supplies provided to health facilities are used rather blindly for both treatment and prophylaxis. Cotrimoxazole stock shortage is therefore a common operational problem that directly hampers initiating and continuing prophylaxis. For example, in a recent national survey in Malawi at 94 public-health facilities providing ART, 55% of facilities were out of stock of cotrimoxazole at the time of the supervisory visit (HIV Unit, Ministry of Health, Malawi, unpublished data).

By 2008, while most resource-limited countries had integrated cotrimoxazole prophylaxis into national policy documents on PMTCT, ART and Maternal, Newborn and Child Health (MNCH), there remained a lack of sufficiently detailed operational guidance to advise national programme managers on exactly *how* cotrimoxazole prophylaxis is to be scaled up at the health-service level. There are legitimate concerns as discussed:

- Limited integration of PMTCT services within MCH and ART programmes, and weak links between these programmes and other child health services: PMTCT services are the crucial link to timely identification of HIV-exposed infants who are eligible for cotrimoxazole prophylaxis. Mothers and infants are often seen separately at clinics, even when they are both in need of HIV services, bringing other factors such as time, transportation and cost into play as additional barriers.
- Missed opportunities to identify infants and children in need of cotrimoxazole prophylaxis and other HIV services: Frequently, communities have also not been sufficiently informed or sensitized to identify HIV-exposed infants and children so that they can be referred to care.
- Other constraints that limit health workers' ability to implement cotrimoxazole

prophylaxis include limited policy support for lower-level workers to dispense cotrimoxazole prophylaxis, insufficient training on the importance of cotrimoxazole prophylaxis of those allowed to prescribe and dispense it, and failure to include cotrimoxazole prophylaxis in training materials for HIV care and treatment. In terms of supplies, barriers include insufficient quantities of cotrimoxazole made available for

prophylaxis, a lack of clarity on sharing of supplies across programmes, inadequate procurement policies and procedures, and problems with storage and distribution.

Non availability of the drug and or required dosage preparation/constitution would affect the morale of mothers who would have wanted to comply with the prophylactic treatment.

2.3 LIMITED CAPACITY FOR FOLLOWUP BY HEALTH WORKERS.

Despite the fact that countries have developed and put in place policies to support the scale up and implementation of cotrimoxazole prophylaxis for infants and children, and that it is inexpensive, life-saving, safe and theoretically simple to deliver, the United Nations Children's

Fund (UNICEF), WHO and partners estimate that in 2008, only 8% of children exposed to HIV were initiated on cotrimoxazole prophylaxis by two months of age. One of the main challenges countries must address in order to scale up cotrimoxazole prophylaxis is the absence of mechanisms to systematically identify and follow up HIV-exposed infants at and after birth. WHO and UNICEF recommend that if HIV-infected children are to be identified early in the course of their disease – a prerequisite for receiving cotrimoxazole prophylaxis and early ART – systems need to be in place to ensure that health workers consider the possibility of HIV infection in infants at birth and at all clinic or other health encounters thereafter.
In addition to the clinical benefits of cotrimoxazole, there are several potential operational advantages that include the following:

- Mothers are more likely to bring children to health-care centres for HIV testing and follow-up care if they know that an effective treatment is immediately available. This could also provide an opportunity to address HIV-related prevention and care issues for the mother and other family members.

- Cotrimoxazole prophylaxis provides an opportunity for systematic care of children at health facilities at lower levels of the health system and the observed stabilizing effect on immune function and viral replication has the biological potential to delay the need for ART until it is available.

- Cotrimoxazole could serve as a backbone for establishing and strengthening a chronic care infrastructure upon which interventions including ART could be built, since systematic delivery of cotrimoxazole requires a healthcare delivery system that will not only identify HIV infected children but also ensure that they remain in the system.

- Cotrimoxazole prophylaxis provides an opportunity to model drug adherence approaches before starting ART.

Limited identification and recruitment of HIV-exposed and HIV-infected children for cotrimoxazole is another challenge.

Opportunities for early identification of HIV-exposed children are limited for three main reasons.

- First, coverage of PMTCT programmes in countries with a high prevalence of HIV remains low, meaning that most HIV-exposed infants are not being identified or are being lost from the health system.
- Second, countries with a high burden of HIV have not maximised the opportunity of child-health programmes such as the Expanded Program of Immunisation (EPI) to identify HIV-exposed children. For example, in Swaziland where the antenatal HIV prevalence rate is particularly high (estimated to be 42%), about four out of every ten children attending EPI and child clinics could be considered HIV exposed. Of these children, one to two are likely to be HIV-infected and could benefit from early HIV testing, cotrimoxazole, and ART.

- Finally, the high possibility of obtaining false-positive results from antibody-based rapid HIV tests in children under 18 months of age born to HIV-positive mothers in resource-limited settings makes it difficult to determine infection in HIV-exposed children. This problem is a major policy bottleneck for early administration of cotrimoxazole prophylaxis and ART, since health systems in some countries are unwilling to provide cotrimoxazole to children unless HIV infection is confirmed.

Adherence may be challenging when cotrimoxazole prophylaxis is given to very small infants, and in infants who need to take cotrimoxazole prophylaxis for long periods of time. Adequate initial and ongoing counselling is critical to achieving good adherence. Initial counselling can help caregivers identify factors that may interfere with adherence, while ongoing counselling both reinforces positive trends and allows for the detection of emerging issues. Helping caregivers develop cues based on daily life activities that trigger medication administration is a particularly useful technique for improving long-term adherence (WHO, 2009).

Imperfect adherence to cotrimoxazole prophylaxis should not, however, be a reason to discontinue it, as prevention efficacy is maintained even with thrice-weekly dosing. While the benefits may be reduced with less-than-perfect adherence, it is likely that there will still be some benefit.

2.4 KNOWLEDGE OF MOTHERS/CARETAKERS OF HIV EXPOSED INFANTS

Antenatal messages for HIV-infected women need to routinely include anticipatory guidance aimed at improving postnatal follow up of mother–infant pairs through education and information of parents and caregivers. It is also critical to inform and mobilize communities to ensure that HIV-exposed infants and children are identified and families are aware of available services for prevention and treatment for young infants and children, and the benefits of early use of care services.

However, cotrimoxazole prophylaxis may protect against development of resistance if it reduces the number of hospital admissions and the frequency of use of other antibiotics.

- It was however proposed that, there is a need for consultative fora within countries that bring together key stakeholders at a national level, to disseminate information on current evidence, bridge gaps in knowledge, allay fears on use of cotrimoxazole at country level, and present the rationale for current recommendations. The fora should also serve to boost leadership and to prepare the next steps for implementing a phased national cotrimoxazole scale-up plan that is integrated into child survival programmes.
- Furthermore, care providers at different levels of the health system have not been adequately trained to be able to maintain a high index of suspicion for recognition of signs and symptoms suggestive of HIV infection in children. Opportunities for active recruitment have also been grossly under-used or missed in voluntary counselling and HIV-testing sites, clinics for under-5-year-olds, the general out-patient department, and sites visited by people at high risk of HIV infection, such as tuberculosis clinics, paediatric wards, and paediatric nutritional rehabilitation units (Zachariah et al., 2007,7:686–693.)

Inadequate IEC information, education, and communication advocating cotrimoxazole can be one of the barriers because of policymakers' concerns about effectiveness and development of drug resistance following widespread use of cotrimoxazole at country level, little or no emphasis had been placed on developing specific information, education, and communication messages advocating cotrimoxazole within health services or the community. Individuals that use health

services might therefore be insufficiently aware of the benefits of cotrimoxazole prophylaxis(WHO, 2009).It is therefore important that this research is undertaken to help identify information gap about the benefits

Much as there is an urgent need to develop specific messages to increase awareness and the demand for cotrimoxazole both among health workers and in the community. Such messages should be simple and clear—for example, "taking your daily doses of cotrimoxazole could provide you with protection from a number of common HIV related illnesses including malaria and diarrhoea, considerably reducing your risk of death from HIV and AIDS, therefore providing you with benefits before starting ART and also while on ART". Motivational talks advocating the use of cotrimoxazole in the community and within different health services should be routinely done by a joint team of health workers and people living with HIV/AIDS(http://www.infection.thelancet.com)

To prevent PCP in HIV-infected individuals, cotrimoxazole has been the standard of care in high income countries for many years, based on a number of studies that have demonstrated its benefits, primarily in HIV-infected adults. There were initial concerns by some policy-makers and MCH experts that widespread use of cotrimoxazole as prophylaxis would undermine its efficacy in the management of ARI, and would lead to problems of antibiotic resistance in common pathogens. More recent studies have not substantiated such fears and have demonstrated population-level benefit. These studies are discussed in the WHO cotrimoxazole prophylaxis guidelines. It has also been recognized that cotrimoxazole prophylaxis provides benefits beyond the prevention of PCP (WHO, 2006).

A randomized controlled trial among HIV-infected children in Zambia demonstrated that mortality was reduced by half and the number of hospital admissions was significantly reduced among children using cotrimoxazole. These findings, along with other evidence of efficacy and cost-effectiveness, as well as fewer deaths due to ARI in HIV-infected infants under the age of six months, have highlighted the benefits of cotrimoxazole prophylaxis for infants and children with HIV (Mermin et al 2004).

Cotrimoxazole prophylaxis also protects against episodes of malaria (estimated 99.5% protection from pooled data). Mortality from malaria in HIV-infected children and adults is also reduced if they are on cotrimoxazole comparing HIV-infected persons on cotrimoxazole with HIV-infected subjects not on cotrimoxazole). A similar reduction in mortality was seen in a subgroup of children below five years of age the Children with HIV Antibiotic Prophylaxis (CHAP) study from Zambia (Zachariah et al.2002; and Watera et al. 2002; Chintu et al.(2004) and Mwaungulu et al,2004,Grimwade et al,2005,WHO, 2006)

Zambia Council for Counselling (ZCC, 2008), indicates that there are situations whereby some counsellors are not adequately knowledgeable of the various aspects of HIV/AIDS management strategies, they are not adequately trained in counselling, and they lack practical skills and competences. Consequently, they fail to motivate or persuade clients to self-disclose or notify their partners or spouses about their HIV status negatively affecting their attitudes and practice towards the treatment, care and support services. When clients are given an opportunity to learn more about PMTCT services most of them will adopt a more positive attitude and be aware of the urgent need to adhere to treatment and also for their infants.

2.5 COTRIMOXAZOLE PROPHYLAXIS USE IN LOW AND MIDDLE INCOME COUNTRIES.

WHO and UNICEF provide a brief review of evidence supporting the use of cotrimoxazole prophylaxis in children and summarize common barriers to implementation.
WHO/UNAIDS/UNICEF (2009) further revealed that Cotrimoxazole prophylaxis can cut mortality in half and reduce hospital admissions of children and that is inexpensive, and costs about US$ 0.03 per child per day, or about US$ 10 /child /year.

In resource-rich settings, the rate of HIV transmission from HIV-infected pregnant women who have access to a comprehensive package of PMTCT services to their infants is less than 2%. Unfortunately, in 2008, antiretroviral (ARVs) or ART to prevent MTCT, a crucial component of PMTCT services, reached only about 45% of pregnant women with HIV in low- and middle-income countries. In addition, most women received prophylaxis with only single-dose

nevirapine (NVP), a regimen that is less effective than combination of ARV regimens in reducing MTCT.

Despite the existence of national policies for cotrimoxazole prophylaxis and the fact that it is inexpensive, lifesaving, widely available, safe and theoretically easy to deliver there are very few children who have been initiated on it.

It is therefore important the research is undertaken to help in the identification of other critical barriers and explore possible strategies to further scale up cotrimoxazole prophylaxis.

Providing cotrimoxazole prophylaxis protects against serious, often fatal, opportunistic infections (OIs) and leads to improvement in the quality of life of HIV-infected infants while reducing the burden of care on health-care systems and caregivers. This is particularly important in resource-limited settings where access to effective services for prevention of mother-to-child transmission (PMTCT) and ART remains limited.

Epidemiological and clinical over view by WHO and UNICEF, (2009), estimates that; globally, over 90% of children with HIV live in sub-Saharan Africa, where sero prevalence rates among women of reproductive age remain high. The vast majority of these infants were infected *in utero*, during delivery or after birth through breastfeeding. For infants infected during pregnancy or delivery, HIV disease progression is particularly rapid, with mortality rates exceeding 50% in the first year of life.
Access to cotrimoxazole prophylaxis and early ART is life-saving for such infants.
Just as in adults, HIV in children damages the immune system; thus, opportunistic and other infections are more common and more severe. In addition, children in resource-limited settings are exposed to a greater burden of pathogens associated with early morbidity and mortality, irrespective of HIV status. HIV-uninfected infants born to HIV-infected women also have greater morbidity and mortality than HIV-unexposed infants and children (UNAIDS 2008: 33).

Benefits of cotrimoxazole prophylaxis in HIV infected infants and children cannot be over emphasized. Randomised controlled trials (RCTs) and studies with historical controls in HIV

infected African adults consistently show significant benefits in survival for those receiving cotrimoxazole prophylaxis. These improvements in survival have been accompanied by substantial reductions of severe disease events and the number of hospital admissions linked to invasive bacterial disease, pneumonia, malaria, and diarrhoea, although disease-specific benefit has varied between studies. It is well recognised that *P jirovecii* is a common cause of pneumonia and death in HIV-infected infants. The introduction of routine cotrimoxazole prophylaxis for infants at risk of HIV infection in several countries has been very effective in preventing *P jirovecii* pneumonia, which could in itself prevent a third to a half of all HIV related deaths in African infants (Zechariah et al and Watera et al, 2002,Chintu et al and Mwaungulu et al,2004,Grimwade et al,2005,WHO 2006).

However, the drug's routine use in resource-limited settings—particularly sub-Saharan Africa—has remained limited. Out of an estimated 4 million children who are in need of cotrimoxazole prophylaxis (HIV-exposed and HIV-infected), only 4% are currently receiving this intervention (Zachariah et al, 2009; Zachariah et al,2007)

Hypothetical objections against widespread use of cotrimoxazole in high HIV-prevalence countries according to Zachariah et al, (2007) include;
Scaling-up cotrimoxazole as part of the minimum package of care in Africa was initially hampered by a number of legitimate concerns. The provisional WHO/UNAIDS recommendations for Africa released in 2000, 30 were made on the basis of two studies both from Abidjan, Côte d'Ivoire, where at the time prevalence of bacterial resistance to cotrimoxazole was low. Clinicians and policy makers in Africa therefore doubted the efficacy of cotrimoxazole in countries where cotrimoxazole resistance was known to be high, and so did not accept or apply the provisional recommendations. Since then, several studies have shown that cotrimoxazole prophylaxis improves survival and reduces serious disease events even in areas of Africa where in-vitro cotrimoxazole resistance is common. Furthermore, although resistance levels increase with time, as they have in Abidjan, this has not prevented the drug from being useful. Cotrimoxazole's efficacy against pneumocystis, isospora, and malaria might explain its favourable effects on morbidity and survival in endemic areas. However, an RCT in children aged 5–15 years in Mali showed that cotrimoxazole prophylaxis does not appear to select for sulfadoxine-pyrimethamine-resistant *P falciparum.* Furthermore, since sulfadoxine-

pyrimethamine is being phased out and replaced by more effective artemisinin-based combination therapies in most countries, concerns about antimicrobial resistance to sulfadoxine-pyrimethamine have become less relevant, (WHO/UNAIDS/UNICEF, 2009).

Research is also needed to evaluate the efficacy of other antimicrobial agents for reducing morbidity and mortality of HIV-related infections in high HIV-prevalence countries (with and without malaria).

Other barriers identified include inadequate policy guidance on cotrimoxazole prophylaxis. The provision of HIV/AIDS care in the low-resource setting has mainly focused on antiretroviral drugs for treatment of HIV and for prevention of mother-to-child transmission (PMTCT) of HIV. Since 2006, WHO has begun to produce guidelines for use of cotrimoxazole and ART in infants and children (WHO, 2009)

The cotrimoxazole policy should also be incorporated into training curriculum for clinicians, doctors, nurses and other care providers also into guidelines and ongoing training involving integrated management of childhood illnesses (IMCI), PMTCT, tuberculosis, and HIV/AIDS care.

Therefore the universal option that remains is, Prophylaxis for all infants and children born to mothers confirmed or suspected of living with HIV especially in settings with a high prevalence of HIV, high infant mortality caused by infectious diseases, or limited health infrastructure (WHO,2009).

Funding gaps in high HIV-prevalence settings exist. Although cotrimoxazole is cheap, large-scale implementation of cotrimoxazole prophylaxis in settings with a high prevalence of HIV will need substantial resources and logistics. With a conservative global estimate of 2·8 million children requiring cotrimoxazole in 2005 (2·3 million HIV-infected children and 530 000 new HIV infections), this would amount to US$8·5–23 million per year on drug costs only, using an estimated annual cost of $3–8 per child (Zachariah et al, 2007).

Cotrimoxazole for HIV-exposed and HIV-infected children should be considered a priority intervention that is included in scale-up of paediatric HIV care and treatment.

The socio-economic impact of HIV/AIDS in Zambia is enormous because the most affected are individuals at the peak of their productive and reproductive period. HIV/AIDS has resulted in reduced productivity because of illnesses and premature mortality due to HIV – related opportunistic infections and malignancies. Furthermore these opportunistic infections have seriously overburdened the health care system at all levels (MoH, 2008)

The downward trend of many African Economies has increased poverty levels. NAC (2009 pg.15) outlines that young people, women and other vulnerable groups engage in high risk sexual behaviors due to limited life skills. These include negotiating and vocational skills which increase self assertiveness and economic empowerment. There are also limited skills in gender analysis and planning in the country. As a result these women resort to marriage or even sexual work as means of earning a living. The combination of dependence and subordination of women can make it difficult for girls and women to demand for safer sex practices or opt to end relationships that seem to provide them with some means of livelihood. Most women in rural areas barely survive due to lack of income (NAC, 2009 Pg. 12). They have many commitments like caring for their children and selling at the market places to earn a living. This many influence utilization of cotrimoxazole.

2.6 DISTANCES TO THE HEALTH FACILITY

Advocacy for the development of specific, easy-to-use, and affordable HIV diagnostics for identifying HIV infection in children less than 18 months of age is urgently required.

Sometimes, Prescriptions of cotrimoxazole prophylaxis are restricted to isolated HIV/AIDS clinics. Although identification of HIV-exposed infants and HIV infected children might occur at different sites in the health system, patients are often obliged to present themselves to specialised HIV/AIDS clinics, often located in hospital settings, if they are to receive a prescription of cotrimoxazole prophylaxis. This means additional waiting times in queues, the need for separate

visits, or long distance travel to hospitals for monthly prescription refills. The latter is an important barrier for those committed to continuing prophylaxis; one of the main reasons for stopping prophylaxis is the high cost of transport to distant health facilities. It is much more convenient to provide a 3-month rather than 1-month supply of drugs when distance and transport costs are issues and this is likely to improve adherence.

It is advised that an integrated one-stop service that provides cotrimoxazole prescriptions at all sites where there is contact with children would foster a patient-friendly approach. To improve access for continued cotrimoxazole prophylaxis, drug refills should be made readily available at decentralised sites including health centres and home based care programmes and given on site. All health workers or members of multidisciplinary care teams should be able to prescribe cotrimoxazole (WHO, 2009).

HIV infected women who have to cover longer than 6 kilometers may not be able to go for subsequent supply of Septrin for their infants.

2.7 SOCIO-CULTURAL FACTORS INFLUENCING COTRIMOXAZOLE USE BY HIV POSITIVE MOTHERS/CARETAKERS

Some socio-cultural practices and norms often place women at a disadvantage and pose great risk to their health (GIDD, 2000). Girls are socialized to become wives and mothers who are generally submissive and have a low opinion of themselves. Zambia Counselling Council, 2003, states that women are generally socialized to take a passive role on issues of sex and reproductive health. Example, some women would rather have unprotected sex with their spouse or sexual partners even when they know he is infected with HIV. This could be attributed to the social and economic dependency of women on their partners and for decision making.

2.7.1 HIV positive mothers/caretakers' Past experiences with HIV/AIDS relatives

Past experiences with HIV/AIDS relatives have made people more knowledgeable about the disease treatment, care and support given. However, this past experience could have a negative or positive influence towards Septrin use. Lewin et al in the Health Belief Model stated that

previous knowledge of the severity of a disease might instigate people to adopt a more responsible attitude to disease prevention and health care maintenance.

2.7.2 Educational level of the HIV positive mothers/caretakers

A Mother/caretaker's education level can influence cotrimoxazole prophylaxis use by infants exposed to use. Those who are able to read and write are better placed because they can access the written audiovisual materials on HIV/AIDS and PMTCT. This helps in making decisions better than their illiterate counterparts. Illiterate levels are higher among women than males. Educational levels can affect the attitudes and practices of clients on PMTCT as women are primary caregivers.

2.7.3 Prior discussion on HIV testing by HIV positive mothers

Men dominate decision making in many relationships while many women can
accept to be tested and get their results, they can only find it easier to disclose their status if they had discussed testing before with their partners (USAID, 2003). Where they did not disclose to their husbands, women will not come for follow up on their infants and re-supply of Septrin for fear of divorce and discrimination if their husbands was to know about it.

2.7.4 Stigma and discrimination faced by HIV positive mothers

HIV/AIDS is associated with stigma and discrimination and this would prevent infected mothers from going to the health facility to collect co-trimoxazole for their infants.

2.7.5 Misconceptions about HIV/AIDS cure by HIV positive mother/caretaker

Facts about lack of cure for HIV/AIDS may create myths that there is no available remedy of any HIVAIDS related symptom and therefore not come for co-trimoxazole collection

2.8 SERVICERELATEDFACTORS

2.8.1 Limited family-centered services

NAC (2009:15) reveals that prevention services are more individual and institution focused; not supportive of a family oriented service delivery approach. This hinders continuum of care at the family and community levels.

2.8.2 Availability of Counseling services for HIV

Health Services have faced major increase in number of patients and counseling has had to be developed and often for the first time, Zambia Counselling Council (ZCC 2003). Counseling antenatal mothers is noble understanding and can exert psychological pressures on the counselor.HIV/AIDS related illnesses could evoke worry in the counselor to the extent that the counselor fails to function competently and professionally. This may result in poor counseling outcome. ZCC (2008:2) outlines that some people experience difficulties to share results of their HIV status due to lack of adequate guidance from the counsellors, non availability of national guidelines on partner notification, and lack of motivation to do so. At other times posttest counselling is either not adequate or not provided: clients are not denied a golden opportunity to explore issues pertaining to partner notification and the need to do so.

2.8.3 Health Worker's Communication Skills

Many positive women are not well informed about their medical conditions. On the other hand, health care workers do not often provide the women with useful or accurate information or their conditions and the condition of their infants. This could therefore lead to women seeking treatment when significant damage to the immunity system has already taken place. ZCC (2008:2) further allude to the fact that some HIV positive women are reluctant to share information about their HIV status despite knowing or having taken a test because of fear of isolation, stigmatization and censure by family, friends and the community.

2.8.4 Health facility Staff attitude

Attitudes of the health workers towards HIV mothers may affect utilization of cotrimoxazole. For instance, if the health care workers have a negative attitude towards HIV positive mothers, the women will not utilize the care services.

In a study conducted by Kankasa et al.(2000), it was found that most mothers interviewed reported that they were pleased with the counseling received and the attitude of the health workers at service delivery points, although some wanted more counseling time. Some said the

post test counseling they received did not give them ample opportunity to ask questions and others received no advice on how to tell their spouse about their HIV status. Many women said that they needed more information on how to reduce their risk of infection and others wanted to know what being HIV Positive mean for themselves and their babies. These findings suggest the need to invest more time in post test counseling. .

2.8.5 Inadequate human resource at the Health facility

As prevention activities are being scaled-up, it is important to remember that this will escalate the already existing challenges of human resources in prevention, as well as treatment, care and support. The current staffing levels in health facilities are inadequate to meet the demands of providing not only prevention, but other services as well (NAC, 2009:13). This underpins the importance of multi-sectoral response in addressing the pandemic.

This is one of the factors that would lead to inadequate counseling training and inadequate client counseling.WHO(2007) country report on HIV/AIDS stated that staffs working in PMTCT Programmes in many countries have taken extra workloads without extra pay. The same ANC health worker usually provides both HIV/AIDS and Pregnancy related counseling and care. This has greatly de-motivated staff. Kankasa et al. (2000) cited that in Zambia staff shortages and heavy workload are among the key constraints to priority adequate Voluntary Counselling and Testing (VCT) and care.

2.8.6 Male Involvement in PMTCT

Men play critical roles in decision-making processes at household and institutional levels. This creates a big gap considering that men are the major decision makers even regarding health seeking behaviours.

This scenario could hinder women from disclosing their status to their husbands and consequently since men make decisions on health and health care for their families; this will prevent mothers from coming for follow up visits. Mutunda (2001): reports that if PMTCT, programmes involved males; it may yield positive result.

(NAC, 2009: 14) further identified in their field visits that in areas where "male taking action" programmes are implemented, and men have been involved in the design, implementation and evaluation of HIV programmes, revealed better results.

2.9.1 Severity of disease

The stage of the disease may have an influence on how the woman would treat the HIV status and her infant. Those who would have reached a stage where significant damage to their immunity system has taken place may be more likely to disclose their status and seek care and treatment for themselves and their babies because of seriousness of the disease.

2.10 CONCLUSION

Literature on compliance to cotrimoxazole prophylaxis among HIV exposed infants is lacking. This scenario may be due to the fact that most countries within the Sub-Saharan Africa have just started providing cotrimoxazole prophylaxis to HIV exposed infants and have just started reporting on the utilisation of cotrimoxazole prophylaxis and its challenges. Therefore, most of the literature reviewed and presented in this chapter is related literature on cotrimoxazole prophylaxis.

Cotrimoxazole prophylaxis is safe, inexpensive and highly effective in reducing morbidity and mortality among HIV-infected infants and children. Coverage, however, remains unacceptably low. One of the main challenges countries face in scaling up uptake is the absence of mechanisms to systematically identify and follow up HIV-exposed infants at and after birth. Systems need to be in place to ensure that health workers consider the possibility of HIV infection in infants at birth, and at all clinic or other health encounters thereafter, so that this intervention can be provided on a timely basis. In Zambia, no study has been conducted on factors associated with cotrimoxazole compliance among HIV exposed infants. The investigator therefore conducted this research in order to provide baseline data that would help in policy implementation in PMTCT strategy on cotrimoxazole prophylaxis.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 INTRODUCTION

Polit and Hungler (2001) states that research methodology is a method or technique used by the research scientist to collect data use statistical manipulation and arrives at a logical conclusion. In this study, the research methodology includes, research design, research setting, study population, sample selection and others.

3. 2 RESEARCH DESIGN

Polit and Hungler (1999) state that a research design is the overall plan for addressing a research question including the specifications for enhancing the integrity of the study. The research study used a cross-sectional descriptive design. Descriptive study designs are useful in gaining information about characteristics within a particular field of study and to provide a picture of situations as they naturally happen (Burns and Grove, 2009: 696). Cross-sectional designs examine groups of subjects in various stages of development, trends, patterns and changes simultaneously with the intent to describe changes in the phenomena across stages (Burns and Grove, 2009: 695). The study has used quantitative approach. This has enabled the investigator to have a broader understanding of the subject under study and arrive at more persuasive findings for policy makers. A quantitative approach has allowed generalization of findings. It has also enabled the researcher to document frequencies concerning compliance to cotrimoxazole prophylaxis.

3.3 RESEARCH SETTING

The study was undertaken at Chikankata mission hospital and three health centres (Malala, Dundu and Terranova) in Chikankata district situated 60 kilometers east of Mazabuka District in Southern province, about 125 km from Lusaka.

The Hospital catchment area has a population of 97,652 and it offers preventive, curative and rehabilitative services. There are nine (9) health centers in chikankata catchment area. The study

was undertaken in this particular setting because the results of the study would enable policy makers understand how rural communities perceive the issue of cotrimoxazole prophylactic use. The study has provided chance to this remote community to participate in the ongoing policy debate as they may not get an opportunity to do so through media. The site has been conveniently selected due to the limited resources that are available to the investigator.

3.4 STUDY POPULATION

A study population is the total group of individuals or people or things meeting the criteria of interest of the researcher (Dempsey and Dempsey, 2000; Basavanthapa, 2007). The study population comprised of HIV positive mothers/caretakers aged 19- 49 years with infants aged 4 weeks-18 months

3.5 SAMPLE SELECTION

Sample selection involves choosing a group of people, events, behaviors or other elements with which to conduct a study (Burns and Grove, 2009).

The study used a multistage sampling method. The first stage involved simple random selection of zones from the Chikankata Mission catchment area. The second stage involved simple random selection of health centers. Lastly, participants were selected using convenient sampling from the Health centre registers.

3.5.1 INCLUSION CRITERIA

i. Women/caretakers 19-49 years of age who are HIV positive and have given birth before, or were pregnant at the time of the study and caretakers of HIV exposed children residing in the study area.

ii. All HIV positive women/caretakers aged 19-49 years with infants aged 4 weeks -18 Months who consented to participate in the study.

iii. All HIV women/caretakers with infants 4 weeks- 18 months who were residing in the study areaat the time of the study.

3.5.2 EXCLUSION CRITERIA

The exclusion criteria included;

i. Individuals below eighteen years.
i. Those who declined to be interviewed.
ii. Mentally challenged adults.
iii. HIV women who did not give consent to participate in the study and those who did not reside in chikankata catchment area.

3.6 SAMPLE SIZE

Sample size for quantitative data was calculated using epi info version 3.3.2 stat calc.

i. Population of 90 000.
i. Confidence interval 95%
ii. Prevalence 50%
iii. Worst acceptable level 45

FORMULAR

N=Z2 P (1-P) /d2

Z= 1.96

P= 8%

THEN 1-P=1-0.08=0.92

d=0.05(5%) is the precision

n=1.96*1.96*0.08*0.92/ 0.05*0.05

n= 114

n=102, Adjusted for Non response

3.7 DATA COLLECTION TOOLS

A data collection tool is a device used in gathering of information needed to address a research problem (Polit and Hungler, 2008).

In this study, a pre tested semi structured interview schedule designed by the researcher was used to collect data from respondents. Data was collected over a period of one month. The tool had a set of pre-determined open and closed ended questions with the same wording and order of questions. Polit, Beck and Hungler,(2008) states that Closed ended questions allow quick recording of responses and save on time while open ended questions permit free expression in answering and are likely to bring out more valid responses.

According to Polit and Hungler(1999), some of the advantages of using this tool are:

- It is appropriate/caters for illiterate respondents since the study will be done in rural areas.
- It is easy for the researcher to ensure that all questions are answered
- It gives the interviewer chance to observe any non-verbal cues and can allow for probing.
- It allows the researcher to clear any misunderstandings the respondents might have during the interview.

For this study, the semi structured interview schedule was chosen as a data collecting tool because the population under study is both literate and illiterate so the interviews catered for both categories of respondents.

One of the disadvantages of using a semi structured interview schedule is that the presence of the interviewer may make interviewee not give precise and accurate responses, if the interviewee is not verbally expressive polit and Hungler, (1999). However, research assistants were trained in data collection.

The semi structured interview schedule had 3 sections. Section A comprised respondent's socio-demographic data. Section B had knowledge questions on the benefits of cotrimoxazole prophylaxis. Section C consisted of questions on compliance of cotrimoxazole prophylaxis. Section D had questions on service related factors that could have influenced mothers/caretakers

compliance to cotrimoxazole prophylaxis and section E comprised questions on socio-cultural factors that could have influenced the compliance of mothers/caretakers of HIV exposed infants with cotrimoxazole prophylaxis.

3.7.1 VALIDITY

Validity is the determination of whether a measurement instrument actually measures what it is purported to measure (LoBiondo-Wood and Haber, 2006). In this study, validity was measured by a pilot study that was conducted before the main study. Any question that was not clear from the pilot study was changed. A semi-structured interview schedule was used and questions that were not clear were clarified during the interview.

3.7.2 RELIABILITY

Reliability refers to the consistency and constancy of a measuring instrument (LoBiondo-Wood and Haber, 2006). The instrument used should be able to bring out the accurate information whereby when the instrument is used after some time it should produce the same response or results. In this study, reliability of the data collecting instrument was ensured by pre-testing the research instruments. In addition, the research assistants were trained in data collection methods

3.8 DATA COLLECTION TECHNIQUES

This refers to a method used to systematically gather information relevant to the research purpose, or the specific objectives, questions or hypotheses of a study (Burns and Grove, 2009).

Data collection techniques are methods used to collect data from the research respondents. Face to face interview were used to collect data. Face to face interviews offered the investigator an opportunity to gain insight into the perspectives of people concerning cotrimoxazole use. It also allowed people to express their personal feelings, opinions, and experiences concerning cotrimoxazole. The technique is also seen to be appropriate as it enabled people to discuss the issue freely since HIV is a sensitive issue and people may be reluctant to discuss it in a group setting.

Self introduction was made by the researcher and the participants before starting each interview in order to create rapport and make participants to relax. The purpose of the study was explained to the participants. Questions were asked the way they are written, without any moderations. Questions not understood were merely repeated without paraphrasing them or indicating the direction of the answer.

The study participants were interviewed using a standardized semi-structured interview schedule. Each study participant was interviewed at the health centre for 20 minutes, in a private room to ensure privacy. All interviews were conducted between 08:00 and 16:00 hours. Interviews were conducted in Tonga. Each interviewer conducted about 3-5 interviews per day. After each interview the interviewer checked the research instruments for completeness before leaving the study site.

The researcher ensured respondents' comfort at all times by considering their priorities, or where not possible, explained to them. Patience was exercised and respondents were given time to think through the question and respond. Respondents were politely asked to repeat answers not understood by the interviewers. All responses were recorded right away to avoid missing any of them. At the end of each interview, respondents were given time to ask questions, which were answered accordingly. Respondents were thanked at the end of each interview.

3.9 PILOT STUDY

A pilot study is a smaller version of a proposed study conducted to develop or refine the methodology, such as the treatment, instrument or data collection process (Burns and Grove, 2009).

The purpose of a pilot study is to determine whether the proposed study was feasible, identify problems with the study design, to determine whether the sampling technique is effective, to examine reliability and validity of the research instruments and refine data collection instruments (Polit, Hungler and Beck, 2008). It also gave the researcher experience with the subjects, setting, methodology and methods of measurement, and also to try out data analysis techniques (Burns and Grove, 2009).

A pilot study was conducted at Nameembo rural health center within the catchment of Chikankata. The health center provides both curative and preventive services, including maternity Services.

The Health center was chosen for conducting the pilot study because it had similar characteristics with the study population. The pilot study sample comprised 10% of the study sample, which is 10 respondents. The study respondents for the pilot study were conveniently selected.

The respondents used for the pilot were not included in the study. Thereafter, adjustments were made to the data collection tool as necessary. Adjustments include grouping of responses into two categories of education as formal and no education as most of the respondents had mainly primary education to give an overall picture.

3.10 ETHICAL CONSIDERATIONS

The investigator obtained Ethical clearance from the ERES Converge IRB committee. Before the data collection exercise was commenced, permission to conduct the study was sought from the Medical Superintendent of Chikankata Hospital.

During the data collection exercise, it was explained to each participant that there were no monetary benefits for participating in the study. Informed consent was sought from each participant. The researcher explained to the participants that there were very minimal risks to participating in the research. Participants were informed that they would not be subjected to any physical harm as the study did not involve invasive procedures but that the discussions may arouse emotional reactions to subjects that were already HIV positive. However the participants were reassured that they would not be asked about their HIV status.

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Respondents were assured that confidentiality of their information would be maintained and that their identity would remain anonymous. During in-depth interviews, the anonymity of subjects were ensured by using serial numbers on the semi-structured interview schedules without writing the respondent's names.

It was also explained to the respondents that they were free to terminate their participation in the research at any time without consequences. Before in-depth interviews, respondents were encouraged to indicate their desire to discontinue the discussions if they so wish without facing any penalties.

Interviews and discussions were conducted in a private room at the health centre. To ensure confidentiality, no one, apart from the researcher was allowed unnecessary access to the collected data.

CHAPTER FOUR

4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 INTRODUCTION

The general objective of the study was to determine factors associated with compliance to cotrimoxazole by mothers/caretakers of HIV exposed infants. A total of 102 respondents were interviewed over a period of two and half months of September to November 2014

4.2 DATA PROCESSING AND ANALYSIS

Following data collection, the structured interview schedules were sorted out and edited for internal consistency, legibility and completeness each time the investigators returned from the field. This was consistently done to make sure that there was quality control. The closed ended responses were coded (by giving numbers) to ensure easy entry and analysis of data when using a computer. The open ended responses were categorised and assigned suitable codes so that all the related issues were brought together under themes. The codes were then entered and analysed using SPSS statistical software and excel computer packages. The confidence interval was set at 95%. A result yielding a P value of less than 0.05 was considered to be statistically significant.

4.2.1 PRESENTATION OF FINDINGS

The findings have been presented according to the layout of the questions and sections of the interview schedule. Some of the findings have been grouped together in tables to show an overall picture. The findings have been presented using frequency tables, frequency bar charts, cross tabulations as effective ways of communicating research findings.

SECTION A: DEMOGRAPHIC DATA OF THE RESPONDENTS

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Figure 4.1: Primary caretaker of the infant (n=102)

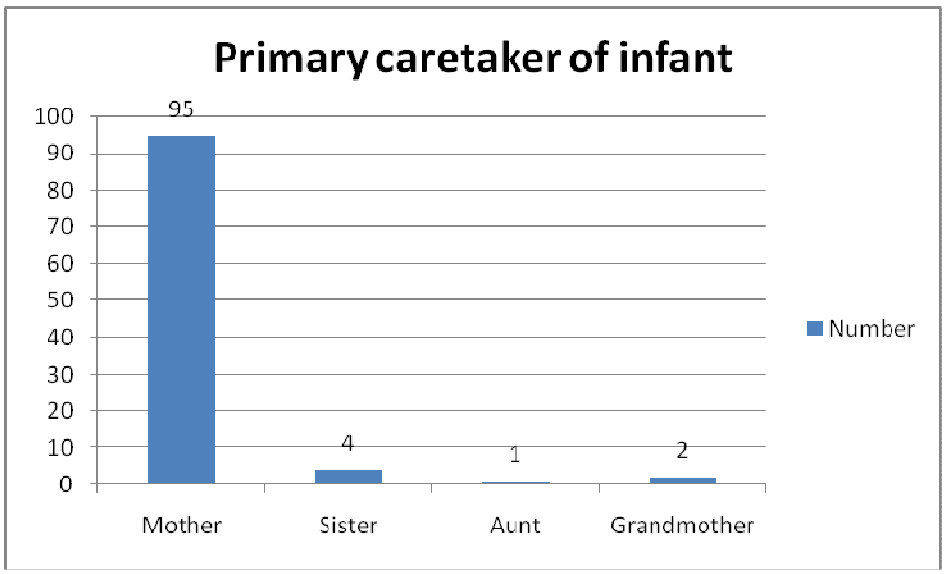


Figure 4.1 shows that 95 (93.1%) of the primary care takers of infants were their mothers, 4 (3.9%) were their sisters, 2 (2.0%) grandmothers and 1 (1.0%) was an auntie.

Table 4.1. Infant characteristics of the sampling distribution (n=102)

Variable	Category	n (%)
Sex of infants	Boys	36 (35.3)
	Girls	66 (65.7).
Age of infants	4 – 6 weeks	10 (9.8)
	7 - 9 weeks	5 (4.5)
	10 – 13 weeks	11 (10.8)
	> 13 weeks	76 (74.5)
Infant is on cotrimoxazole prophylaxis	Yes	88 (86.3)
	No	12 (12.0)
Age at which infants started taking cotrimoxazole.	Mean ± SD	7.1 ± 6.6
How often the infants are given cotrimoxazole	Once daily	83 (81.4)
	Twice daily	5 (4.9)
	N/A	14 (13.7)
How often the mother/caretaker collects cotrimoxazole for the infant.	Monthly	66 (64.7)
	After 2 months	12 (11.8)
	Whenever drug runs out	22 (21.6)
Infant's father HIV status	Positive	66 (64.7)
	Negative	21 (20.6)
	Unknown	15 (14.7)
Father's live status	Alive	100 (98.0)
	Dead	1 (1.0)

Table 4.1 shows that Thirty six (35.3%) of the HIV exposed infants were boys and 66 (65.7%) were girls. About 76 (74.5%) of HIV exposed infants were in the age range of greater than 13 weeks. The HIV exposed infants started using this prophylaxis at the mean age of 7.1±6.6 weeks. About 88 (86.3%) of the infants were on cotrimoxazole prophylaxis while 12 (12%) were not. More than three quarters mothers/caretakers of HIV exposed infants (81.4%) reported that they were giving their infants cotrimoxazole prophylaxis once daily. More than half (64.7%) of the mothers/caretakers stated that they collected monthly, 11.8% collected after 2 months and 21.6% collected whenever the drug ran out. Most (98%) of the HIV exposed infant's fathers were alive. Of these fathers 64.7% (66) were HIV positive while 20.6% (21) were negative and 14.7% (15) had unknown HIV status.

Table4. 2. Mothers/caretaker characteristics of the sampling distribution (n=102)

Variable	Category	n (%)
Age of mother/caretaker Of infant	19 – 24 years	19 (18.6)
	25 – 30 years	37 (36.3)
	31 – 39 years	36 (35.3)
	Above 39 years	10 (9.8)
Marital status of Mother/caretaker	Single	12 (11.8)
	Married/living together	77 (75.5)
	Divorced	6 (5.9)
	Widowed	1 (1.0)
	Separated	6 (5.9)
Highest level of education for	Had no formal education	9 (8.8)
	Had formal education	92 (90.2)
Occupation of mother/caretaker	Formerly employed	7 (6.9)
	Self employed	22 (21.6)
	Unemployed	72 (70.6)
Family monthly income of mother/caretaker	Below K150.00	48 (47.1)
	K150.00 – K300.00	30 (29.4)
	K301.00 – K600.00	12 (11.8)
	Above K600.00	12 (11.8)
Religious denomination of mother/caretaker	Salvation army	47 (46.1)
	Pentecostal	2 (2.0)
	SDA	32 (31.4)
	Other	21 (20.6)
Number of children for mother/caretaker	1 - 2	25 (24.5)
	3 - 5	64 (62.7)
	Above 5	13 (12.7)
Mother enrolled in HIV/ART care	Yes	83 (81.4)
	No	19 (18.6)
Mother/caretaker has ever heard about cotrimoxazole prophylaxis	Yes	95 (93.1)
	No	7 (6.9)
Source of information where mother/caretaker heard about, n=102	Health worker	100 (98.0)
	Relatives	2 (2.0)
Mother/caretaker had knowledge on the use of cotrimoxazole prophylaxis	Yes	62 (60.8)
	No	40 (39.2)
Mother/caretaker had knowledge of the benefits of using cotrimoxazole prophylaxis	Yes	52 (51.0)
	No	48 (47.0)
The mother/caretaker's mode of transport to the nearest health facility	Walking	90 (88.2)
	Bicycle	1 (1.0)
	Vehicle	11 (10.8)

According to table 4.2, a large number of the mothers/caretakers the HIV exposed infants were in the age ranges of between 25 and 39 years (71.6%) ,18.6% and 9.8% were in the age ranges of 19 to 24 and above 39 years respectively. Most of mothers/caretakers of HIV exposed infants were married 75.5%. Ninety percent (92.2) of mothers/caretakers of HIV exposed infants had formal education. Only 6.9%(7) of the mothers/caretakers were in formal employment. 70.6% (72) were unemployed and 21.6% (22) were self employed. Forty seven percent (47%) of the respondents had a family monthly income of below K150.00, 29% earned an income between K150.00 and K300.00, 12% earned an income between K301.00 - K600.00 and 12% had an income above K600.00. Ninety three percent (93%) of the respondents had ever heard about cotrimoxazole prophylaxis and their source of information was the health worker(98%). Interestingly only 60.8% (62) of the mothers knew what cotrimoxazole prophylaxis was used for. Eighty one percent (81%) of the mothers/caretakers of the HIV exposed infants were enrolled in the ART program. Most of the respondents (90%) used to walk to get to the health facility to get the drugs.

SECTION C: SERVICE RELATED FACTORS INFLUENCING MOTHERS/CARETAKERS OF HIV EXPOSED INFANTS COMPLIANCE WITH COTRIMOXAZOLE PROPHYLAXIS.

Table 4. 3. Service related factors of the sampling distribution (n=102)

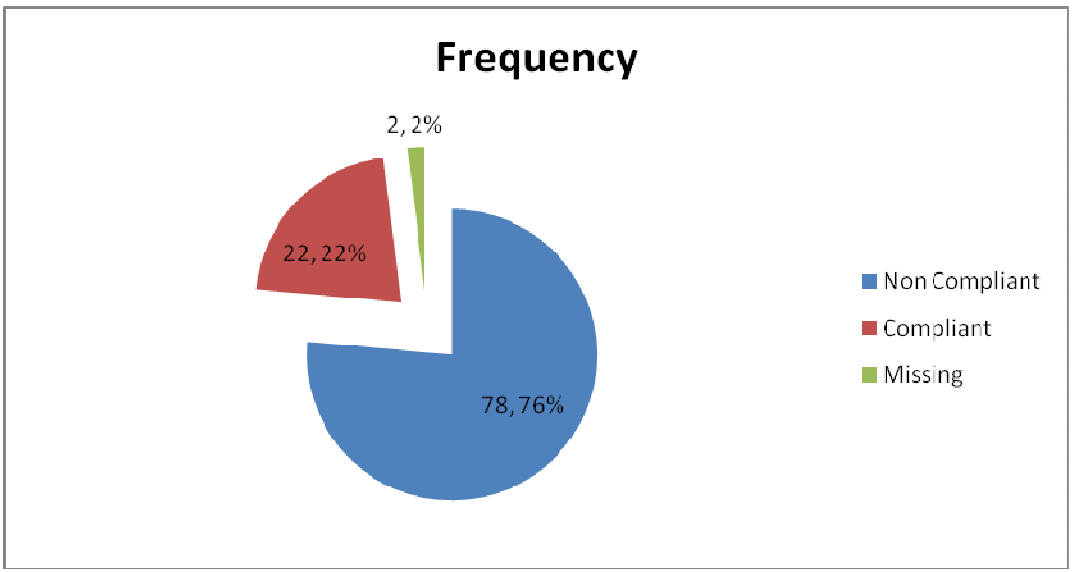
Variable	Category	Frequency (Percentage)
Availability of Cotrimoxazole at the nearest health facility	Yes	23 (22.5)
	No	77 (75.5)
Hours taken to reach nearest	Mean ± SD (hours)	1.31 ± 0.72
Time taken before mothers/caretakers are attended at the health facility	Mean ± SD (hours)	1.01 ± 1.09
Road between their respective homes and nearest health	Yes	91 (89.2)
	No	10 (9.8)
Attitude of health care providers at nearest health facility	Encourage them to collect and use cotrimoxazole	27 (25.7)
	Were not encouraged to collect and use use	73 (71.6)
Nurses at nearest facility follow up mothers/caretakers	Yes	45(44.1)
	No	55(53.9)

Table 4.3 Shows that 75.5% of the mothers/caretakers of HIV exposed infants said that it was not available at their nearest health facility. On average the mothers/caretakers take about 1.3 hours to travel from their homes and reach the nearest health facility. At the health facility on average they reported that they waited for about 1 hour before they were attended to by health care workers. Most of the respondents (89.2%) said that roads between their respective homes and nearest health facility were impassible during rainy season. Majority of mothers/caretakers 71.6% reported that the health workers did not encourage them to get and use cotrimoxazole. Fourty four percent (44.1%) of the mothers/caretakers indicated that nurses at the nearest health facility follow them up to their respective homes.

SECTION C: MOTHERS/CARETAKERS OF HIV EXPOSED

INFANTS'COMPLIANCE WITH COTRIMOXAZOLE PROPHYLAXIS

Figure 4. 2: Compliance to the use of cotrimoxazole prophylaxis (n=102)



Out of 102 mothers/caretakers of HIV positive infants from Chikankata Mission Hospital, only 22 (22%) were compliant as compared to 78 (76%) who were not compliant (Figure 4. 2).

Figure 4.3: Mothers / caretakers level of knowledge on the benefits of cotrimoxazole Prophylaxis

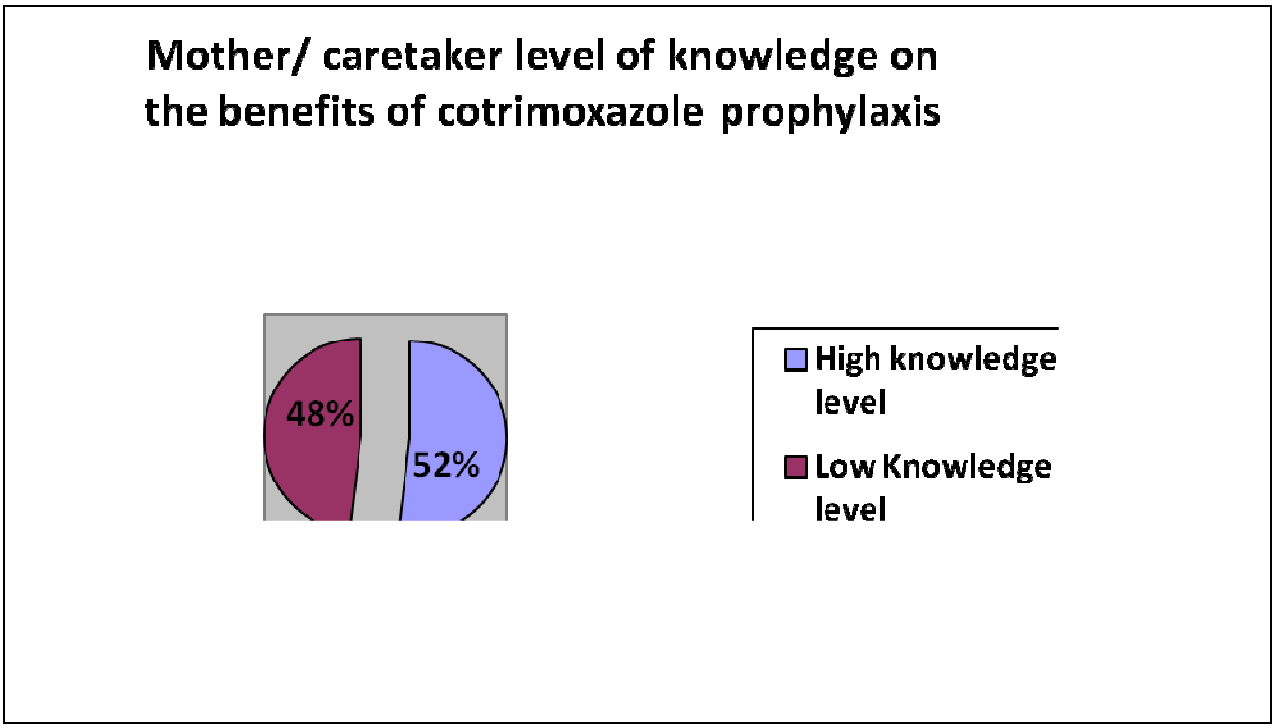


Figure 4.3 shows that Fifty two percent (51) of the respondents knew the benefits of cotrimoxazole prophylaxis.

SECTION D: SOCIO-CULTURAL FACTORS INFLUENCING MOTHERS/CARETAKERS OF HIV EXPOSED INFANTS' COMPLIANCE WITH COTRIMOXAZOLE PROPHYLAXIS.

Table 4. 4. Social and cultural characteristic of the sampling distribution

Variable	Category	n (%)
Spouse allows mother/caretaker to collect cotrimoxazole when it runs out	Yes	23 (22.5)
	No	76 (77.5)
Spouse knows about the mother/caretaker HIV status	Yes	91 (89.2)
	No	9 (8.8)
Mother/caretaker feels free to give a child cotrimoxazole in public	Yes	67 (65.7)
	No	32 (31.4)
There is a social support group for mother/caretaker of the HIV exposed infants	Yes	37 (36.3)
	Don't know	63 (61.8)
There are misconceptions about cotrimoxazole prophylaxis in the communities where mother/caretaker lives	Yes	76 (74.5)
	No	24 (23.5)

As indicated in table 4.4 most of the mothers/caretakers of HIV exposed infants were not allowed by their spouses to collect cotrimoxazole when it ran out (77.5%). Eighty nine percent (89.2%) of the mothers/caretakers of the HIV exposed infants reported that their spouses knew about their HIV statuses. About one third (31.4%) of the mothers/caretakers of HIV exposed infants indicated that they were not free to give cotrimoxazole to their infants in public while two thirds (65.7%) said they were free. Slightly above a third (36.3%) of the mothers/caretakers of HIV exposed infants reported that there were social support groups for mothers/caretakers of the HIV exposed infants in the community while 61.8% were not aware of existence of any social support group. About three quarters (74.5%) of mothers/caretakers of HIV exposed infants said that there were misconceptions about cotrimoxazole prophylaxis in the communities where they lived.

4.2.2 SOCIAL AND CULTURAL FACTORS ASSOCIATED WITH COMPLIANCE TO COTRIMOXAZOLE PROPHYLAXIS USE

SECTION E: ASSOCIATIONS AMONG VARIABLES

Table 4. 5. Social cultural factors associated with compliance to cotrimoxazole prophylaxis use (n=102)

Variable	Compliant		P-value
	Yes,n(%)	No, n(%)	
Spouse allows mother/caretaker to collect cotrimoxazole when it runs out			
Yes	19 (90.5)	4(5.4)	< 0.0001
No	2 (9.5)	74 (94.9)	
Spouse knows about the mother/caretaker HIV status			
Yes	19(86.4)	72 (92.3)	0.408
No	3(13.6)	6(7.7)	
Mother/caretaker feels free to give a child cotrimoxazole in public			
Yes	20 (90.9)	47(61.0)	0.009
No	2 (9.1)	30 (39.0)	
There is a social support group for mother/caretaker of the HIV exposed infants			
Yes	17(77.3)	20 (25.6)	0.0002
Don't know	5 (22.7)	58 (74.4)	
There are misconceptions about cotrimoxazole prophylaxis in the			
Yes	7 (31.8)	69 (88.5)	< 0.0001
No	15 (68.2)	9 (11.5)	
Highest level of education for			
Had no formal education	2 (9.1)	7 (9.1)	1.000
Had formal education	20 (90.9)	70 (90.9)	
Mother/caretaker had knowledge of the			
Yes	18 (81.8)	34(43.6)	0.002
No	4 (18.2)	44 (56.4)	

Table 4.5. Shows that mothers/caretakers of HIV exposed infants who were compliant with cotrimoxazole prophylaxis were more likely to be allowed by their spouses to collect cotrimoxazole from the health facility when it ran out (90.5% Vs 9.5%, P<0.0001). Mothers/caretakers of HIV exposed infants who were compliant with cotrimoxazole prophylaxis were more likely to feel free to give cotrimoxazole to their infants in public (90.9% Vs 9.1%, P=0.009). Mothers/caretakers of HIV exposed infants who indicated that there was a social support group for mother/caretaker of HIV exposed infants were more likely to be compliant with cotrimoxazole prophylaxis compared to those that said that they did not know (77.3% Vs 22.7% , P=0.0002). Mother/caretaker of HIV exposed infants who stated that there were misconceptions about cotrimoxazole prophylaxis in the communities where they came from were less likely to be compliant (31.8% Vs 68.2%, P<0.0001). The findings showed no significant difference between mothers/caretakers who had no formal education compared to those who had formal education (P> 0.05). It is also interesting to note that Mother/caretaker of HIV exposed infants who had knowledge of the benefits of cotrimoxazole prophylaxis were more likely to be compliant than those who did not have the knowledge (81.8% Vs 18.2%, P= 0.002).

Table 4. 6. Service related factors associated with compliance to cotrimoxazole prophylaxis use (n=102)

Variable	Compliant		P-value
	Yes,n(%)	No, n(%)	
Cotrimoxazole available at their nearest health facility			
Yes	19 (86.4)	4 (5.1)	< 0.0001
No	3 (13.6)	74 (94.9)	
How long it takes before for them to be attended to at health facility when they reach, (mean hours)	1.26±0.66	1.50±0.91	0.178
Hours taken to reach nearest facility,	0.85±0.82	1.06±1.16	0.335
Road between their respective homes and nearest health facility is passable, (mean hours)			
Yes	17 (77.3)	5 (6.5)	0.026
No	5 (22.7)	72 (93.5)	
Altitude of health care providers at nearest health facility			
Encourage them to collect and use	17 (77.3)	10 (12.8)	< 0.0001
Don't know	5 (22.7)	68 (87.2)	
Nurses at nearest facility follow up mothers/caretakers			
Yes	18 (81.8)	27 (34.6)	0.0009
No	4 (18.2)	51 (65.4)	

Table 4.6. Indicated that the mothers/caretakers of HIV exposed infants who said that cotrimoxazole was available at the nearest health facility were more likely to be compliant with cotrimoxazole compared to those who said it was not available (86.4% Vs 13.6%, P<0.0001). On average the mothers/caretakers of HIV exposed infants who were compliant with cotrimoxazole prophylaxis were likely to take less time to reach the nearest health facility from their homes compared to those who were not compliant (0.85±0.82 hours Vs 1.06±1.16 hours). This relationship was however not statistically significant. The mothers/caretakers of HIV exposed infants who spent less time at the health facility before being attended to by caregivers were

more likely to comply than those who were not compliant (1.26±0.66 hours Vs 1.50±0.91 hours) though this relationship was not statistically significant. Mothers/caretakers of HIV exposed infants who said that the road from their homes to the nearest health facility was passable were more likely to be compliant with cotrimoxazole prophylaxis compared to those who said the road was not passable (77.3% Vs 22.7%, P=0.026).

The mothers / caretakers of HIV exposed infants who said that nurses from nearest health facility followed them up to their homes to check on them were more likely to be compliant with cotrimoxazole prophylaxis than those who said that nurses don't follow them up (81.8% Vs 18.2%, P=0.0009). It is also interesting to note that mothers / caretakers of HIV exposed infants who stated that providers those who felt that the providers were encouraging them to collect cotrimoxazole were more likely to be compliant with cotrimoxazole as compared to those who said that they did not know the attitudes of the providers (77.3% Vs 22.7%, P<0.0001).

CHAPTER FIVE

5.0 DATA ANALYSIS AND DISCUSSION OF FINDINGS

5.1 INTRODUCTION

The discussion is centered on the general objective of the study which sought to determine the factors associated with cotrimoxazole compliance among HIV exposed infants at Chikankata Mission Hospital. Data was collected using a structured interview schedule between September - November 2014.Data analysis was done using SPSS version 21statistical packages as it was convenient to show associations of dependent and independent variables.

5.3 DISCUSSION OF FINDINGS

5.3.1 DEMOGRAPHIC DATA

Section A of The data collecting instrument consisted of the respondent's demographic data. A large number of the mothers/caretakers (71.6%) were in the age ranges of between 25 and 39 years. Most of these mothers/caretakers were married(75.5%). The findings corresponds with ZDHS (2001-2002) which shows that about (50%) of adults are married and where more people are married, there could be stability of moral living which can lead to behavior change. This high number of couples could also be attributed to strong belief held on the institution of marriage. Ninety percent (90.2%) of these mothers/caretakers had formaleducation. Seventy two percent (72.6%) were unemployed. Forty seven percent (47%) of them had a family monthly income of below K150.00. These findings relate to the UNAIDS/WHO (2000) which noted that women and girls are commonly discriminated against in terms of access to education, employment, health care and inheritance. This downward trend of many African economies has increased poverty levels which has affected women mostly. More than three quarters (81%) of these were enrolled in the ART program. It was also established that most of the mothers/caretakers (90%) used to

walk to get to the health facility to get the drugs. This finding showed a significant association with the non compliance to cotrimoxazole prophylaxis (p-0.026).

5.3.2 KNOWLEDGE LEVELS

The specific objective of the study was to assess HIV positive mothers' knowledge level on cotrimoxazole prophylaxis. The knowledge levels were assessed by asking mothers/caretakers of HIV exposed infants "yes" and "no" questions on the benefits of cotrimoxazole prophylaxis. The study revealed that Ninety three percent (93%) of the respondents had ever heard about cotrimoxazole prophylaxis and a majority of them had the health worker as their source of information (98%). Interestingly only (60.8%) of the respondents knew the use of cotrimoxazole prophylaxis and 56.4% had no knowledge on the benefit of cotrimoxazole prophylaxis. This is consistent with WHO (2009) that indicated that individuals that use health services might therefore be insufficiently aware of the benefits of cotrimoxazole prophylaxis. This therefore means that majority of women in the reproductive age group do not utilize cotrimoxazole prophylaxis 78.8% and this is significantly associated with the level of knowledge and understanding of the benefit of cotrimoxazole prophylaxis. The availability of the health workers in the existing centres can be used as strengths to work out modalities as to how best compliance can be improved by developing specific messages to increase awareness and the demand for cotrimoxazole both among health workers and in the community. Other constraints that limit health workers' ability to implement cotrimoxazole prophylaxis include limited policy support for lower-level workers to dispense cotrimoxazole prophylaxis, insufficient training on the importance of cotrimoxazole prophylaxis of those allowed to prescribe and dispense it, and failure to include cotrimoxazole prophylaxis in training materials for HIV care and treatment. This study finding is similar to Zachariah et al (2007); WHO (2009) and ZCC (2008).

5.3.3 MOTHERS/CARETAKERS'COMPLIANCE WITH COTRIMOXAZOLE PROPHY-LAXIS.

The second specific objective of the study was to establish mother/caretakers of HIV exposed infants compliance levels to cotrimoxazole prophylaxis. The mothers/caretakers' compliance

levels to cotrimoxazole was measured by “yes” and “no” question requesting them state how often they gave the cotrimoxazole to the HIV exposed infants. A total of 102 mothers/caretakers of HIV positive infants were sampled ,out of these only 22% were compliant with cotrimoxazole while 78% were not compliant and two were missing (Figure 4.2). This finding show low compliance levels with cotrimoxazole prophylaxis by mothers/caretakers of HIV exposed infants. Similar to the one UNICEF and WHO (2008), revealed that only 8% of the exposed children to HIV were initiated on cotrimoxazole prophylaxis.Adherence may be challenging if mothers /caretakers are not adequately informed. Adequate initial and ongoing counselling is critical to achieving good adherence. Initial counselling can help caregivers identify factors that may interfere with adherence, while ongoing counselling both reinforces positive trends and allows for the detection of emerging issues. Helping caregivers develop cues based on daily life activities that trigger medication administration is a particularly useful technique for improving long-term adherence (WHO, 2009).

However, provision is extremely low with just 8% of infants born to pregnant women with HIV in 2008 initiating cotrimoxazole prophylaxis by two months of age (UNAIDS, 2010).

5.3.3.1 SERVICE RELATED FACTORS INFLUENCING MOTHERS/CARETAKERS OF HIV EXPOSED INFANTS’COMPLIANCE WITH COTRIMOXAZOLE PROPHYLAXIS

The third specific objective was to establish whether service related factors influences mothers/caretakers of HIV exposed infants compliance with cotrimoxazole prophylaxis. As indicated in Table 4.3 75.5% of the mothers/caretakers stated that cotrimoxazole was not available at their nearest health facility. This has resulted in 78.7 % of them not complying to the treatment. In addition, the study has revealed a significant association between non availability of cotrimoxazole and compliance with cotrimoxazole prophylaxis (p-<0.0001). This result is in line with WHO (2009) that states that an integrated one-stop service that provides cotrimoxazole prescriptions at all sites where there is contact with children would foster a patient-friendly approach. To improve access for continued cotrimoxazole prophylaxis, drug refills should be made readily available at decentralised sites including health centres and home based care programmes and given on site. Ninety three and half percent (93.5%) of the mothers/caretakers

who lived in areas where roads were not passable throughout the year did not comply with cotrimoxazole prophylaxis attributing a significant association with a (p value =0.026). There is need therefore to reduce distances between homes and health centres by increasing the number of outreach to health posts as the study showed a significant association between distance and the utilisation of cotrimoxazole prophylaxis.

On average the mothers/caretakers took about 1.3 hours to travel from their homes to reach the nearest health facility. HIV infected women who have to cover longer than 6 kilometers may not be able to return for subsequent supply of cotrimoxazole for their infants.
On average most mothers/caretakers reported that it took about 1 hour at the health facility before they could be attended to by health care workers. The long waiting time could be attributed to shortage of staff at the health facility. As HIV preventive activities are being scaled up it most likely that the already existing human resource challenge will escalate. The current staffing levels in health facilities are inadequate to meet the demands of providing not only prevention, but other services as well (NAC, 2009:13). This underpins the importance of multi-sectoral response in addressing the pandemic.
Kankasa (2000) reported that in Zambia staff shortages and heavy workload were among the key constraints to priority adequate Voluntary Counselling and Testing (VCT) and care.

The findings showed that 71.6% of the respondents reported that the health workers did not encourage them to get and use cotrimoxazole. This could be attributed to poor staffing levels in the health institutions. As a result of staff shortage the few available staff are overwhelmed with work and may not give information education and communication to the clients as expected. The present study has found an association between compliance with cotrimoxazole prophylaxis and the attitude of the health workers (p=<0.0001). The findings revealed that 65% of the respondents indicated that nurses at the nearest health facility did not follow them up to their respective homes. This could be attributed to shortage of staff at the health facility. There was a significant association between mothers/caretakers of HIV exposed infants who were followed

up and compliance with cotrimoxazole prophylaxis (p-0.0009). This scenario is in line with (WHO 2010), that reported that one of the main challenges countries face in scaling up uptake is the absence of mechanisms to systematically identify and follow up HIV-exposed infants at and after birth. Therefore systems need to be in place to ensure that health workers consider the possibility of HIV infection in infants at birth, and at all the clinics or other health encounters thereafter so that this intervention can be provided on a timely basis.

5.3.3.2 SOCIOCULTURAL FACTORS INFLUENCING MOTHERS/CARETAKERS OF HIV EXPOSED INFANTS'COMPLIANCE WITH COTRIMOXAZOLE PROPHYLAXIS

Table 4.4 shows that most of the mothers/caretakers were not allowed by their spouses to collect cotrimoxazole when it ran out (77.5%). This could be attributed to the fact that men are social-culturally considered to be in decision-making processes at household and institutional levels.

This scenario could hinder women from utilizing cotrimoxazole prophylaxis and could prevent mothers from coming for follow up visits. This study finding is supported by a study conducted by Jones et al. (2005) in Johannesburg South Africa who reported that lack of paternal support may affect the capacity of families to comply with PMTCT program. Eighty nine percent (89.2%) of the mothers/caretakers of HIV exposed infants reported that their spouses new about their HIV statuses. This finding could be attributed to IEC and counselling provided to the mothers by health workers.

About one third of the respondents indicated that they were not free to give cotrimoxazole to their infants in public while two thirds felt free. This could be attributed to the fact that HIV/AIDS is associated with stigma and discrimination and this would prevent infected mothers from going to the health facility to collect cotrimoxazole for their infants. It is however gratifying that (90.9%) of those who felt free to give the drug in public also complied with cotrimoxazole, indicating that they have overcome the barrier of stigma.

Majority (61.8%) of the respondents in this study reported that they were no social support groups for mothers/caretakers of the HIV exposed infants in the community. It is clear from this study that those care takers who did not know about social support (74.4%) did not comply with cotrimoxazole prophylaxis (p=0.0002), thus indicating a significant association between social support and cotrimoxazole compliance. This study confirms the importance of family and community support systems (community based care). This is, in accordance with UNAIDS/WHO (2002) report that states that citing of home and community care should be an essential part of the response to the pandemic. This result clearly indicates the key role the community plays in terms of offering support to its members who are sick. The kind of support given by the community will somehow influence the attitude of mothers/caretakers to comply with cotrimoxazole prophylaxis. This study confirms the importance of social support system in ARV treatment which is conducted on the basis of ambulatory care consequently with cotrimoxazole prophylaxis as well.

In this study, above three quarters (76%) of mothers/caretakers of HIV exposed infants said that there were misconceptions about cotrimoxazole prophylaxis in the communities where they lived. This could be due to lack of information on HIV/AIDS. It is clear from the above findings that lack of facts about cure for HIV/AIDS may create misconceptions about HIV/AIDS and its management and hence mothers/caretakers may not come for cotrimoxazole collection.

5.4 IMPLICATIONS TO NURSING

5.4.1 NURSING PRACTICE

All HIV exposed infants born to mothers living with HIV must receive prophylaxis commencing at 4-6 weeks of age (or at first encounter with health care system and continued until HIV infection can be excluded, 2006). HIV/AIDS impacts children in many ways m; increased infant and childhood mortality, increased number of orphaned children, increased deprivations in various forms like mental, psychological and school drop outs as well as abuse which could be physical or sexual(MOH ,2011)

Poor compliance to cotrimoxazole of such service by women in the reproductive age group results in an increase in opportunistic infections thereby increasing infant and child mortality

impacting negatively on childhood mortality trend. Nurses and midwives need to intensify IEC on the importance of mothers/caretakers adherence to cotrimoxazole prophylaxis in order to reduce opportunistic infection in HIV exposed infants. It is clear in this study that 61% had knowledge on the use whilst 48% of participants did not know the benefit of cotrimoxazole prophylaxis.

5.4.2 NURSING MANAGEMENT

This study showed that majority 78% of mothers/caretakers of HIV exposed infants were not compliant with cotrimoxazole. Nurse Managers should ensure that mothers/caretakers are given guidelines on schedules and encouraged to collect and utilize the drug. There is need to plan,monitor and ensure availability of the drug at every health facility. Nurse Managers are encouraged to collaborate closely with stakeholders to educate mothers/caretakers of HIV exposed infants to clear misconceptions about benefits of complying with cotrimoxazole prophylaxis in order to reduce opportunistic infections in their infants. The current staffing levels in health facilities are inadequate to meet the demands of providing not only prevention, but other services as well (NAC, 2009). This underpins the importance of multi-sectoral response in addressing the pandemic.

5.4.3 NURSING EDUCATION

In this study it was revealed that 78.8% did not comply with cotrimoxazole prophylaxis. There is need for Nurse Educators to ensure the Nurse –Midwives are given adequate tools and knowledge on the HIV/AIDS treatment and care modalities to ensure that health education is adequately given to clients. It is also eluded that helping caregivers develop cues based on daily life activities that trigger medication administration is a particularly useful technique for improving long-term adherence (WHO, 2009).

5.4.4 NURSING RESEARCH

It is clear from the literature that there is inadequate data available on the level of compliance with cotrimoxazole prophylaxis in Zambia. Nurse researchers should undertake research in order

to create innovative approaches to identify gaps in the current efforts and encourage clients appreciate the benefits of cotrimoxazole. This can help further explore new strategies on how to promote cotrimoxazole compliance by mothers/caretakers of HIV exposed infants. Nonetheless, the results obtained gave a crew on factors associated with cotrimoxazole compliance among HIV exposed infants in the area. There is need therefore to conduct another study preferably with big samples to enable generalization of findings.

5.5 CONCLUSION

The current study focused on determining the factors associated with the compliance to cotrimoxazole prophylaxis by HIV exposed infants in Chikankata District. The study explored some demographical, social-cultural, economical, knowledge of benefit of cotrimoxazole prophylaxis and the availability of the drug and other services. The findings showed that 78% of mothers/caretakers did not comply with cotrimoxazole due to several factors among them were several socio-cultural factors like spouse not allowing them to collect the drug whenever it ran out, misconceptions about cotrimoxazole, lack of social support and other service related factors like non availability of the drug at nearest health facility, negative attitude of health care providers and lack of nurses follow up of mothers/caretakers by staff at health centres. Mothers who were neither in formal employment nor in formal education though not beyond primary level nor farming never turned up for drug refills whenever the drug ran out. With the above findings, the null hypothesis for this study has to some great extent been rejected.

5.6 RECOMMENDATIONS

Based on the study findings, we recommend that;

1. Ministry of Health to organise a consultative forums within countries that bring together key stakeholders at a national level, to disseminate information on current evidence, bridge gaps in knowledge, allay fears on use of cotrimoxazole at country level, and present the rationale for current recommendations.

2. Information Education and Communication (IEC) strategies are strengthened by Chikankata District Community Medical Office (CDCMO), include misconceptions in the brochure placing more emphasis on misconceptions about cotrimoxazole prophylaxis and also teach men and

women on importance and benefits of cotrimoxazole prophylaxis use and need for positive attitude of health care providers at the health facilities.

3. The government, through the relevant ministries, needs to strengthen outreach programmes to ensure good follow up of mothers/caretakers in order to accord every mother /caretakers a chance to be seen.

4. Utilisation of cotrimoxazole should be increased by further stimulating mothers to be attending the health facilities where mothers who do not work, as well as farmers should become quite knowledgeable about the importance and benefit of using cotrimoxazole and returning for drug refills and follow-ups according to the recommended schedules.

5. The Chikankata District Community Medical Office should with immediate effect lobby from government through their relevant ministry for the construction of better roads and health centres or posts, so that the distance between the health centres and mothers can be reduced and ensure that the drug is available all the time.

5.7 PLANS FOR DATA DISSEMINATION AND UTILIZATION OF FINDINGS

1. Four bound copies of the report of the research will be submitted to the Department of Nursing Sciences, School of Medicine Library, University of Zambia Library, and the Ministry of Health.

2. The findings will then be presented to the faculty of Department of Nursing Sciences (DNS) in the School of Medicine, University of Zambia (UNZA). Thereafter, results will be published in the Medical Journal and also presented to various stake holders involved in provision of ART Antenatal Care and PMTCT services. These will include Ministry of Health and its' partners and Provincial Health Office for Southern Province, provincial meetings, principal Tutors meetings, ZUNO meetings, LAMRN conference, ICN and ICM conferences.

3. Chikankata DCMO will receive an executive summary of the results so that the district can use the results and render evidence based care, as they provided the study sites.

4. Money will be sourced from Chikankata District Community Medical Office research fund to organize a dissemination workshop which will be attended by the District Commissioner, members from the District Development Coordination Committee and other cooperating

partners. Staff from Chikankata Mission Hospital and the health centers will also be invited to hear the study results so that they will be able to render evidence based care.

5.8 LIMITATIONS OF THE STUDY

The limitations for this study were:

i. The study was only conducted in Chikankata district and therefore results cannot be generalized to other districts in Zambia.
ii. The presence of interviewer may have affected respondents' responses and may not have brought out the true facts about the topic. This was minimized by creating rapport with respondents and maintaining a non threatening attitude.
iii. Respondents may have failed to bring out their views as the interview may have aroused unpleasant emotions about their experiences.
iv. Convenient sampling method was used to select the study respondents therefore generalization of findings should be done with caution.

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APPENDIX 1: WORKPLAN

ACTIVITY	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
Proposal development & finalization												
UNZA Research Ethics Clearance												
Training data collectors												
Pilot study												
Data collection, data entry& cleaning												
Data Analysis												
Report writing												
Submissions of draft report												
Submission of final report												
Dissemination of results												

APPENDIX 2: CLIENT INFORMATION SHEET

STUDY TITLE: FACTORS ASSOCIATED WITH COTRIMOXAZOLE PROPHYLAXIS COMPLIANCE AMONG HIV EXPOSED INFANT AT CHIKANKATA MISSION HOSPITAL

INTRODUCTION

I Zondiwe M. Ngalande ; a Master's of Science in Nursing student at the University of Zambia is kindly requesting for your participation in the research mentioned above. It is important for me to conduct this research because increasing the uptake of cotrimoxazole in infants exposed to HIV infection will improve their survival, reduce hospitalizations and the incidence of pneumonia and deaths among HIV infected infants.

PURPOSE OF THE STUDY

The purpose of the study is to determine factors associated with compliance to cotrimoxazole prophylaxis among HIV positive infants.The findings will help the policy makers and implementers of PMTCT programmes in the Ministry of Health to design strategies to improve cotrimoxazole prophylaxis uptake.

PROCEDURE

The study will involve a face to face interview with the research assistant who will ask you a set of questions using a semi structured questionnaire. You will be asked to sign a consent form before the research assistant proceeds to ask you the relevant questions and your response will be recorded on the questionnaire. The interview will **take about 20 minutes.**

RISKS AND DISCOMFORTS

There is no risk involved in this research, although it may arouse unpleasant emotions. Part of your time will be used to answer some questions. Some of the questions will be sensitive and personal.

PARTICIPATION

Your participation in this study is voluntary. You are not under obligation to participate. You are at liberty to refuse to participate and are free to withdraw from the study as you may wish. **You are also free not to answer questions you deem to be sensitive and personal.** If you decline to participate, no privileges will be taken away from you. If you agree to participate, you will be requested to sign a consent form in the presence of a witness.

BENEFITS

There is no direct benefit to you by participating in this study. However, the information to be obtained will help policy makers to make viable practical strategies that will enhance utilization of cotrimoxazole prophylaxis. This will benefit the PMTCT programme.

There is no financial benefit or favours that will be given in exchange for the information but information will be given on the benefits of cotrimoxazole prophylaxis use to improve/ promote the health status of your children.

CONFIDENTIALITY

The information you will provide will remain confidential and will not be released without your permission except when required by law. Your research records will not be availed to anyone who is not involved with the study. You will be identified by a number. Your name will not be written on the interview schedule for the purpose of confidentiality. The Ministry of Health, University of Zambia Biomedical and Research Ethics Committee at the School of Medicine may review your records and again, this will be done with confidentiality

APPENDIX 3: CONSENT FORM

The purpose of this study has been explained to me. I have read and understood the purpose, benefits, risks, discomforts and confidentiality of the study. I further understand that if I agree to take part in this study, I can withdraw without having to give a reason and that taking part in this study is purely voluntary.

I hereby give consent to participate in the study to investigate factors associated with cotrimoxazole prophylaxis compliance among HIV exposed infant at Chikankata mission hospital.

.

I …….

(Names)

Agree to take part in this study.

Signed…… Date……(Participant)

Participant's signature or thumbprint

Signed ……. Date……...(Witness)

Signed ……. Date……..(Researcher)

PERSONS TO CONTACT FOR ANY CONCERNS, PROBLEMS OR QUESTIONS

1. The Head, Department of Nursing Sciences, School of Medicine, University of Zambia, P.O. Box 50110, Lusaka. Telephone no. 252453.
2. **The Chairperson, ERES Converge IRB,33 Joseph Mwilwa Road, Rhodes Park, Lusaka, Telephone 0955 155633/4.**

APPENDIX 4: DATA COLLECTION TOOL

THE UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

DEPARTMENT OF NURSING SCIENCES

INTERVIEW SCHEDULE

TOPIC: FACTORS ASSOCIATED WITH COTRIMOXAZOLE PROPHYLAXIS COMPLIANCE AMONG HIV EXPOSED INFANT AT CHIKANKATA MISSION HOSPITAL

DATE OF INTERVIEW …….
PLACE OF INTERVIEW ……
NAME OF INTERVIEWER……..
SERIAL NUMBER ……

INSTRUCTIONS TO THE INTERVIEWER

1. Introduce yourself to the respondent.
2. Explain the purpose of the interview
3. Assure the respondent of confidentiality and anonymity.
4. Do not write name of the respondent on the interview schedule.
5. Fill in the most appropriate response to the question on the space provided.
6. Provide time for the respondent to ask questions at the end of the interview.
7. Refer the respondent to a per4son who can answer the questions you are not sure of.
8. Thank the respondent at the end of the interview.

SECTION A. DEMOGRAPHIC DATA OF EXPOSED INFANT, MOTHER/CARETAKER AND FATHER

1. Sex of infant

a) Boy

b) Girl

2. Age of infant

a) 4-6 weeks

b) 7-9 weeks

c) 10 -13 weeks

d) More than 13 weeks

3. At how many weeks did your infant start taking Cotrimoxazole prophylaxis?

_____

4. Ageof mother/caretaker?

a) 19 – 24 years

b) 25 –30 years

c) 31 – 39 years

d) 40 years and above

5. Marital status of the mother/caretaker?

a) Single

b) Married/ living together

c) Divorced

d) Widowed

e) Separated

f) Other (Specify)……..

6. Highest level of education of mother/caretaker?

a) No education

b) Primary

c) Secondary

d) College

e) University

7. Occupation of mother/caretaker?

a) Formerly employed

b) Self employed

c) Unemployed

8. Family monthly income of mother/caretaker?

a) Below K150.00

b) K150.00 – K300.00

c) K301.00 – K600.00

d) K601.00 and above.

9. Religious denomination of mother/caretaker?

a) Catholic

b) Salvation Army

c) Pentecostal

d) SDA

e) Other (Specify)…….

10. Number of children a mother/ caretaker has

a) 1-2

b) 3-5

c) More than 5

11 Mother enrolled in HIV/ART care

a) Yes

b) No

12. Father HIV status

a) Positive

b) Negative

c) Unknown

13. Father live status

a) Alive

b) Dead

14. Primary care taker

a) Mother

b) Sister

c) Aunt

d) Grandmother

15. Have you ever heard about cotrimoxazole prophylaxis?

a) Yes

b) No

16. If yes who is the source of information

a) Health worker

b) Relatives

c) Friends

d) Media

SECTION B. KNOWLEDGE OF AND BENEFIT OF COTRIMOXAZOLE PROPHYLAXIS

17. What is cotrimoxazole prophylaxis used for? .....

18.. What are the benefits of using cotrimoxazole prophylaxis? .....
……

SECTION C. COMPLIANCE WITH COTRIMOXAZOLE PROPHYLAXIS

I) SERVICE RELATED FACTORS

19. Is your child on cotrimoxazole prophylaxis

a) Yes

b) No

20. If your response is "yes" to question 19 above, how often do you give cotrimoxazole to your baby? .....

21. Is cotrimoxazole available at your nearest health facility?

a).Yes

b).No

22. If no to question 22 above, where do you get the drug if it is not available at the health facility?

……..

23. How often do you collect cotrimoxazole prophylaxis for your child?

a) Monthly

b) After 2 months

c) Whenever the drug runs out.

24. How many hours do you take to reach your nearest Health facility?

_____

25. What is the mode of transport to your nearest health centre?

a) Walking

b) Bicycle

c) ox-cart

d) Vehicle

26. When you have reached the health facility, how long do you take before the health worker attends to you?

.....

27. Is the road between your home and your nearest health centre passable throughout the year?

a) Yes

b) No

28. What is the attitude of the health care providers at your nearest health facility towards you?

a) Encourage me to collect and use cotrimoxazole

b) Discourage me to come

c) Do not know

d) Always appreciate my efforts of coming to collect the drug.

29. Do nurses at your nearest health facility follow up mothers/care takers when they do not come back for Cotrimoxazole supply?

a) Yes

b) No

II) **SOCIO-CULTURAL FACTORS**

30.Does your spouse allow you to go to the hospital to collect cotrimoxazole when it runs out?

a) Yes

b) No

31. Does your spouse know your HIV status?

a) Yes

b) No

32 If your answer to question 31 above is No, explain?

_____

33. Do you feel free to give your child cotrimoxazole in public?

a) Yes

b) No

34. Is there a social support group for mothers/care taker of HIV exposed infants in your community?

a) Yes

b) No

c) Don't know

35. Are there any misconceptions about cotrimoxazole prophylaxis in the community where you live?

a) Yes

b) No

36. Give any suggestions on how we can encourage mothers/caretakers to comply with cotrimoxazole prophylaxis?

THANK YOU FOR YOUR PARTICIPATION

APPENDIX 5: BUDGET

BUDGET CATEGORY	UNIT COST (ZMK)	QUANTITY	TOTAL
1. STATIONERY			
a) Flash Disc	140.00	x1	140.00
b) Bond paper	30.00	x10	300.00
c) Pens	1.00	x10	10.00
d) Pencil	50	x10	5.00
e) Rubbers	1.00	x5	5.00
f) Note book	8.00	x1	8.000
g) Tippex	10.00	x1	10.00
h) Bag for interview schedules	150.00	x1	150.00
i) Stapler	50.00	x1	50.00
j) Staples	10.00	x1 Box	10.00
SUBTOTAL			**688.00**
2. PERSONNEL			
a) Lunch allowance			
Principal researcher	50.00	x1x 30 days	1,500.00
Research assistant	30.00	x3x 30 days	2,800.00
SUBTOTAL			**4,300.00**
3. SERVICES			
a) Ethics committee	1,000.00	1	1,000.00
b) Data entry	500.00	1	500.00
c) Data analysis	2,000.00	1	2,000.00
d) Photocopying proposal	20	320 pages	64.00
e) Photocopying questionnaire	20	10pagesx 330	33.00
f) Photocopying report	20	400 pages	80.000
g) Binding	5.00	5 copies	25.00
h) Dissemination of Research Results	3,000.00	1	3,000.00
SUBTOTAL			**6,927.00**
TOTAL			**11,915.00**
CONTINGENCY FUND 10%			**1,191.50**
GRAND TOTAL			**13,106.50**