THE IMPACT OF ANTIRETROVIRAL TREATMENT (ART) ON RURAL LIVELIHOODS
THE CASE OF NYANGA RURAL DISTRICT IN ZIMBABWE

By

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DECLARATION

I, **TAWANDA GUVI, hereby** present for consideration by the Disaster Risk Management Training and Education Centre for Africa (DIMTEC) within the Faculty of Natural and Agricultural Science at the University of the Free State (UFS) my dissertation in partial fulfilment of the requirements for the degree of Master's in Disaster Management.

I sincerely declare that this dissertation is the product of my own efforts and that no other person has published a similar study from which I might have copied and at no stage will this work be published without my consent and that of the Disaster Risk Management Training Education Centre for Africa (DIMTEC).

Views, opinions and proposals expressed herein should be attributed to the author and not to the Disaster Risk Management Training and Education Centre for Africa.

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TABLE OF CONTENTS

LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-Retroviral Treatment
ARV	Anti-Retroviral (drug)
CAFOD	Catholic Organization for Overseas Development
CW	Concern Worldwide
DAC	District AIDS Coordinator
DFID	Department for International Development
DiMTEC	Disaster Management Training and Education Centre for Africa
FAO	Food and Agriculture Organization
HIV	Human Immune Virus
IEC	Information, Education and Communication
MOHCW	Ministry of Health and Child Welfare
NAC	National AIDS Council
NGOs	Non Governmental Organizations
OI	Opportunistic Infection
OVC	Orphan and Vulnerable Children
PLWHA	People Living with HIV and AIDS
PMTCT	Prevention of Mother to Child Transmission
SAFAIDS	Southern Africa AIDS Dissemination Services
STI	Sexually Transmitted Infection
SLA	Sustainable Livelihoods Approach
VCT	Voluntary Counselling and Testing
UNAIDS	United Nations Joint AIDS Programme
UNICEF	United Nations Children's Education Fund
WHO	World Health Organization
ZIMVAC	Zimbabwe Vulnerability Assessment Committee

LIST OF TABLES AND PICTURES

ABSTRACT

Agriculture is the backbone and driver of the economy for many African countries such as Zimbabwe. In the past decades, the sector was severely hit by the debilitating effects of HIV and AIDS causing alarming levels of food and income insecurity, especially in rural areas. As household food production declined families were forced to adopt harmful coping mechanisms such as reduction in the number of meals, quality and quantity consumed per day, and this impacted negatively on the ability of the sick to participate in income and food production activities. The impact was felt as soon as a member of the household fell ill and his/her ability to work decreased, while living costs increased, such as medical, education and funeral expenses. In other instances people living with HIV and AIDS (PLWHA) lost friendship and social networks as the disease took its toll and children dropped out of school as the head of household was no longer able to raise income due to the debilitating and dehumanising effects of the disease (Haddad & Gillespie 2001).

With the coming of antiretroviral treatment (ART) worldwide, most governments and civil society actors, especially in Africa had been working flat out in a bid to increase the number of people accessing antiretroviral treatment in their countries. In Zimbabwe, the government established a National AIDS Council to coordinate all HIV and AIDS related activities in the country and above all to lead in the national roll out of free distribution antiretroviral drugs in both urban and rural areas. This had indeed brought hope and relief to thousands of people living with HIV and AIDS as this new intervention greatly reduced mortality and morbidity (World Health Organisation /United Nations Joint AIDS Programme 2010). Much emphasis on the current ART programmes in Zimbabwe was placed on improving accessibility to ART drugs in both urban and rural areas, but little if nothing on the impact of ART on rural livelihoods. This is a huge area that needs to be examined and analysed as it plays a critical role in key issues such as sustainability of free ART programmes and replication of such models countrywide.

Given the fact that the ART treatment programme was launched in Nyanga Rural District in 2004, and several hundreds of patients were reached with ART services every month, the research would investigate the impact of ART on livelihoods of rural patients in Nyanga District. Essential issues covered by this research was to examine whether access to ART enabled rural people to engage in productive food and income generation activities sufficient to meet day to day requirements of their families. Ensuring participation of people living with HIV in productive activities such as food and income generation would ultimately lead to more people being able to procure essential medication and drugs on their own rather than waiting for donor funded or limited government programmes. That would ensure access to prevention, treatment, care, and support to everyone who needed it in the long term. This research is expected to contribute to the body of knowledge and inform development workers and government policy makers of the need to adopt holistic and empowering ART interventions in rural areas.

CHAPTER 1: SETTING THE SCENE

1. Introduction

The Government of the Republic of Zimbabwe through National AIDS Council had been making frantic efforts to increase the number of people accessing antiretroviral treatment (ART) throughout the country by rolling out free distribution of antiretroviral drugs at various health centres such as district hospitals and rural clinics. The record shows a significant increase in the number of people living with HIV and AIDS (PLWHA), accessing treatment. The increase was from 7% in 2004 to the current 47% in 2010 (World Health Organisation/United Nations Joint AIDS Programme 2010:98). The Government made efforts to subsidize local manufacturing of ART through provision of foreign currency for purchase of raw materials and waiver of duty on raw materials for local production of ARVs and imported ones in 2008. Consequently, the supply of ARVs improved in 2009. The cost of ART treatment declined from USD 155 per person per month in 2004 to USD 15-20 per person per month for the first line generic drugs in 2010 (National Academies of Science 2010).This indeed, brought hope and relief to thousands of people living with HIV, as the new intervention had greatly reduced mortality and morbidity (WHO/UNAIDS 2010:95).

However, not much has been done regarding examination and analysis of the impact of ART on livelihoods, especially rural livelihoods in the country. Great emphasis had been placed on the health and biological impact of ART on human beings. Few and isolated studies focussed on the impact of livelihoods in urban areas of the country, missing the rural areas where livelihoods depended on agriculture. In a country where 60% of the population reside in rural areas with an increasing number of people living with HIV in the rural areas of Zimbabwe, it is important to understand the impact of the countrywide government programme (ART) on the livelihoods of rural people.

According to National AIDS Council (NAC,2010:57), 53% of the national population of people living with HIV and AIDS (PLWHA) who urgently needed ART services were still not accessing treatment leading to an estimated 3 000 deaths per week as a result of AIDS-related illness in the country (National AIDS Council 2010:57). It was expected that people who started benefiting from ART in 2004 should now be able to support themselves with minimum external support from government and other players. It would afford new clients the opportunity to benefit from donor and government funded programmes. Much emphasis on the current ART programmes in Zimbabwe was placed on improving accessibility of ART drugs in both urban and rural areas, but little if anything on the impact of ART on rural livelihoods. This is a huge area that needs to be examined and analysed, as it plays a critical

role in key issues such as sustainability of free ART programmes and replication of such models countrywide.

Essential issues to be covered by this research are to examine whether access to ART resuscitated agricultural production and other agro income generating activities in rural areas. Maximum participation of people living with HIV in livelihood activities is necessary, rather than relying mostly on external players, they should become self-sustainable as well key drivers of the rural economy. This approach would ensure that communities, especially people on ART, would be able to build strong resilience and to be able to cope in the event of future hazards and shocks occurring in rural areas. This research is expected to contribute to the body of knowledge and inform development workers and government policy makers of the need to adopt holistic and empowering ART interventions in rural areas.

1.2. Problem Statement

The levels of livelihood and food insecurity in Zimbabwe, especially in rural areas with households affected and infected with HIV and AIDS was increasing at an alarming rate (Catholic Agency for Overseas Development Livelihoods Assessment Report 2010:16). It was noted that an increasing number of vulnerable and poor households were relying entirely on donor or government handouts for their livelihoods. In addition, households affected and infected with HIV and AIDS were finding it difficult to participate or provide labour to CAFOD funded agricultural and other non-agricultural recovery interventions (CAFOD Livelihoods Assessment Report 2010:18).

The adult HIV prevalence rate had fallen from 27.8% in 2003 to 14.3% in 2009 due to various reasons ranging from behaviour change, high condom use, high mortality rates, as well as migration of those that tested positive for HIV (NAC 2010:57). Rural livelihoods had been greatly affected. Most households headed by people living with HIV were struggling to earn a living and the majority depended on unsustainable handouts from government, non-state actors, neighbours or relatives owing to poor health and limited ownership or access to productive assets (CAFOD LPPZ 2010:18).

This disturbing situation was occurring at a time when major breakthroughs in science and medicine had been attained such as provision of antiretroviral treatment. With national antiretroviral treatment rollouts in place for the past seven or more years in the country, one would assume that people accessing treatment should be able to participate in agricultural recovery programmes and provide labour in community development initiatives.

In recent years, the introduction of antiretroviral treatment in Africa and in Zimbabwe in particular brought hope and relief to millions of people living with HIV and AIDS. Because of

the costly nature of antiretroviral therapy, which involved testing and treatment, governments frequently recruited the services of non-governmental organisations (NGOs) as well as donors in their roll out programmes. The effectiveness of antiretroviral treatment is well documented worldwide with results showing that indeed morbidity and mortality have been successfully and remarkably reduced. However, little has been said regarding the effect of ART on PLWHA's ability to restore lost means of earning a living, especially in rural areas. Therefore this research will focus on examining and analysing the impact of ART on rural livelihoods, with particular reference to Nyanga rural district in Zimbabwe.

1.3 Study Area

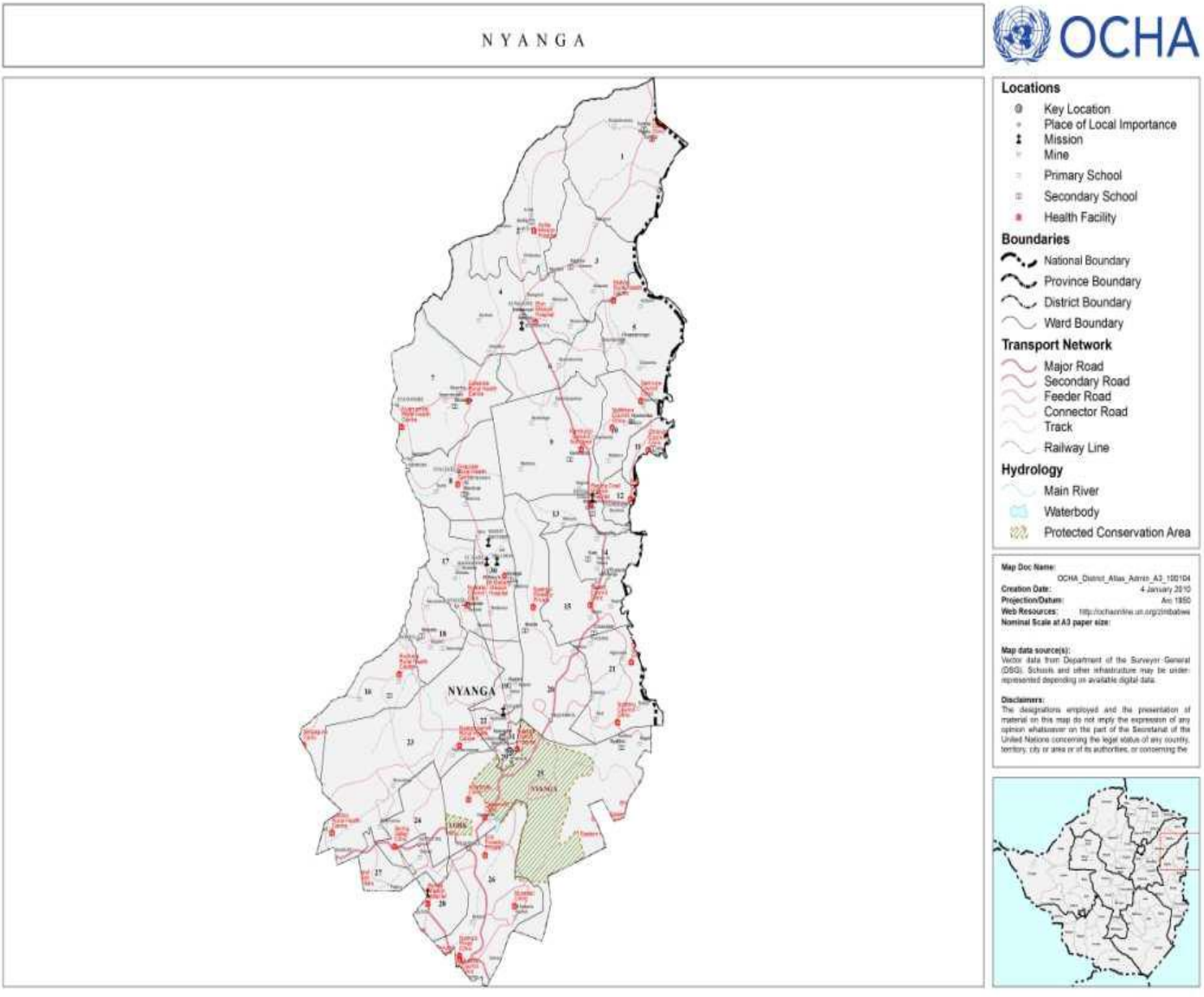


Figure 1: Nyanga District Map

1.4 Demographic Data

Nyanga (Figure1) is a rural district in the eastern province of Manicaland and lies to the north of Mutare in Zimbabwe. It shares borders with Mozambique to the east, Mutasa District to the south, Makoni District to the West and Mutoko District to the North. The district is made up of 31 administrative wards and 443 villages. It covers an area of 5 897.82 km2 of which 28% fall under natural region one, while 24% falls under natural region two. The rest of the district either falls under natural regions three, four and five (National AIDS Council 2010:4).

Nyanga Rural District commenced ART treatment in May 2004 and so far a total of 2 439 adults and 104 children are currently being provided with ARVs under the Global Fund Programme in collaboration with the Ministry of Health and Child Welfare (National AIDS Council 2010:10). Adult HIV prevalence in the district is estimated to be 13.7% and 3 100 patients are on the ART treatment waiting list (National AIDS Council 2010:10). There are three major health centres and ten local health centres in the district. The ART programme is being implemented at the three major health centres. Ten community outreach programmes are being carried out once per month at each local health centre. The hospital catchment area has a population of 175 000 people and covers 31 administrative wards (National AIDS Council 2010:8)

1.4.1 Definitions of terms

Antiretroviral treatment: these are standard antiretroviral therapy (ART) consists of the combination of at least three antiretroviral (ARV) drugs to maximally suppress the HIV virus and stop the progression of HIV disease (WHO 2010).

Livelihoods: defined as ‘*’means of making a living and it comprises the capabilities, assets (including both material and social resources) and activities required for a means of living* (DFID 1999:1).’’

Food security: defined as: *“food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs, and food preferences for an active and healthy life (FAO 1999).”*

Capital: - Include social, physical, human, financial and natural which make livelihoods assets.

Impact of ART: negative or positive contributions of antiretroviral treatment on the livelihoods people living with HIV and AIDS

Beneficiary: - An individual receiving antiretroviral treatment

Pre HIV and AIDS period: this refers to the period where current ART beneficiaries (people on ART) where not living with HIV and AIDS.

HIV status without ART period: this refers to the period where people living with HIV and AIDS had no access to antiretroviral treatment.

HIV status with ART period: this refers to the period where people living with HIV and AIDS had access to antiretroviral treatment (the now period)

1.5 Conceptual Framework

The conceptual framework used in this study is based on the sustainable livelihood approach (SLA). A livelihood is comprised of the capabilities, assets, and activities necessary for living. Though there are several definitions of livelihoods, this study will adopt the Department for International Development's (DFID) definition that defines livelihood, ''as means of making a living and it comprises the capabilities, assets (including both material and social resources) and activities required for a means of living''(DFID 1999:1). A sustainable livelihood is one that can deal with and recover from various stresses and shocks, can maintain or enhance its capabilities and assets, can provide sustainable livelihood opportunities for the next generation; and can contribute to the net benefits of other livelihoods at the local and global levels in the short and long term (DFID 1999:1). The policy and institutional context sets the enabling or restraining environment within which the household acts to maintain or improve its livelihood, and may cause a gender-based access to resources.

Households follow livelihood strategies grounded in the opportunities afforded by their livelihood assets, their vulnerability context and the transforming structures and processes. The basic concept surrounding the livelihood framework is that the quality and sustainability of livelihoods depend on the strategies households develop in managing their assets. Livelihood outcomes could be more income, increased well-being, reduced vulnerability, improved food security and more sustainable use of the natural resource base (DFID, 1999:1). This study used this framework to identify the impact of antiretroviral treatment program among other transforming structures and processes in the face of shocks, trends and seasonality factors to sustainable rural livelihood outcome for people on ART. The sustainable livelihoods approach (DFID 1999) perceives rural households to possess five livelihoods assets essential to their livelihood strategies: human capital, natural capital, financial capital, social capital and physical capital. The households can adjust to their

physical, social, economic and political environments through the utilization of the capital assets and set of livelihood strategies designed to strengthen their well-being (DFID1999).

The relationship between antiretroviral treatment, HIV and AIDS and sustainable rural livelihoods is as follows.HIV and AIDS is a shock that incapacitate an individual from undertaking normal day to day productive activities and in most instances leaves the individual bedridden and requiring care and support from relatives and neighbours. Because of the illness the individual cannot partake in agricultural or other labour intensive income generation activities hence reducing the earning or productivity capacity of that household. Thus HIV and AIDS increases vulnerability of the household to other shocks and pressures due to reduced household capacity of producing food or earning regular and predictable income. Antiretroviral treatment comes in as a life supporting mechanism that facilitates restoration of health thereby assuming that with good health the household will be able to embark on its previous food and income generation activities hence realising sustainable rural livelihoods outcomes.HIV and AIDS is posing serious challenges in both urban and rural areas of Zimbabwe, hence the need for this study to examine whether availability and access of ART is supporting re-bound of sustainable livelihoods in rural areas.

1.6 Justification of the Study

In the past five years there has been a significant expansion of HIV treatment in Zimbabwe with 250 000 (47%) currently receiving ART while an estimated 280 000 (53%) are on the official waiting list (National AIDS Council 2010:10). The role of treatment is to restore the health of the sick person. This is a narrow approach and does not consider whether people who receive treatment and make significant recovery, eventually take up or resume their normal socio-economic roles, including gainful employment or not. This is a critical issue and key for social and economic policy, particularly in environments where a significant number of prime age adults are living with HIV.

There is need to look beyond a fragmentary approach to treatment, to the broader approach where treatment is seen in the context of returning to productive work and thereby earning a livelihood. Since the large-scale introduction of ART in Zimbabwe, the main preoccupation has been the improvement of health infrastructure, roll out of the drugs, drug adherence, and other technical activities. While the uptake of ART has expanded throughout the country, there is a knowledge gap in terms of restoring health, and enabling those under treatment to return to engaging in productive rural livelihoods. This research intends to bridge this knowledge gap.

1.7 Research Objectives

Overall, this study is guided by two key objectives that are indicated below:

- To examine the impact of antiretroviral treatment (ART) on rural livelihoods of people living with HIV and AIDS (PLWHA).
- To recommend appropriate and key actions that both government and humanitarian actors in response to improving rural livelihoods of people living with HIV and AIDS should adopt.

1.7.1 Research Questions

The following key research questions are meant to reveal particular livelihood changes that have been brought about because of commencement of ART in the lives of people living with HIV and AIDS. Therefore the key research questions are as follows:

1) What was the livelihood situation before HIV status of people on ART?
2) What was the livelihood situation with HIV status without ART?
3) What is the livelihood situation now, HIV status with ART?
4) What else can be done to improve rural livelihoods of people on ART?

1.8 Hypothesis

The hypothesis of this study is that while ART boosts immunity and improves the health of people living with HIV and AIDS, it is not sufficient to improve the livelihood and quality of life outcomes for household heads living with HIV and AIDS. This hypothesis not only draws attention to issues of immunity, but to the other outstanding societal issues and changes necessary to enhance livelihoods.

1.9 Research methodology

This study will focus on an HIV positive rural programme where both men and women have been on ART treatment for the past six months or more to assess the impact of ART on their livelihoods. Therefore this research will investigate the impact of ART on the means of PLWHA to earn a living and this investigation will focus on their capabilities, assets, activities, as well as the sustainability of these activities. The research will make use of research assistants (both male and female) particularly in questionnaire administration. Research assistants will be trained on data collection, community entry and ethical considerations as well as other critical steps to ensure efficient and quality, data collection exercise.

1.9.1 Research design

Research designs are plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis (Robson 1993:194-197). A mixed design or integrated approach that will include both qualitative and quantitative techniques will be used in this proposed research. It will be qualitative in the sense that it will be exploratory in nature as it deals with people's opinions and attitudes (Robson 1993:194-197). Thus, this study will make use of quantitative as well as qualitative data to be able to come to a valid conclusion and make suitable recommendations.

1.9.2 Sampling technique

The study will make use of both purposeful and random sampling (Robson 1993:194-197). Purposeful sampling will be used during the identification and selection of study locations while random sampling will be used in the actual identification and selection of households who will participate in the study. Random sampling is possible and convenient to this study because it will provide the opportunity for every member of the population to be included in the sample, that is, males and females. Regarding PLWHA, 5% of the registered heads of households of ART beneficiaries in Nyanga Rural District will be interviewed and this translates to 125 heads of households being interviewed (Ministry of Health and Child Welfare 2010). Three health officials from the three local clinics (one from each ward), three ward based agricultural extension officers (one from each ward) as well as the District AIDS Coordinator will form part of the key informants for this research study.

1.9.3 Data collection strategy

Data will be collected from PLWHA who are on ART and key informants such as community leaders and health officials. The following data collection strategies will be used:

- **Questionnaire:** For ease of quantification, the research will make use of questionnaires, a technique popular in the social science (Hyman and Cobb 1954:68). These will be administered on a face-to-face basis.

- **Key informant interviews:** the study will also make use of informant interviews and these will be administered to key experts such as local health clinic and hospital staff, District AIDS Coordinator and agricultural extension officers.

- **Focus group discussions:** these will be held especially through the support groups in order to find out the unique needs of those who are infected and what it is that they need to regain their autonomy.

- **Secondary data:** even though there are problems with secondary sources such as unreliability the study will also make use of them (Robson 1993:194-197). Reports to be used and for which the researcher has access includes those from UNAIDS Resource Centre, Southern African AIDS Dissemination Services (SAFAIDS), Ministry of Health and Child Welfare, District AIDS Council, Concern Worldwide (CW) as well as CAFOD among others.

1.10 Study Limitations

- Some local health centre officials not being cooperative.
- Ward leadership failure to understand the purpose of the research and may not consent to their residents (PLWHA) participating in the study.
- Some PLWHA might not answer all the questions.
- Failure of some PLWHA to provide honest answers.

1.11 Research ethics

The conduct of this research will be in *tandem* with standards of the Research Council of Zimbabwe that establishes the following ethical considerations for medical research:

- Informed consent from all study participants: participants will willingly participate after receiving detailed information about the research.

- Voluntary participation: participation will be on voluntary basis and no payments whatsoever will be paid to participants, this must be made clear to the participants well before hand.
- Rights to confidentiality: the researcher must assure confidentiality that no names of participants will be published and no comments linked to participant's name will be given.

- Respect for persons incorporates two fundamental ethical considerations: (a) respect for autonomy, which requires that those who are capable of deliberation about their personal choices (community leaders, nurses, etc) should be treated with respect for their capability for self-determination, and (b) protection of persons with impaired or diminished autonomy (in this case the sick or ART beneficiaries). It requires that those who are dependent or vulnerable be afforded security against harm or abuse.

1.12 Conclusion

In general, the research is going to focus on assessing the impact of ART on rural livelihoods of Nyanga Rural District in Zimbabwe using the sustainable livelihoods framework as propagated by Department for International Development (DFID). This entails ascertaining pre-AIDS livelihoods activities for the study population and then comparing it with the current livelihoods scenario at household level. Research participants will identify livelihood changes that occurred in their lives if there were any because of the introduction of antiretroviral treatment.

In addition, the study population will also be offered the opportunity to recommend appropriate interventions that might be promoted by policy makers and development agents to uplift livelihood opportunities for ART beneficiaries. The findings of the research will be shared with Nyanga District stakeholders, as well as circulated at national level for reference and cross learning. Therefore results found, might then act as a framework for decision-making purposes by various stakeholders working towards improving livelihoods opportunities for people on ART.

The chapter highlights the overall objectives of the research, conceptual framework to be used and justification of the research. The research furthermore refers to other scholarly work undertaken in the region about impact of ART on livelihoods. Chapter 1 also provides an explication of pertinent terms as used in the study, research methodology and sampling techniques adopted as well as research ethics that will be observed during data collection and report writing.

CHAPTER 2: LITERATURE REVIEW

2. Introduction

According to the UNAIDS (2010:95), the overall growth of the global AIDS epidemic appears to have stabilised. The annual number of new HIV infections has been steadily declining since the late 1990s and there are fewer AIDS related deaths due to the significant scale up of antiretroviral therapy over the past few years. Standard antiretroviral therapy (ART) consists of the use of at least three antiretroviral (ARV) drugs to maximally suppress the HIV virus and stop the progression of HIV disease. About 1.5 days is the estimated period required by the HIV virus to complete its short lifecycle: from viral entry into a cell, through replication, assembly, and release of additional viruses, to further infect other cells.

Thus, antiretroviral combination therapy defends the person against resistance by suppressing multiple HIV replications to keep the number of offspring low and reduce the possibility of a superior mutation. If a mutation arises that conveys resistance to one of the drugs being taken, the other drugs continue to suppress reproduction of that mutation. With rare exceptions, no individual antiretroviral drug has been demonstrated to suppress an HIV infection for long; these agents must be taken in combination in order to have a lasting effect. As a result, the standard of care is to use combinations of antiretroviral drugs.

Antiretroviral combination therapy has been shown to slow the onset of AIDS and prolong life expectancy. Poku (2005:16) observes that the reduced cost of ARVs has significantly changed the possibilities for treatment and has changed the potential for reducing the socio-economic cost of the epidemic to many countries in Africa. ART directly reduces the infectivity of people and this translates into making prevention programmes effective by creating opportunities for effective treatment. Although the number of new infections has been falling, levels of new infections overall are still high, and with significant reductions in mortality the number of people living with HIV worldwide has increased (UNAIDS Report 2010:95).

According to World Health Organisation (2010:110) an estimated 2.6 million people became newly infected with HIV in 2009. This is nearly one fifth (19%) fewer than the 3.1 million people newly infected in 1999, and more than one fifth (21%) fewer than the estimated 3.2 million in 1997, the year in which annual new infections peaked. In 33 countries, the HIV incidence has fallen by more than 25% between 2001 and 2009; 22 of these countries are in sub-Saharan Africa. In sub- Saharan Africa, where the majority of new HIV infections

continue to occur, an estimated 1.8 million people were infected in 2009; considerably lower than the estimated 2.2 million people in sub-Saharan Africa newly infected with HIV in 2001.

Thus, Chapter 2 looks at a global HIV and AIDS picture, standard antiretroviral treatment and advances as well as benefits of ART. The chapter will also discuss in detail the impact of HIV and AIDS on rural livelihoods and look at studies undertaken on the impact of antiretroviral treatment, especially on rural livelihoods. Discussion on the impact of HIV and AIDS on livelihoods and rural livelihoods in particular will enable the proposed study to trace changes that have occurred, if any, because of introduction of antiretroviral treatment to people living with HIV and AIDS. Chapter 2 will present existing research gaps that this research will focus on. This chapter will present and discuss the conceptual framework (Sustainable Livelihoods Approach) used by the researcher in analysing the impact of ART on rural livelihoods. This approach as discussed in Figure 2 was adopted by the researcher owing to its comprehensive manner in protecting and promoting sustainable livelihoods especially amongst vulnerable and marginalised groups. This approach views HIV and AIDS as not only a health issue, but also a developmental challenge that requires the attention of a multi-sectorial and holistic approach.

2.1. Sustainable Livelihoods Approach (SLA)

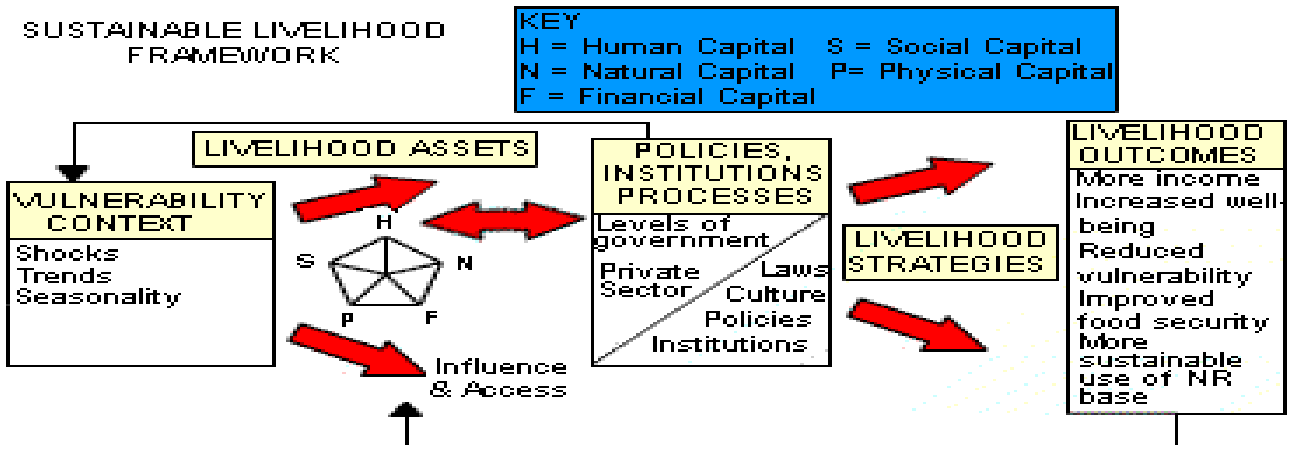


Figure 2: Sustainable Livelihoods Framework (Source: DFID 1999)

This research study borrows heavily from the Sustainable Livelihoods Approach promoted by United Kingdom's Department for International Development. The department defines a livelihood as comprising the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (DFID 1999:1). Key components of the framework for analyzing the

livelihoods of individuals and the community are their capital assets, their vulnerability context and the transforming structures(layers of organizations both in the private and government sectors) and processes (laws, policies, incentives), which shape and influence the livelihood strategies which they adopt. The capital assets are grouped as:

- **Natural capital:** the natural resource stocks from which resource flows useful for livelihoods are derived (including land, water, wildlife, biodiversity, environmental resources).

- **Social capital:** the social resources upon which people draw in pursuit of livelihoods (for example networks, membership of groups, relationships of trust, access to wider institutions of society).

- **Human capital:** the skills, knowledge, ability to labour and good health important to the ability to pursue different livelihood strategies.

- **Physical capital:** the basic infrastructure (transport, shelter, water, energy, and communications) and the production equipment and means, which enable people to pursue their livelihoods.

- **Financial capital:** the financial resources which are available to people (whether savings, supplies of credit or regular remittances or pensions) and which provide them with different livelihood options.

2.2. Nyanga Rural District: Livelihoods Activities

Agriculture is the main economic activity undertaken by more than 95% of the households in the district (ZIMVAC Report 2010:42). Rural households have access to communal land and in most instances the greater part of harvests is for own consumption while surplus is sold to private buyers as well as government agencies such as Grain Marketing Board in the case of maize . In addition, many people are employed on other farms in the community. The chores for men are clear fields, make mounds and ridges, and women do the weeding and harvesting. This labour is usually provided by young girls and boys, working on their own or with their associations. Adults belonging to very poor households work as casual labourers in return for money or food (CAFOD LIME Report 2010:8-11).

2.2.1 Livestock

A greater number of people own small livestock in the district while large animals, especially cows, are predominantly owned by the average and better off households. Goats, sheep, pigs and chickens play an important role in the household economy as they can be easily converted into cash in cases of emergencies, and are essential for social occasions such as

marriages and funerals. Livestock epidemics, however, occur regularly in ecological region 4 and five of Nyanga District and this relate to disease outbreaks such as foot and mouth, to severe and recurrent droughts that impact negatively on the availability of pastures and water for both people and animals (CAFOD LIME Report 2010:8-11).

2.2.2 Crops

A wide range of crops is grown. Crop combinations are dominated generally by root crops(Irish potatoes, sweet potato) or grain crops (sorghum, maize, rapoko, millet).Other crops grown include vegetables (tomatoes, covo, tsunga, okra), round nuts, groundnuts, and soybeans. Most crops are used both as food and as cash crops, but many farmers regard soya beans, Irish potatoes and groundnuts as cash crops. A good harvest requires timely preparation of land, planting and regular weeding (CAFOD LIME Report 2010:8-11).

2.2.3 Land

In Nyanga Rural District, land is still perceived as the property of the clan that is holding it in trust for the (male) family members. Fields are clearly demarcated and allocated by the elders to individual households. The head of the household can then allocate a plot to his wives and children. The Manyika people are patrilineal and when a woman marries, she leaves her family to live with her husband's family. Her husband will provide her with a field. Unmarried or divorced women depend on their fathers, brothers or other male relatives to offer them farmland. Manyika widows cannot inherit land, but it may be left in her care on behalf of her sons. According to custom, women only have usufruct rights (CAFOD LIME Report 2010:8-11).

2.2.4 Labour requirements and division of works by gender

Farming in Nyanga Rural District is labour-intensive and most of it done by hand. Animal-pulled ploughs are limited as the majority of poor households lack ownership of productive assets such as cattle for draught power and farming implements. Herbicides that reduce time spent weeding, are expensive, and beyond the reach of many poor households. Therefore average and better off farmers engage casual labour during the peak of agricultural season (CAFOD LIME Report 2010:8-11).

2.2.5 Information and technical support

Ministry of Agriculture has employed ward based extension officers that provide rural smallholder famers with day-to-day information and technical support on both crop and animal farming. Thus in making strategic decisions concerning crop choice and cultivation practices, farmers are being assisted by extension workers. A number of non-governmental organisations are also supporting farmers with extension services through master farmer trainings and junior farmer field trainings (CAFOD LIME Report 2010:8-11).

2.2.6 Common pool resources

Natural resources are also key assets for local livelihood strategies. Forests and streams are very important for hunting, fishing, honey collecting, and the gathering of other products (firewood, wild fruits, etcetera). Fish and wild game are smoked and sold. Owing to the increase in population and poor management practices, these reserves have been considerably depleted, although some of the poor and young still engage in hunting and gathering activities. In places were these resources are less abundant it is mostly the poorer households that rely on these resources for extra income (CAFOD LIME Report 2010:8-11).

2.2.7 Non-farm activities

Most households have diversified their livelihoods to some degree, and are involved in activities like the processing of agricultural produce, trading or off-farm activities. Commodity markets are common in Nyanga rural district. Women engage in petty trading and sell food, while men do most of the bulk trading. Women will sell their own produce as well as produce from the family farm. Traders seldom come directly to the communities, possibly with the exception of Irish potato buyers. Farmers prefer larger markets visited by many traders such as the one in Mutare and Rusape. They usually haul their produce to the market places, and the costs are higher for farmers who live in the more isolated communities (fuel and transportation costs will continue to rise as long as roads remain in a poor condition) (CAFOD LIME Report 2010:8-11).

2.2.8 Mobility and migration

In Nyanga district there is much movement of people between households. It is a district where migration to other parts of Zimbabwe, both rural and urban, is an important livelihood strategy, which involves both men and women. In addition, due to its closeness to Mozambique there is also significant movement of people, both men and women, between the two countries as means of earning a living. Migrating to a city is a livelihood strategy often undertaken by young people who are seeking a better life and an escape from farming (CAFOD LIME Report 2010:8-11).

The vulnerability context is particularly important as it indicates the nature of trends, shocks and culture, and the ability of the poor to withstand their impact. Within the present context of HIV and AIDS, SLA would argue that ART alone without looking at other facets of livelihoods such as financial capital, social capital and institutions and policies would not improve livelihoods and welfare of the people living with HIV and AIDS. Therefore, it is vital to understand the structures and processes which define people's livelihood options. These

structures and processes are critical in determining who gains access to the various assets, and in influencing the effective value of each asset.

The livelihood strategies, which individuals adopt, reflect their choices in building on their assets: gaining more from a livelihood through increased agricultural production (more outputs per unit area with increased capital or labour inputs) or by cultivating more land. Alternatively, there may be opportunities to diversify into off-farm income-earning activities, or to seek a livelihood by moving away temporarily or permanently. These combinations of activities, which make up a livelihood strategy, are known as a 'livelihood portfolio'. A portfolio will be diversified over time, and between households, communities and generations; hence, the composition of livelihood strategies is a dynamic element of sustainable livelihoods, and as such requires a historical analytical approach (DFID 1999:1).

In summary, SLA theory does what few other theories do, namely reminding scholars and practitioners that purely technical solutions may not on their own, be sufficient to make a difference to a problem. Whether or not this injunction is true is a matter that the present research will investigate using appropriate and timely example of ART presently being scaled up in Zimbabwe intending to restore health and livelihoods of people living with HIV and AIDS.

2.3. Impact of HIV and AIDS on Rural Livelihoods

Rural livelihoods especially agriculture driven livelihoods have experienced negative impact as a result of HIV and AIDS epidemic. Nevertheless few and isolated studies on the impact of ART on rural livelihoods have also shown an encouraging and positive impact. This is extensively discussed below.

2.3.1 HIV and AIDS: Impact on the community

Jackson (1999:467) notes that the social fabric of the extended family is showing signs of erosion, and close bonds that hold family members together are disappearing. In some instances, parents are forced to either send their children to work or take them out of school. In some areas, families are being forced to adjust burial rites and ceremonies in terms of both time and money spent, to cope with economic pressures resulting from HIV and AIDS. Traditional roles, duties and responsibilities of family members are blurred, as AIDS places additional demands and pressures on orphans particularly economic uncertainty, stigmatisation, and emotional insecurity.

Jackson (1999:467) further notes that adult death and loss of income leads to lower investment in schooling, with children being withdrawn from school to substitute adult labour. Girls appear to be carrying the brunt of the burden within the home and are given more

responsibilities and duties than boys are. They are taken out of school to work at home and on the farm, and to sell produce at the market. Young children between 8-11 years of age have become the main carers, running small errands like fetching water and bringing food (Jackson 1999:467). In many cases, youths are being deprived of life and sex education, which is instrumental in establishing a code of conduct between men and women, husbands and wives. The majority of parents attribute early sexual activity and multiple/casual partners to disappearance of family life education. Grandparents in particular often find themselves unable to control and discipline adolescents.

So aggravated is the problem that some young women are forced to break up their families to assist their AIDS-afflicted parents. The result is a dilemma in which the young woman is torn by the decision because on one hand, she has to take care of her parents while on the other, she fears losing the marriage and her family as the husband may decide to take another wife. Even if he does not marry another wife, he may be engaging in high-risk sexual behaviour with other women during her absence. The woman, however, may feel she does not have the right to confront her husband, as she is the one who has ‘’abandoned’’ him. All this leads to the disintegration of the household and families in the face of the epidemic (Jackson 1999:467).

For the sick, AIDS is dehumanising as it denotes loss of control, as seen in conditions such as incontinence, temporary (and sometimes permanent) physical disability and mental illness (hallucinations and memory loss which come with some opportunistic infections),loss of hair and the debilitating effects of HIV status, which make people function at less than optimal level. Mental illness particularly intensifies discrimination. HIV and AIDS therefore renders people societal invalids because they have to be cared for and this is humiliating and not easy for an adult (Jackson 1999:467).

Being the subject of verbal and non-verbal running commentaries because of the current stigma around AIDS adds psychological dimensions to these problems. In Beitbridge, for instance it was observed that people publicly laugh at people who looked ill, calling them names. Generally, AIDS patients are referred to with a lot of innuendo, satire and sarcasm. In Victoria Falls, the sick are referred to as *umuntu ofileyo* (literally meaning “a dead person’’), which is very demeaning, while others are referring to AIDS patients as ‘’.quarter to (to the hour of death)’’ meaning that the person is about to die. This also leads to the stigmatisation of women involved in commercial sex work who are called *O-Doves or ‘O-Moonlight*’, meaning that if you date the women you are as good as dead because they are seen as undertakers (Mate 2002:66). These names are derived from two funeral and undertaker companies in Victoria Falls, Zimbabwe (that is Doves Funeral Services and

Moonlight Funeral Services). These references do not allow the infected to live positively as expected.

Despite the enactment of legal instruments to protect HIV and AIDS infected people against discrimination, the disease impinges on people's basic human rights, for instance loss of employment and accommodation. Mate (2002:66) notes that people lose employment and accommodation in Victoria Falls upon their discovery by their employers and landlords that they are HIV positive. Given unemployment, widowhood and other forms of singleness, some HIV positive women resort to commercial sex work as coping strategy or transactional sex in order to make ends meet.

However, literature has shown that expansion of antiretroviral therapy has yielded remarkable health dividends in countries in which an HIV diagnosis was regarded as a death sentence only a decade ago. Emerging evidence shows associations between rolling out treatment and reduced population mortality in high-prevalence settings. In South Africa's North West Province, the rollout of antiretroviral therapy, one of the earliest and most aggressive efforts to improve access, coincides and appears to be associated with a decline in mortality in the most affected age groups. The data also suggest initial mortality declined by 27% in the Western Cape and KwaZulu-Natal. The preliminary findings of a study on death registration undertaken by the Medical Research Council of South Africa provide supporting evidence of continued declines in mortality (World Health Organisation 2010:115).

Estimates suggest that worldwide, about 14.4 million life-years have been gained due to the provision of antiretroviral therapy. More than 1.2 million life-years are estimated to have been gained in Brazil between 1996 and 2009, which has had a long-standing policy of universal therapy coverage. In South Africa, more than 970 000 people are now enrolled in antiretroviral therapy and more than 700 000 life-years have already been gained. Kenya and Nigeria have both enrolled more than 300 000 in treatment, leading to about 320 000 life-years gained in each country. Later rollout of antiretroviral therapy and/or low coverage mean that significant gains in life-years have yet to be documented in some of the concentrated epidemic countries such as Indonesia, Ukraine and Viet Nam (World Health Organisation 2010:116).

An international team of researchers looking at more than 7 700 HIV patients undergoing combination therapy with antiretroviral (ARV) drugs has reported an increase in survival rates and a significantly reduced risk of progression to full-blown AIDS. "Predicted survival for people with HIV-1 has continued to increase, since the introduction of HAART (highly active antiretroviral therapy). Results of the study, based solely on HIV-positive cohorts in

Europe, Australia and Canada, show that ARVs prolong the lives of HIV patients in industrialized countries where hospitals are well equipped with state-of-the-art laboratory facilities. However, numerous small-scale pilot projects run by UNAIDS, a French initiative called the International Therapeutic Solidarity Fund (FSTI) and non-governmental organizations such as Médecins Sans Frontières — as well as the Brazilian National AIDS Programme — have since demonstrated the feasibility of ARV treatment even in resource-poor settings (UNAIDS Report 2009:90).

Palella and Moorman (1998:853) in their study demonstrate how effective anti-retroviral treatment is with clinical practice. Palella *et al.* (1998) note that mortality among the patients declined from 29.4 per 100 person-years in 1995 to 8.8 per 100 person-years in the second quarter of 1997. There were reductions in mortality regardless of sex, race, age, and risk factors for transmission of HIV. The incidence of any of three major opportunistic infections (Pneumocystis carinii pneumonia, Mycobacterium avium complex disease, and cytomegalovirus retinitis) declined from 21.9 per 100 person-years in 1994 to 3.7 per 100 person-years by mid-1997. In a failure-rate model, increases in the intensity of antiretroviral therapy (classified as none, monotherapy, combination therapy without a protease inhibitor, and combination therapy with a protease inhibitor) were associated with stepwise reductions in morbidity and mortality. Combination antiretroviral therapy was associated with the most benefit in terms of reduction in mortality and morbidity rates (Palella *et al.* 1998:853-60).

Coetzee *et al* (2004:85) reveal positive results or outcomes after two years of providing antiretroviral treatment in Khayelitsha, South Africa. Based on excellent results for patients who started antiretroviral treatment with very low CD4 and high viral load counts, Coetzee *et al.* (2004) concluded "ART can be provided in resource-limited settings with good patient retention and clinical outcomes. With responsible implementation, ART is a key component of a comprehensive response to the epidemic in those communities most affected by HIV".

In other studies done in Cape Town, South Africa by Bari and Khan (2004), Eurosida cohort revealed reductions in mortality and morbidity after introduction of anti-retroviral treatment on AIDS patients. Potential long-term adverse effects associated with anti-retroviral treatment have not altered its effectiveness in treating AIDS. Moultrie and Egger (2009:730-7) note that rollout of ART in the public sector in low resource settings makes paediatric HIV infection a manageable chronic condition. However, there are few data demonstrating the success of these programmes, particularly on virological response − a crucial outcome to predict drug resistance and long-term programme sustainability.

Moultrie and Egger (2009:730-7) report four-year outcomes from a paediatric HIV outpatient service at Chris Hani Baragwanath Hospital, which includes routine virological monitoring.

The study concludes that the vast majority of children achieve viral suppression even in the context of a routine service programme. Mortality rates are high during the first few weeks of ART and may reflect failure to identify HIV-infected children early. Programmes to strengthen early infant diagnosis combined with prompt referral to treatment programmes may be able to reduce these needless deaths (Moultrie and Egger 2009:730-7).

2.3.2. HIV and AIDS: impact on household viability

Household viability refers to the ability of a household to mobilise material and non-material resources, which enable it to function optimally and to meet the needs of its members (Mate 2002:66). Focus group discussions with married women in Harare suggested that household viability is threatened early in HIV infection. Married woman reported that, when a woman was the first to know her status and informed the husband, the latter often left for other partners. Some widowed women also reiterated that, before their husbands died, they had married or lived with other women because they could not bear the thought of having sex with HIV positive spouses. Some men were said to partially accept the information but continue to have sex without condoms arguing that it was their conjugal right (Mate, 2002:66).

The implications of rising morbidity and mortality are not only that HIV and AIDS is changing the demographic structure of the household, but that it is also taking a heavy toll on household resources and assets. As a result, the social and economic progress of the last few decades is being reversed with serious impact on household livelihood systems. The loss of labour, income, and managerial skills associated with HIV and AIDS epidemic threatens the sustainability of rural agricultural production. HIV and AIDS is affecting agricultural production through its impact on household labour, disruption of the dynamics of traditional social security mechanisms and the forced disposal of productive assets (e.g. to pay for medical care and funerals) according to Mate (2002:66).

With the job losses, which come with an HIV diagnosis or death of the breadwinners, many households experience reduced viability. This is worsened by chronic ill health of the surviving spouse, which is invariably the case in many instances. HIV status leads to loss of savings as people spend on the care of the sick. In Victoria Falls, it was reported that many rural families had disposed of their livestock to generate income to care for the sick (Mate 2002:66). Where there are children, this invariably leaves the children in poverty, thereby reducing their opportunities in life.

HIV and AIDS have had an impact on rural development. In most third world countries and in Zimbabwe in particular, sick persons are sent to rural homes and this has a negative impact

on productivity in rural households. The rural women are looked upon to take on the responsibility of caring for the sick. Jackson (2002) notes that women lack time for projects, because they have to take care of the sick. Mgalla and Pool (1997) suggest that when women spend long hours caring for the sick family members, the loss of labour in agriculture could have severe economic effects. Meagre resources and savings are depleted towards unsubsidised and uncoordinated costly care for HIV and AIDS. In widow-headed households with many young children and elderly and/or infirm family members, the impact can be devastating. Toupozis (1998) notes that most widows mentioned that their working day had increased by two to four hours to make up for their labour shortages and loss of income. One of the consequences of this coping mechanism, however, was that children were left unattended, their meals were poorly and hastily prepared, and the widow's own health and diet deteriorated because of exhaustion and less food intake. Because of reducing the number of crops under cultivation and/or switching to less labour intensive crops, the diet becomes restricted to one or two starches (Toupozis 1998).

2.3.3 HIV and AIDS and agriculture: interactions and impacts

According to Food and Agriculture Organisation (1999:1), between 60% and 80% of the population in SADC, countries depend on small-scale or subsistence agriculture for their livelihoods, so the impact of the epidemic on this sector is crucially important. While agriculture is central to many African countries, not least of all for household survival, there are marked differences among countries in terms of current economic conditions and agricultural and economic potential. Generally, however, this sector is facing increasing pressure from heightened levels of poverty, dwindling inputs, and a lack of support services, amongst other issues. In rural areas, increasingly impoverished communities may receive fewer visits from traders or suffer a reduced availability of services and consumer products (FAO 1999:1).

Just as HIV and AIDS affected households may ultimately disintegrate, so too may HIV and AIDS-affected communities through the loss of significant numbers of their members, economic collapse and social breakdown. It is therefore suggested that as a result of thee interactions, the possibility of substantially increased vulnerability to other shocks, such as drought or conflict, the emergence of new types of vulnerability, the erosion of some capacities and skills for coping with shocks and adaptation and emergence of new capacities in response to these threats may emerge (Harvey 2003). In essence, the relationship between HIV and AIDS and food security is bi-directional: vulnerability and food insecurity feed into the risky behaviour that drives the epidemic; and the impact of HIV and AIDS exacerbates food insecurity, which again feeds into risk. An understanding of the negative two-way relationship between livelihoods and HIV and AIDS opens up opportunities. Policy

makers, government officials, and development practitioners can pursue livelihoods objectives in ways that also address major aspects of HIV and AIDS.

2.3.4 Reduction of area cultivated

Donovan and Calisto (2003:13) note a decrease in the area of land under cultivation at household level (due to a lack of labour stemming from illness and death among household members). This is a frequently used strategy in the Sub-Saharan region among affected households in response to prime age illness and prime age deaths. Decreasing the area cultivated is a response to labour shortage, shortages of agricultural inputs due to the death of an income earner and as a response to the lack of draught power and farm implements. A study carried out in Swaziland, found that there was a significant reduction in area under cultivation in households that experienced an AIDS related death (Muwanga, 2004).

The average reduction in land under cultivation was 51% compared to 15.8% in households that experienced a non-AIDS related death. Reduction to area cultivated may result in reduced yields, which have a negative impact on household food security. Effects on area planted were examined during the vulnerability assessments done in Zimbabwe and Zambia from 2001/2 to 2002/3 based on the presence of an active adult (SADC FANR 2003). In Zimbabwe, results show that with the presence of active adults, 33% of the households stated that they would plant more while 60% households with chronically ill heads, planted less area.

The Zambian Vulnerability Assessment also showed a similar trend, with households without a chronically ill head planting on average 22% greater area in 2002/3 than the previous year, while households with a chronically ill household head had planted 53% less area than in 2002/03. The way households respond to HIV status varies across wealth groups as observed in Zambia during the 2002 vulnerability assessments, with the better-off households having a slight reduction in area cultivated (three per cent less) as compared to 69% less for the poor households (SADC FANR 2003:28).

CARE-Lesotho, responding to an increasing tendency for households to focus more time on plots closer to the homestead, began to develop homestead gardens suitable for households living with HIV and AIDS. Such gardens are easier to reach and work in than fields. Associated garden work can be combined with home care, the nutritional advantages for those living with HIV and AIDS are great considering the focus on vegetables and herbs, and water is more readily available, though extra strategies are needed to harvest and store more water (SADC FANR 2003:23).

Empirical evidence from Kwaramba (2004) indicates that a reduction in area cultivated in response to HIV and AIDS contributes to reduced yields, although situations differ according to farming systems and across the natural regions of Zimbabwe. Kwaramba (2004) revealed that households in the communal areas of Zimbabwe that had members suffering from HIV and AIDS reduced their cattle by 29% along with a 61% reduction in maize yield. The 2002 projected estimates indicated a further yield decline of 71% for maize, which had serious implications for food security, household income, and raw material availability for agro-industries in the country (Kwaramba 2004). The percentage yield decline was more severe under communal irrigation schemes than dry-land resettlement areas because of high input needs.

Further analysis indicated a decline in yields by natural region generally becoming more severe moving down from Natural Region II to Natural Region IV (Kwaramba 2004). A similar trend reported by C-SAFE showed that more than 40% of Zimbabwean rural households in 2003 were not cultivating as much land as previously (Senefeld & Polsky 2005). The most common sited reasons were lack of labour (17%), rainfall (62%), draught power (51%), fertiliser (19.7%) and seed (52%).The FARNPAN study undertaken in Zimbabwe, reported a decrease in area cultivated among households affected. The area was increasingly used for planting maize and legumes, and less for labour intensive and cash crops (Mano & Matshe 2005). The same reports note that apparently there are no effects on fertilizer applications between affected and non-affected households.

Gender variations influenced the changes in crop production according to a descriptive study developed by Marongwe (2005). No changes in the diversity of crops were observed after the death of the male head with the maize crop continuing to be the dominant type among rural households in Seke, Buhera and Chimanimani communal areas. According to Marongwe (2005), other labour intensive crops such as sorghum, rapoko and wheat continued to be part of the main crops produced This provides opportunities for further research into the reasons for the rearrangement of cropping for coping purposes.

2.3.5 Illness and time allocation of labour

Rugalema (1999:27) notes illness of an adult makes a significant demand on household labour in providing care. HIV and AIDS affliction alters household time allocation considerably. The sick person becomes morbid due to the disease, spends all of his time at home looked after by the caregivers. Time spent by the sick person in bed and in productive activities varied with the gravity of illness. Besides the patient's lost labour, caregivers (women) were found to transfer labour time from productive activities to care provision. The amount of labour time withdrawn varied with distance from the sick and other factors such as having someone else to care for.

Their wives, mothers or sisters cared for married male patients (especially if the wife was sick or had died). In afflicted households where wives were present, and strong, female relatives of the male patients provided occasional back-up especially if the sick person was in critical condition and on weekends. A wife whose husband was sick spent 45% less time on agriculture than she would normally do. Equally, she spent 50% less time on leisure and participating in village social activities. A considerable amount of time was spent on care of her husband, some 700 person-hours of which about 75% was divested from agriculture (Rugelama 1999:27)

Children who had to care for one or both of their sick parents reported spending time on activities such as collecting food for cooking, minding livestock and also running errands to relatives, neighbours and friends asking for food stuffs such as sugar, salt or money to buy essential needs. Compared with children in unaffected households, children in afflicted households were found to work far more than other Buhaya child worked in childhood (Rugelama 1999).

Nqwira & Mkandawire (2003:7) argue that since women in the rural areas in Malawi are usually responsible for both cultivating food crops and household tasks, they work between 15-17 hours per day. This is substantially more than eight hours men are assumed to work. A survey conducted by Afro barometer in 2004 (across fifteen countries in East and Southern Africa) revealed that four in ten Malawians (43%) spend more than five hours a day caring for sick household members (Afro barometer 2004).

2.3.6 Substitution of crops and changes in crop production

Crop diversification involving a shift from cultivation of labour intensive crops to crops requiring less labour is another common strategy widely cited in the literature. According to FAO studies in East Africa, affected households substituted cash crops for crops, which required less labour and expensive inputs such as fertilizer and pesticides (FAO 1999). Muleba District, Tanzania, Muchunguzi (1999) observed a shift from banana and coffee to root and tuber crops, which was similarly observed in Rwanda (Donovan & Bailey 2005) and in Mozambique (Mather & Jayne 2004). Some researchers identified a shift in households' preference for early maturing crops to late maturing ones, with fewer types of crops increasingly being preferred (Neema 1999). This shift raises concerns around the increased workload of women for more labour-intensive root and tuber crops, as women provide more than 80% of the labour required in the cultivation of such crops (Neema, 1999). Another long-term agricultural concern is the loosening of the soil through cultivation, digging and harvesting of root crops that damages the banana root system. In Swaziland, 43% of the households that experienced an AIDS death substituted labour intensive crops like cotton

with less labour intensive crops like maize and moved from cash crops to subsistence crops (Muwanga 2004).

In Rwanda, Donovan and Bailey (2005:21) report that sweet potatoes have a labour advantage in that the timing of labour is more flexible, as harvesting can take place over time and planting can be undertaken outside the main planting period for other crops. Other households with an illness, experienced higher growth in sweet potato production (500kg more than unaffected households) and much lower growth in production of beer bananas (a cash crop) (Donovan & Bailey 2005). A recent study undertaken in Mozambique had shown that changes in crop production were influenced by gender. In this study, it was evident that cash, livestock, assets, total and per adult equivalent income, were lower for households experiencing death.

Affected households had lower total and cultivated land area, particularly with the death of a male household head. While tuber production and area under tuber cultivation increased, especially when a man died, they did not increase when a woman died or was chronically ill. Similar results were found in Kenya where gender differentiated the way people managed the area cultivated and relative shifts away from cash crops (Yamano & Jayne 2004). In that case, the death of a female head or spouse led to a significant reduction in area under cereals. However, in contrast another study found that although farm activities were scaled back after a male death and wage income fell, affected households did not shift towards subsistence crops (Beegle 2003). This finding is largely in contrast with most other research and has been explained by the high population density around the area that provides a large labour supply.

Gillespie (1989) explored the potential impact of AIDS on farming systems in Rwanda, undertaking a simulation using farm management (FM) data and modelling five farming systems. He concluded that highland potato and sorghum systems and lowland bean, sweet potato and maize crops would be the most sensitive to labour loss and hence to the HIV and AIDS epidemic. Also in 1999, Food and Agriculture Organisation (FAO) undertook a simulation study in Tabora in Tanzania utilising old FM data and similar findings were made.

Barnett and Blaikie (1992) published research undertaken in the Rakai and Kabale districts of Uganda to identify the effects of HIV and AIDS on households and farming systems. The research focussed on the effects of labour losses and mapped the relative vulnerability of different farming systems. The research utilised small samples and an anthropological methodology. The main conclusions were that:

- Some households would cope effectively while others would fare badly depending on initial endowments.
- Some farming systems would contract in areas cultivated productivity and range of crops because of labour shortages.
- The impact would be geographically concentrated and patchy.
- Some child headed households were emerging.

Black- Michaud (1997:16) looked at Burkina Faso and Ivory Coast and at savannah and forest zone systems, examining the links between the two through migration. In Burkina Faso, she found a reduction in cultivated area and changes to the agricultural calendar apparently because of reduced remittances due to the illness or death of a migrant worker, rather than due to local illness and death among smallholder farmers themselves. In the Ivory Coast, however, illness and death in the village farm households were having a serious impact. Common to both countries were the findings that cash crops were reduced before food crops, and that the total area under cultivation declined.

The impact on commercial crop production varied. In Burkina Faso vegetable production was particularly hard hit and in the Ivory Coast, cotton and cocoa production. Depending on the price balance between food and cash crops, households would choose between them to economise labour. One emerging labour demand was taken to care for the sick and to seek medical assistance often directly affecting time available for agricultural production. The outcome might be less timely farming practice resulting in reduced yields and over time, a general decline of household welfare. Nonetheless, the severity of the impact of HIV and AIDS may be less in these countries than in Eastern and Central Africa (Black-Michaud 1997).

2.3.7 Declining investment in household agriculture

Rugalema (1999:27) notes that in seriously affected households, agriculture investment has declined between 40-60% compared with the time when there was no AIDS in the families. An affected household is forced to change its expenditure pattern with most of its income paying for medicines, hospital charges, palatable food for the sick and funeral expenses. Households sell their assets to meet new expenses in the family. The commonly sold assets include cattle, bicycles, radios, family (banana and coffee) fields, etcetera, leaving the family without the means to support itself in the future. In such families, the expenditure on agricultural activities is no longer a priority because of HIV and AIDS in the family.

In some affected households, the family size has doubled or tripled because of orphans and elderly people. The more children and elderly people a family has the greater the proportion of household income that must be spent on food, clothing, education, health and other items.

Such families have little or nothing to save on food in order to invest in other sectors like agriculture. In families where the patient is the sole earner of the family income, they totally neglect agriculture, depending on the extended family and friends for food and other necessities. All these expenditures negatively influence the volume of savings the affected households could use to purchase certified seeds, fertilisers, pesticides, labour hiring and other agricultural inputs. Declining investment in the agricultural sector has resulted in permanent household food insecurity, a fall in income, and banana and coffee fields turning into fallow land (Rugalema 1999:27)

Muchopa & Mutangadura (1999), point out that the important contribution of livestock through draught power, manure, food security, and meat and milk products is compromised when large numbers are diverted to support medical bills. In addition, the sale of agricultural implements such as ploughs has been observed, and in some cases, land has been abandoned or sold to cover medical expenses (Muchopa & Mutangadura 1999). In Namibia, Muchunguzi (1999) reported that some households with chronically ill heads sold family banana and coffee fields to cover medical costs. Coupled with the sale of assets, it is a trend that assets sold, generally take care of men rather than women because of traditional power relations (Rugalema 1999). Increased reports of land and other property stripping from widows and orphans have been reported across the region (Marongwe 2005). Whereas property stripping is not a new phenomenon, increasing number of deaths due to AIDS and the additional stigma attached to HIV has caused greater hardships for women and girls in particular. In some cases, widows are blamed for killing the husband by infecting him with HIV and in-laws use HIV and AIDS as a justification for dispossession (Marongwe 2005).

In other cases, in-laws refuse to recognise AIDS as a cause of death even when it is documented as the cause. Often in such cases, widows are accused of witchcraft. Many of these widows are infected with HIV or living with AIDS, and dispossession, harassment and eviction often takes place when their economic and health conditions are rapidly deteriorating. Consequently, such widows and their children are left without shelter, means of livelihood and support network in the community. Decisions are increasingly based on health needs and not on the importance and usefulness of the assets. For example in some cases, land has been abandoned and sold formally and informally to meet medical costs, a situation that has long term implications for household food security (Muchopa & Mutangadura 1999).

2.3.8 Decrease in farm labour force

According to Muchopa and Mutangadura (1999) family members in affected households invest less time in agricultural activities. They have to take care of the sick, visit sick friends or relatives, and attend burial and mourning ceremonies. The available labour in the affected

households is mostly comprised of young children and the elderly. The elderly are not labour active and the children are less experienced and uninterested in farming. In most severely affected households, the total number of dependents is increasing and this increase leads to permanent household food insecurity and fall in income and general welfare.

The home garden, which gave family food security and income, is gradually disappearing because of AIDS. Normally farmers constantly transferred organic material from surrounding grasslands to the banana and coffee fields for mulching. All household refuse was used to mulch the fields and where cattle were available; cattle manure was administered to the fields. Coffee husks were also applied to the fields. Nutrient recycling built up soil fertility. With the current labour shortage, however, this is no longer possible in seriously affected households. For instance if they harvest coffee, they sell it in unhulled state because of labour shortages. This practice results in soil-nutrient mining and contributes to declining soil fertility. As a result households experience acute food shortages and a general fall in welfare (Muchopa & Mutangadura 1999).

Generally, hiring of labour depends on the size of the local labour market and the ability to pay workers in cash or in kind using maize or other commodities. Only households with a stable income or source of remittance are able to hire labour and draught power (Jackson 1999). Poor households often rely on free labour from relatives and the community. In a Swaziland study over 40% of the households hired labour on their farms (Muwanga 2004). In Malawi, a study conducted by CARE found that 70% of the households affected by HIV status to be suffering from labour shortages, with 45% delaying agricultural operations and 25% leaving land fallow or changing the crop mix (Shah *&* Vilili 2002).

One of the effects of the decline in agricultural production and household asset bases is an increased reliance by poor rural households on *ganyu* labour. *Ganyu* labour is largely a product of the countryside where cash earnings are needed by peasant farmers, but are hard to obtain. Once households begin to depend on *ganyu,* it is difficult to stop. When working on other's land, they are unable to work on their own fields. This reduces crop yields and makes them even more dependent upon seeking *ganyu* to meet family needs. Reliance on payment in kind for *ganyu* also implies that sufficient money cannot be raised to buy fertilisers to produce a surplus crop or repay loans. This often leads to a downward spiral of further *ganyu* or that the *ganyu* worker's crops are handed over to the creditor. This situation is referred to as a *ganyu* trap (Shah *et al* 2002).

Of the poor households interviewed in the CARE-Malawi study, 55% depended on *ganyu* labour for more than four months of the year: 'Once the household starts to depend on *ganyu*, it becomes very difficult for it to come out of it' (Shah *et al*. 2002). Those looking for

ganyu labour take what opportunities they can, and since these are most commonly at the peak points of the agricultural cycle, their own crops are neglected and the yields shrink further. This 'downward spiral' continues until many poor households consume their whole 'crop' whilst it is still in the field and have no food at all for storage (Shah *et al*. 2002). Because of growing rural poverty and social fragmentation and dislocation, the rise of various forms of labour and social exploitation is undoubtedly becoming more serious in Malawi. *Ganyu* wage labour rates have continued to fall, becoming ever more exploitive (Bryceson & Fonseca 2005).

Associated with this is the heightened sexual exploitation of women and adolescent girls. Shah, in another study on adolescent sexual and reproductive health, found adolescent sex to be widespread, unsafe, often coercive, and mostly transactional, with 'the main reason for girls to be involved in sex is for the payments (cash and kind) they receive' (Shah *et al*. 2002). Adolescent orphan girls and widows are especially vulnerable to sexual abuse.

Shannon-Stokes used the sustainable livelihoods framework in the development of indicators for the FAO to measure the impacts of HIV and AIDS on rural households and food security. This analysis drew on a wide-range of experiences and studies, finding a number of impacts on the household's human capital. A household member with a chronic illness limits the productive activities of the household, which suggests a number of likely additional impacts on other dimensions of human capital, as well as other livelihood assets. These may include withdrawal of the eldest child from school, the reallocation of the wife's time away from productive labour, the loss of off-farm employment, the decline in on-farm labour that is likely to reduce the area cultivated and shift cropping patterns to less labour-intensive practices should all be measured by these indicators. Thus, the re-allocation of labour may lead to diminished production due to a change in cropping or area under cultivation.

In some instances, intra-household labour re-allocation entailed changes in gender roles, especially to transcend "traditional" the gender division of labour leading to men learning to cook and women collecting firewood (FAO 1999:9). Certain key tasks for household survival would be allocated to those able to undertake the activity if the person "normally" responsible for such activity was sick or deceased. This is, however, not a widespread response as other strategies, often involving a reduction in inputs usually provided by women labour, were more common.

Zivin, Goldstein & Thirumurthy (2005) in a study done in Western Kenya revealed that the use of ARVs increases CD4 count, which increases the health of patients. Within the first period, it was found that patients on ARVs have a 24% of chance of not working in a given

week, compared to 11% for the control population. Patients on ARVs, provided fewer working hours than adults of the control population, whose serology had not been analyzed (24 hours compared to 35 working hours per week). Sickness contributes to eight per cent of the under-employment in the control population, while AIDS explains 85% of the underemployment for patients on ART.

During the second period, while patients on ARV treatment are still relatively less active physically, these differences are smaller than during the first period. After six months of treatment, the supply of labour increased by 20% and the weekly time spent working increased by 35%. Using a difference-to-difference evaluation methodology, the study showed an increase in the participation rate of 85.4% and an increase of 26 hours of working time. This shows an important outcome of ARV treatment on treated individuals. Most of the increase in labour supply occurred in independent non-agricultural work. However, income from the non-agricultural sector increased for patients on ART. Women receiving ART have higher labour force participation than men. Being under ART increases female labour supply by 20.8% more than that of the male (Zivin *et al.* 2005).

Many studies have analyzed in depth the advantages of applying HAART therapy in different cities around the world. New York City released a study in 2003, showing a mortality rate drop from 131 to 31 deaths per 1 000 persons/year, and a reduction of 50% in mortality risk. Mortality rates, months per year of absenteeism, work productivity rates, and productivity gains have been calculated to estimate the societal consequences of HAART treatment. Not only have mortality rates decreased, but there has also been an increase in the quality of life of patients and thus in their ability to produce in society, thanks to treatments available to date. Hence the months of absenteeism have been reduced from three months to half a month per year, and the productivity of an employee treated with antiretroviral treatment has been estimated to increase by $ 1,562 per year 35 (Holguin *&* Soriano 2006) .

2.3.9 Impact of HIV and AIDS on livestock production

Food and Agriculture Organisation (2005:10), notes that smallholder agriculture is labour intensive due to low levels of mechanisation. HIV/ AIDS has the potential to erode the active labour force in farming systems where women and children already make up a higher proportion (FAO 2005:10). HIV and AIDS is debilitating, and reduces hours at work due to chronic illness. Attending funerals frequently reduces labour input in areas like herding which is important to animal well being and crop security. Frequent slaughter of cattle particularly for funerals or the sale of livestock by the immune compromised individuals to raise money for medical and other expenses could reduce the size of the national herd. In addition, the health of animals might decline further and reduce productivity, because the families have less income with which to care for the animals. Because families need animal protein, they

might shift the production system towards species amenable to intensive production around the home such as poultry, pigs and dairy; convenient for chronically ill persons (Rugalema 1999:27).

Routine inspection, handling and restraining of animals in the small-sector areas are time consuming due to lack of homestead/village handling facilities. Treatments and vaccinations cannot be given regularly and efficiently. Effects of HIV and AIDS on the population structure raise further concerns about ownership, decision making and investment in livestock. Where only children survive, the children may not value livestock, and this would affect the national herd. The health of animals may deteriorate, thus precipitating underproduction.

The immune-compromised status of HIV affected people makes them more susceptible to infections, some of which could be zoonotic. In such cases, they may have a concentrating effect on pathogens like tuberculosis bacteria that can then spread to animals and other people. According to Stone (1992:33), in the United States an increase in zoonotic diseases in recent years has paralleled the increasing prevalence of AIDS. Several important zoonoses that have received the most attention as re-emerging in recent years include toxoplasmosis, cryptosporidiosis, salmonellosis, cryptoccosis and mycobacterium avium.

Some of these, such as salmonellosis, are associated with food and food hygiene for which women and girl children are traditionally responsible in the home. In the community as a whole HIV and AIDS has the potential to reduce food availability resulting in malnutrition (FAO 1999). Zoonoses may further affect the health status of family members. Women and girl children are particularly at high risk as they are largely responsible for preparing and processing most foods consumed in the home. Women are also involved in the cottage industries some of which are based on animal products such as skins and hair.

2.4.0 Effects of HIV and AIDS on Veterinary Extensions Services

Increasing incidences of HIV and AIDS has reduced the effectiveness of livestock extension programmes. The frequent funerals make it difficult for extension workers to meet farmers. Attendance at funerals is obligatory by local custom. Nyagambo (1997) through socio-economic survey in Chinamora and Chiweshe communal areas (Zimbabwe) found that some farmers spent 25% of their working time attending funerals. When husbands die the wife and children may not have the same time and access to extension services because of increasing responsibility, in addition to other existing social barriers. Some affected orphaned children reported that getting advice from veterinary extensions workers s could be difficult especially since some extension workers are biased towards adults (Nyagambo 1997).

Dip tanks are also important for health inspection and for general dissemination of information concerning animal health and production. Absenteeism at dip tanks is on the increase. Some farmers spend several weeks or months away from home caring for the sick at hospitals, and when young children are in school, no one may be at home to take the animals to the dip or decide about animal health care. Extension workers reported that children aged six or less who bring animals to the dip cannot give accurate information on stock transfers or other exists (Ushewokunze-Obatolu 1990). Distance to the dip tank is also another factor that may reduce attendance at the tanks. About 30% of farmers in the small holder sector walk distances averaging eight kilometres or more taking an average of six hours to the nearest dip tanks (Ushewokunze-Obatolu 1990).The elderly or the very young (under five years) cannot walk these long distances. This means that most animals are not often dipped or inspected.

2.4.1 Loss of indigenous skills and knowledge about the home garden farming

The prevalence of HIV and AIDS is affecting the passing on of these skills and knowledge because farmers are dying at a young age. HIV and AIDS is doubling or tripling the deaths of young people who could inherit the skills and knowledge from their parents. If the rate of deaths continues, the skills and knowledge about home garden farming will become scarce. The knowledge and skilled farmers will be difficult to replace because it took them a long time to gain such experiences (Rugalema 1999:27).

2.4.2 Large-scale commercial agriculture

Apart from the multiple impacts on small-scale or subsistence agriculture, there is increasing concern that large-scale commercial agriculture is experiencing variations of the issues described above and, in particular, is losing to HIV and AIDS a significant and increasing proportion of its labour force – both men and women. De Waal and Tumushabe (2003:33) argue that this is not because rates of HIV are higher among workers in the agricultural sector, both commercial and small-scale subsistence, than elsewhere. It is because the structure of the agricultural sector, especially the smallholder sub sector, is such that it is much less able to absorb the impacts of the human resource losses associated with the epidemic.

Similarly, HIV and AIDS is affecting food security through its multiple impacts on remittances and employment opportunities (casual labour and seasonal labour), outside of the subsistence and small-scale agricultural production. In a study conducted in Kenya, it was found that the commercial agriculture sector is facing a severe social and economic crisis because of the impact of AIDS (Rugalema 1999:27). HIV and AIDS in the commercial sector is leading to falling labour quality and supply, more frequent and longer periods of

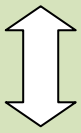
absenteeism, losses of skills and experience resulting in shifts towards younger and less experienced workforce and subsequent losses (Louwenson & Whiteside 2001). The costs to employers include replacement worker costs, paid sick leave, lost wages and productivity losses.

However, as Gillespie and Kadiyala (2005) reflect, "burden-shifting" is becoming more common, as the private sector can avoid the economic burden of AIDS more readily than governments, households or non-governmental organisations (2005). In Zimbabwe, farm workers still on commercial farms and those who have been displaced have been exposed to the impacts of HIV and AIDS (Sachikonye 2003). Commercial farm worker communities comprise some of the most isolated groups of people in Zimbabwe (Sachikonye 2003). Sachikonye (2003) reports how farm worker communities are vulnerable to the impact of HIV and AIDS due to their lack of a common history and social background, isolation from other communities by large distances, lack of access to information, high levels of mobility. As such, extended family structures have broken down and early marriages are common as well as poor access to health care. A study in Zimbabwe showed that prevalence rates among farm workers in the 20-49 year age group were estimated at higher than 25% (Sachikonye 2003). Consequences of such high rates include a rise in the number of orphans and child headed households.

2.4.3 The intertwined relationship between food security and HIV and AIDS

Insecure livelihoods exacerbate the risk and vulnerability environment for HIV and AIDS, through:

- Increased risk of HIV infections.
- Faster progression from HIV infection to onset of AIDS.
- Difficult environments for proper treatment of HIV.
- Increased socio-economic impacts of AIDS.



Illness and death associated with AIDS in turn undermine livelihoods options by:

- Weakening or destroying human capacity (human skills, knowledge, experience, and labour).
- Depleting control and access to other key assets: financial, social, natural and physical.
- Constraining options for productive activities, reducing participation in community activities, and increasing time needed for reproductive and caring activities.

Source: Harvey, 2003.

The additional impact of HIV and AIDS on these besieged agricultural systems is thus severe. The major impacts on agriculture include serious depletion of human resources, diversions of capital from agriculture, loss of farm and non-farm income and other psychosocial impacts that affect productivity (Mutangadura 1999). The potential impact of HIV and AIDS on agriculture may include:

2.5. HIV and AIDS: Social Impacts

2.5.1 Removal of children from school

Children may be taken out of school to fill labour and income gaps created when productive adults become ill or are deceased. Taking children out of school is used as a way of reducing expenditure, as observed in chronically ill households in Swaziland (Muwanga 2004). Postponement of registration at school of children of school-going age due to parental illness is common. Rugalema (1999:27-9) reports the intensive use of child labour as a major strategy used by affected households within a case study from Bukoba district, Tanzania. This study illustrated how the illness affected time allocation, placed pressure on children to work, diverted household cash and led to the disposal of household productive assets. Drawing from another study in Tanzania, Rugalema (1999:27-9) confirms that the illness affects time allocation, puts pressure on children to work, divert household cash and the disposal of household productive assets.

Yamano and Jayne (2004) confirmed in Kenya that children in relatively poor households were more likely to drop out of school after the death of an adult member than children in less poor households. The lagged HIV prevalence rate was negatively correlated with schooling among the poor, even after controlling for child fixed effects. Adult mortality negatively affected schooling even in the period directly before the mortality occurred, which may be a result of children sharing the burden of care giving. However, another recent study presented at the Durban Conference in 2005 raised a challenge to the notion of generic withdrawal of children from school in a detailed study in rural Zimbabwe (Senefeld & Polsky 2005). It was assumed that boys and girls would be removed from school for lack of school fees, to work in the fields and to care for the sick. Consistent with this hypothesis, they found that 12% of boys and 15% of girls had recently left school. However, the inability of 44 % of the dropouts to pay school fees was not related to household HIV and AIDS or orphan status, but rather to broader socio-economic impacts snaking across Zimbabwe.

With respect to the impact of ARV treatment on the household of the patient and intra-household resources allocation, the study shows that the use of ART decreases significantly the need for children to work, and simultaneously increases their school attendance. Indeed, the work of family members (i.e. children and older people) is a poor substitute for the work of adults who become incapacitated by HIV and AIDS. The uptake of ART by parents increases the probability of children going to school (Zivin *et al*. 2007). The study shows a very high impact on the schooling of children whose parents are on ARV treatment. The increase in the weekly schooling hours of children varies from 20% to 35% in the first six months following the initiation of ARV treatment. Similarly, when the health of the adult improves, thanks to the use of ARVs, the child's time spent working decreases. The

household income increases and there is a decrease in the expenses on treatment of opportunistic diseases. This facilitates the allocation of an important share of income to food consumption, which has a direct and positive effect on the growth of children (Zivin *et al*. 2007).

On the one hand, the increase in the labour capacity of a patient has a positive income effect, which reduces the likelihood to work or the working time of other household members. On the other hand, the improvement of the health of the patient reduces the burden of care and the time spent on household work by family members. This allows these members to assign more time to paid job and leisure activities. Intra-household time allocation is strongly influenced by the use of ARVs. The results of the study also show that after 100 days of ARV treatment, child labour participation rate decreases significantly, especially for children in the 8 to 12 year age group. This reduction in child labour supply corresponds to 8.6 working hours per week. The effect is even greater when there are two adult members of the household who are receiving ARVs. In the second case, the reduction in child labour decreases by as much as 79.2 % (Zivin *et al.* 2007).

2.5.2 Children orphaned by HIV and AIDS

The increasing number of orphans is described as one of the worst consequences of the AIDS epidemic in many African countries (Barnet & Whiteside 2002; UNAIDS 2002). Undeniably, there is growing concern in villages across Malawi about the number of orphans. Orphans impose a heavy burden and increase financial costs on basic needs such as food, clothing and schooling. Children are taken out of school at an early age because child labour is needed in the household to meet the shortfall caused by the death or illness of an older member of the family or because the parents of extended family cannot afford direct cost of schooling. In Malawi and other African countries girls are more prone than boys to be withdrawn from school in the event of prime age adult death (Ngwira *et al*. 2002).

Zimbabwe has a higher number of orphans, in proportion to its population, than any other country in the world, according to UNAIDS (2010:180). In fact, as many as one in four children in Zimbabwe are orphaned as a result of parents dying from AIDS-related illnesses (The Standard Newspaper 2010). Average life expectancy for women, who are particularly affected by Zimbabwe's AIDS epidemic, is 47. According to Zimbabwe's National AIDS Council, an estimated 60% of Zimbabwean adults living with HIV at the end of 2009 were female. This gender gap is even wider amongst young people – women make up around 77% of people in the 15 - 24 age group living with HIV (UNAIDS 2010:182).

In largely agrarian societies, the HIV and AIDS epidemic is intensifying existing labour bottlenecks, proving a barrier to traditional mechanisms of support during calamities, adding

to the problems of rural women, especially female-headed farm households arising from gender division of labour and land rights, and deepening macroeconomic crises by reducing agricultural exports. It thus makes a fragile system even more vulnerable to shocks. The following section briefly reviews the impacts of HIV and AIDS on subsistence agriculture as the main source of livelihood for the majority of the population in the region, on commercial agriculture, and on institutions, such as extension services and communities themselves. A short section summarises an important debate on “new variant famine”, which has added a new dimension to thinking about the long-term interactions between AIDS and agriculture.

The third effect of ARVs at the household level is the reduction in the working time of boys when the health of their relatives improves. This outcome is explained by the fact that when the health of relatives improves, there is less need for child labour supply. The immediate consequence is an increase in school attendance for children. Reallocation of income also permits parents to improve their children's education. Finally, having parents on ARV treatment results in a reduction of sub-consumption of household resources by children and in child labour, and thereby is likely to lead to macro-economic advantages in the long run. It is shown that eligible children who are not on ART experience difficulties in attending school, and have a lower probability of being enrolled at school. There is therefore a higher propensity to work, for these children (Zivin *et al.* 2007).

2.5.3 Kinship networks

In a study done in Malawi, Shah et al. (2002) noted that the main source of help and support for households impacted by HIV and AIDS and other chronic illnesses comes from kinship networks. Neighbours helped those affected with small immediate needs, usually on a reciprocal basis. Parents, children and siblings were the main source of support for the affected households although over 20% of the households affected had to resort to seeking long-term support from others.

This increased dependence is in the form of receiving food and other necessities, moving in with relatives, relatives taking care of the children and help with farming. The study clearly articulated that dependence on close relatives increased the number of affected households. Thirty-five per cent of the affected households received other types of immediate help from others, including help with transport, obtaining medicines, household chores, food and support with the funeral. Most of those who received help belonged to the rich category of households, as people recognised that by helping the rich they earned themselves a favour, which could be returned later. There is some evidence that households experiencing income stresses due to AIDS send their children to live with relatives (Barnett *et al.* 1995).

However, these social networks sometimes fall under increasing pressure, which undermines their effect. In Uganda, there is an increase in pressure exerted on family safety nets due to broad economic and political conditions. The emergence of child-headed households for example, is considered an indication that the extended family is under stress and cannot cope (Jackson 1999:467-87). The stigma associated with the deaths from AIDS has contributed to the breakdown of family ties and hence the capacity to provide for the needy has been severely stretched (Tibaijuka 1997:963).

2.5.4 Consumption trends

Consumption trends have generally involved the reduction in the number of meals eaten, skipping of meals for days, consumption of wild foods, and begging for food from the extended family. The strategies are usually aimed at improving food security and vary according to the gender and role of the person who is ill or who has died. Households with HIV status were most likely to indicate a change in diet consisting of fewer meals of less quality compared to households with a death due to illness (Donovan *et al*. 2003). In Malawi, for example 57% of households in which there was a chronically ill adult had skipped entire days without eating compared to 45% of the households in which adults were healthy (SADC FANR, 2003).

Natural capital and common property resources have been found to increase resilience of farming systems as they serve as safety nets during agricultural shortfalls. HIV and AIDS affected households increase reliance on woodland activities as a coping and more consistent livelihood strategy (FAO 2005). In South Africa, Hunter and Twine (2005) argue that HIV and AIDS has contributed to changes in resource collection strategies whilst also increasing “nutritional dependence on the local environment”. The C-SAFE analysis of food emergency data reported more than 39% of households skipping meals at least once a day a week as a means to deal with food shortages, 77% reducing the amount taken at meal time a week and 24% reported to have eaten wild foods at least once a week (Senefeld & Polsky 2005).

2.6 HIV and AIDS and Income Generation

2.6.1 Income trends

Increasing evidence across the region indicates that rural households are engaged in a mix of strategies for either raising or supplementing income. Income strategies range from selling of livestock and agricultural produce, selling of household assets, income diversification

through selling of woodland products, building fences, handicrafts, tailoring and petty trade, migration to look for jobs and sending remittances (Drimie & Gandure 2005).

Chivhinge in Mhazho (1996) noted that income was lost through poor management of crops and livestock due to shortage of labour and lack of agricultural inputs. Excessive weed growth is one of the most important single factors limiting crop production in small-scale farms in communal areas of Zimbabwe. In Africa, production loss caused by weeds is estimated at 35% in maize and 25% in sorghum or millet (Chivhinge in Mhazho, 1996).

In livestock, herding had the highest percentage of neglect. According to Ncube (1998:19), failure to herd cattle resulted in thefts and deaths, and not dipping exposed animals to tick infestations that cause tick-borne diseases. Mortality rates can be very high due to tick borne diseases. Failure to milk cows means the family is deprived of a good source of protein, further weakening the strength of the suffering family, and thus reducing the household's agricultural productivity

According to Mutangadura (1999:88-9) agricultural extension workers are expected to attend funerals in their communities. According to the research findings, extension workers spend on average three days per month (ten per cent of working time per month) attending funerals. An extension worker's salary in 1998 ranges from $ 3600 to $4600 per month (Z$137 per day).The department employs 1 735 extension workers. In equivalence, ten per cent of the salary of an extension worker is lost through attending funerals. This is a great loss to the agricultural extension industry. The department is losing Z$55 896 per month and Z$ 670 752 annually (Mutangadura 1999:88-9).

2.6.2 Natural resource collection

Barany (2005:123) expound on the importance of forest product collection especially following death where households become more dependent on income sales of forest products, including firewood, thatch grass, mushrooms, mats and baskets (2005). As such, forest product collection has an income-smoothing role at the time of agricultural stresses or other shocks. Households may increase reliance on woodland activities to respond to AIDS, yet on the other hand, labour and knowledge constraints may reduce the viability of such a response. Mutangadura (2005) emphasise the importance of local seed systems to household resilience, and how they are particularly threatened by HIV and AIDS impacts on intergenerational knowledge transfer from parents to children.

2.6.3 The macro-economic impacts

In industrialized countries, evidence has shown that treatment has a considerable impact on the reduction of the negative socio-economic effects of HIV infection. In the developing

world, however, the extensive distribution of ARV treatment has only occurred recently. Amongst developing countries, Brazil was the first to implement a national treatment programme, in 1996. Since then, that programme has led to a reduction of up to 50% of the HIV-related deaths. In the most severely affected countries, it is well known that HIV and AIDS is currently responsible for 30% to 50% of hospitalizations. The use of antiretroviral drugs will make it possible to considerably reduce the incidence of opportunistic infections as well as alleviate other major epidemics such as tuberculosis. As morbidity and mortality rates decrease, it will be important to reconsider the amount of time and resources currently devoted to the care of the patients in the final stage of HIV and AIDS. In addition, HIV and AIDS has a devastating impact on health workers themselves.

Consequently, treatment represents an essential tool that helps to reduce a very pernicious "double blow", as it will positively influence the motivation, skills and competences of health professionals. Beyond the specific considerations of the health sector, access to ART revitalizes communities affected by the virus, preserves families, and sustains labour productivity. Maintaining the lives of parents will make it possible to ensure the education and well-being of future generations. Access to treatment will also help to ease discrimination, and will consequently provide strong support for communities in the fight against HIV and AIDS.

However, by using their experience, they will be able to engage actively in HIV prevention. According to Malawi National AIDS Council (2005), of 5 558 patients who were on ART in Malawi, 75% are still living, 8% have died and 14% are no longer on treatment.

2.7. Antiretroviral Treatment and Mental Health

Meisler (1993:15) note that at an advanced level of AIDS, the central nervous system (CNS) and memory may be affected, hence patients with advanced AIDS often present cognitive disturbances; this is so-called AIDS-related dementia or AIDS Dementia Complex (ADC). AIDS-related dementia can be a constraint to effective adherence to ART (Meisler 1993:15). The patient can forget about the appropriate time to take pills. This hinders the effectiveness of the treatment and favours the emergence of drug resistance. In addition, AIDS-related dementia reduces the productivity of patients, and makes them dependant on their relatives. Three clinical studies conducted among patients in Germany showed that ART not only prevented AIDS-related dementia, but also remedied cognitive disturbances (Evers *et al.* (1998), Husstedt *et al*. Evers *et al*. (2004)). These impacts are not only important for the wellbeing of families, but they also have potentially important implications for economic growth. For these reasons, AIDS treatment is likely to result in macro-economic advantages in the long run (Meisler 1993:15).

2.8. Existing Research Gaps

It is undeniable that research regarding the impact of HIV and AIDS is in abundance not only in Sub Saharan Africa, but also across the whole world. Studies have revealed the vicious and virulent impact of the epidemic on livelihoods and especially in resource. Poor and marginalised communities are mostly found in Africa or low developed nations. In addition, academic research about the effectiveness of antiretroviral treatment in particular relating to arresting mortality and morbidity is again in abundance. These various research studies undertaken worldwide revealed the ability and capacity of ART in reducing mortality and morbidity across the globe.

However, there is little research regarding the impact of ART on livelihoods and more so on agro-based rural livelihoods. Isolated studies on this subject have focussed on urban livelihoods and less on rural livelihoods. Given the fact that the majority of people affected by HIV and AIDS in Africa live in rural areas and depending on agriculture to earn a livelihood, it becomes imperative that more research on the impact of ART on rural livelihoods be undertaken and inform policy formulators as well as development agents in the continent.

2.9 Conclusion

Chapter 2 revealed that HIV and AIDS, though stabilising, is still posing serious challenges for the developing nations. The epidemic has wreaked havoc especially in vulnerable and marginalised communities, resulting in:

- Reduction of area under cultivation.
- Reduction of labour force for agriculture.
- Declining investment in agriculture.
- Overburdening of women and girls with additional caring and productive roles.
- Lack of transfer of inter-generational skills and nature and type of livelihoods activities.

Chapter 2 also revealed the positive changes that have been brought about by introduction of Antiretroviral Treatment worldwide especially about reduction of mortality and morbidity rates. Few studies on the impact of ART on livelihoods have concentrated on urban areas and these have revealed encouraging signs such as; the ability of people on ART to restore a normal healthy lifestyle and return to gainful employment, releasing the rest of the family members to embark on productive activities as compared to caring work, as well as decrease in health care expenditure leading to increase in investments in productive work. However, given the different contexts pertaining to rural areas more research is needed to examine the impact of ART on rural livelihoods and informing policy makers and development agents on the sustainable livelihood strategies demanded by ART patients.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

According to Terre Blanche and Durkheim (2006), the methodology provides a detailed description of how the research is conducted, what type of research design is used and why, the sample or sampling technique, data-collection techniques and which instruments are used and why. This chapter begins with the reason that motivated the researcher to investigate the given issue. It also provides a concise description of the conditions, which led to the selection of the topic of research. It then sketches the areas of study, the sample population, ethical considerations, the methods and techniques used to identify and collect data, data analysis, the expected outcomes and study assumptions. The selection of the special procedures followed was largely influenced by the topic chosen, the environments of study, the experiences of the researcher and the anticipated outcomes. The procedures followed are outlined and the data-collection instruments are described. The data collected is analysed and interpreted thematically.

3.2 Research Methodology

The underlying motivation was to select a methodology on the basis of its ability to provide the researcher with a description of and reasons for livelihood changes that happened over time in the lives of people living with HIV and AIDS, and who were on antiretroviral treatment. The researcher wanted, through engagement, direct interaction with the people living with HIV and AIDS, and who were on ART.

To engage positively with people on ART, it was decided that a mixed or integrated approach that includes both qualitative and quantitative techniques is more appropriate for this research. This study will focus on HIV positive rural programme (both men and women) who have been on ART treatment for six or more months to assess the impact of ART on their livelihoods. An assumption was made that at least six months of someone on ART is significant to influence certain livelihood options for people living with HIV and AIDS. Therefore this research will investigate the impact of ART on the means of PLWH to earn a living, and this investigation will focus on their capabilities, assets, activities, as well as sustainability of these activities. The study will only focus on breadwinners or heads of households who are living with HIV and AIDS and on treatment to objectively examine and analyze the impact ART has on rural livelihoods. Inclusion of children or family members

living with HIV and AIDS will not give an accurate assessment, as they are not directly involved in the day-to-day provision of food and income for household requirements.

3.3 Research Design

Research designs are plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis. A mixed or integrated approach is both qualitative and quantitative. It will be qualitative in the sense that it will be exploratory in nature and it deals with people's opinions and attitudes. Thus, this study will make use of quantitative to establish the occurrence and frequency of livelihoods activities being pursued by people on ART, while qualitative data will bring out more in-depth information to be able to make a valid conclusion and suitable recommendations.

3.4 Target population

The research focused on 125 households on the programme, Living with HIV and AIDS, and had been accessing antiretroviral treatment for the at least six or more months in Nyanga rural district. Three focus group discussions of ten people per group were conducted (one in each ward) and three focus group discussions targeting people on ART for the past six or more months in Nyanga rural district were held. In addition, ten key informants were drawn from the National AIDS Council (NAC), ward agricultural extensions officers and local health centres.

3.5 Sampling Design

The study made use of both purposeful and random sampling. Purposeful sampling was used during the identification and selection of study locations while random sampling was in the actual identification and selection of households who participated in the study. The research was conducted in Nyanga rural district. It was one of the first ten rural districts to launch antiretroviral treatment roll out in 2004, providing a big number of people living with HIV and AIDS. Hence, they had been on ART for a longer period. The research was conducted in three wards of the district namely ward 4, 7 and 8. Only three wards out of 31 were selected due to financial and non-financial constraints on the part of the researcher. In addition, the particular wards were purposively sampled because the researcher had worked in the area before as a Development Coordinator and was hence familiar with local leadership, customs and norms.

Participants in the study were selected by means of random sampling. Random sampling was possible and convenient to this study because it provided the opportunity for every

member of the population to be included in the sample, that is, males and females. Hence, ART beneficiaries were selected randomly in such a way that every fourth beneficiary picked was interviewed. In this case every ART head of household (18 and above) beneficiary on the data base of Nyanga Rural District Hospital residing in the identified three data collection locations, stood an equal opportunity to be interviewed. Accordingly, one hundred and twenty five (40 in ward 4, 40 in ward 7 and 65 in ward 8) head of households programme living with HIV and AIDS and on ART were pooled from the Nyanga rural district ART master register. Three focus groups (FGs) of ten people per group, and one focus group per ward were convened from the participating programme. The selection of these focus group discussions and heads of households to be interviewed was entirely based on availability at the time of data collection. All the focus group members were similar in their composition in terms of gender mix, other demographics and structure.

Purposive sampling was also used in the selection of the key informants. These were purposively selected for their intimate knowledge of the support groups that they attained through their interaction with them in their various specialized roles. These key informants included the National AIDS Council District Coordinator who played a critical coordination role of all the stakeholders, ward agricultural extension officers and local health centre officials.

3.6 Data collection strategy

Data was collected from PLWHA who are on ART and key informants such as community leaders and health officials. The following data collection strategies were used:

- **Questionnaire:** for ease of quantification, the research made use of questionnaires, a technique popular in the social science (Hyman *et al.* 1954). These were administered on a face-to-face basis. The questionnaire administered to the respondents had two sections, one structured, and the other unstructured to enable the respondent to answer open-ended questions and allow for further probing. The questionnaire was used to determine the socio-economic impact of AIDS as well as the benefits of antiretroviral treatment to their health and how that translated to improved livelihoods. The questionnaire also assessed beliefs about survival, earning, educational, and quality of life outcomes before and after starting ART. The questionnaire was pre-tested on 15 research subjects, was brief, and translated into the Shona dialect of Manyika, the language specific to the district.

- **Key informant interviews:** the study also made use of informal interviews and these were administered to key experts such as local health clinic and hospital staff, District AIDS Coordinator and agricultural extension officers. These interviews sought to get

an understanding from experts who were spearheading ART in the district on its impact on health as well as livelihoods.

- **Focus group discussions.** They were held through the support groups in order to find out the unique needs of those who were infected and what it was that they needed to regain their autonomy. Observations and transect walks were also undertaken in order to get sense of whether affected people lack access to critical resources necessary for sustaining livelihoods.

- **Secondary data:** even though there are problems with secondary sources such as unreliability the study also made use of them (Robson 1993). Reports used and to which the researcher had access included those from UNAIDS Resource Centre, Southern African AIDS Dissemination Services (SAFAIDS), Ministry of Health and Child Welfare, District AIDS Council, Concern Worldwide (CW) as well as CAFOD among others.

3.7 Data Collection Procedure

The researcher obtained consent from the key gatekeepers who are Nyanga District Administration Officer, District AIDS Coordinator, local leadership and target population in the three wards of Nyanga rural district to carry out the study. The gatekeepers had already liaised with other stakeholders in the area to sensitize them about the study and got their buy-in for the pre-testing of the tools and the subsequent actual data collection. Appointments with the target population and the key respondents were done through the NAC District Coordinator.

3.8 Research Assistants

The research made use of four research assistants, (two male and two female) particularly in administration. Research assistants were trained on data collection, community entry, and ethical considerations as well other critical steps to ensure efficient and quality data collection exercise. As part of building ties with the PLWHA, and as a way of getting an inside view of the crisis, the researcher employed research assistants drawn from the Nyanga rural district.

3.9 Piloting

A pilot study can be viewed as a small-scale preliminary survey conducted before the main research to check feasibility and reliability of the research to be carried out (Hyman et al 1954). It is carried out to iron out wrinkles in decisions to do with identifying and classifying the lived experiences under investigation. The researcher carried out a pilot study with a

conveniently selected group of fifteen people drawn from ward one in Nyanga District. The researcher needed to test logistics and gather information prior to the main study in order to improve quality and efficiency (Lancaster, Dodd & Williamson 2004) of data collection. The pilot study provided the researcher with an opportunity to test the validity and reliability of the research instruments. The pilot study was also intended to test and possibly reveal deficiencies in the FGD's guide so that they could be addressed in time for the main study. In particular, instructions for the focus group discussion sessions were checked. Most importantly, the questionnaire items were tested for content validity and clarity.

3.9.1 Data Analysis

SPSS version 15 was used for data entry and data analysis. A codebook with a number of sections of the questionnaire was used to facilitate easy data entry. Methods of analysis included uni-variate, bi-variate and multi variate analysis and these produced frequency information while qualitative data was analysed qualitatively.

3.9.2 Respondents' characteristics

The analysed data of the study revealed the following characteristics of the respondents that participated in the research study as either programme on ART reached individual with a questionnaire or programme on ART who participated in the focus group discussion.

3.9.3 Sex distribution

Figure 3 indicates that of the 125 people on ART, heads of household who received individual questionnaires, 37.6% were males while 62.4% were females. This trend was noticed in focus group discussions where 33% were males and 67% of the participants were females. The number of females only dropped during interviews with key informants where 60% were males, while 40% were females. Generally, the above analysis shows that there were more females than males who participated in this research study. That was not surprising given the fact that at district level the number of women on ART was more compared to their male counterparts.

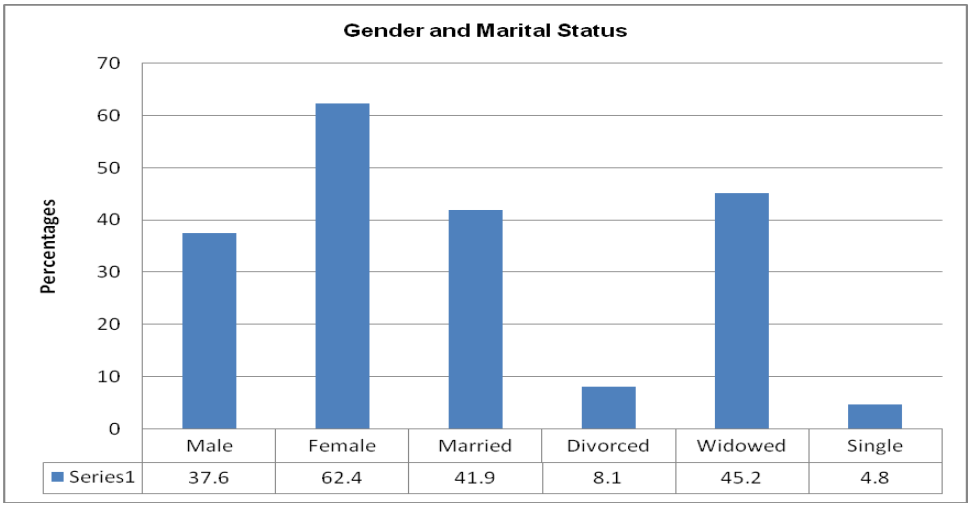


Figure 3: Gender and Marital Status of the respondents

3.9.4 Marital Status

The variable marital status as indicated by Figure 3 had four variables; married, widowed; divorced and never married. Out of the 125 people on ART reached with the head of household questionnaires, 45.2% were widowed, 41.9% were married, 8.1% divorced and 4.8% were single persons. The high number of widows clearly indicates there were high mortality cases amongst people living with HIV and AIDS. It was revealed by the District AIDS Coordinator who pointed out that cases of mortality were particularly high especially before the rolling out of antiretroviral treatment in the district.

3.9.5 Educational Level

Most respondents (54.8%) had completed primary education level, 24.2% had completed secondary education, 20.2% never went to school, and 0.8% had completed tertiary education. Educational levies and tuition in rural primary schools are very low (ranging from $2 to $5 per term) hence the high number of people being able to complete primary basic education. Tuition fees and school levies skyrocket when it comes to secondary education with most schools charging $60 to $120 per term. The high number of respondents who never went to school at all mentioned the liberation war that rocked the nation in the late 1970s as the major obstacle. Figure 4 shows respondents' educational levels as discussed above.

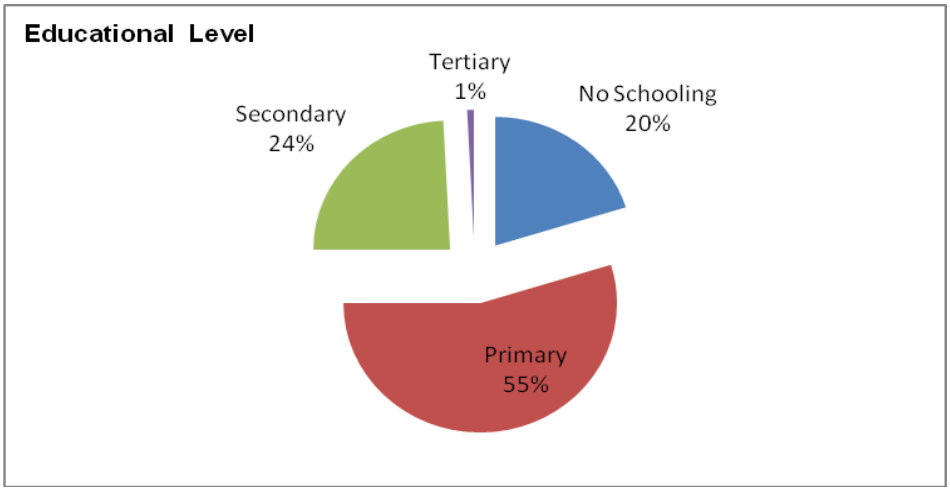


Figure 4: Educational level of respondents

3.9.6 Respondent's HIV status without ART period

As indicated by Figure 5, 42.4% of the households interviewed had been living with HIV and AIDS for a period ranging between two to four years; 32.8% of the households had been living with HIV and AIDS for a period ranging between five to six years, 16.8% living with HIV and AIDS for a period ranging six years and above, while eight per cent of the respondents reported that they had been living with HIV and AIDS for a period ranging between six months to one year. It seems the number of new infections in the district was indeed slowing down as indicated by the low level of people living with HIV and AIDS for the period ranging six months to one year. That might be also in line with 2010 National AIDS Council Report that indicated that adult prevalence and rate of new infections were on the decline countrywide (National AIDS Council 2010).

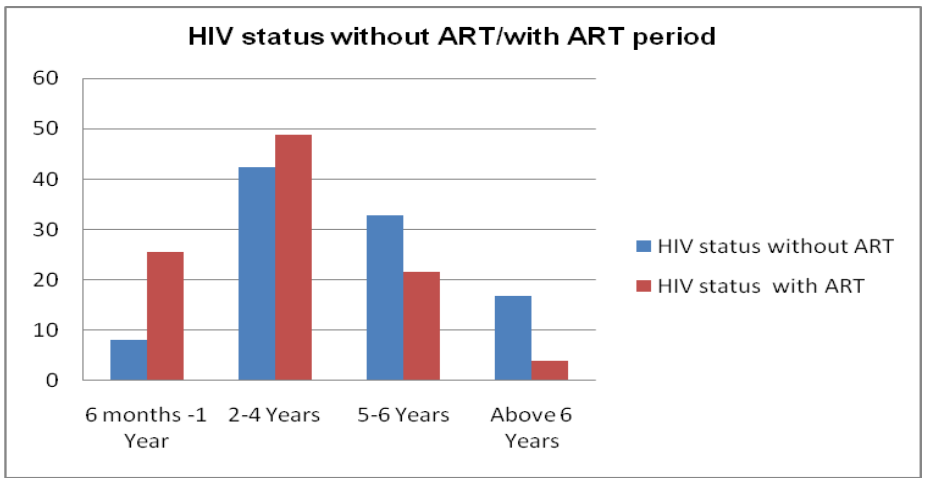


Figure 5: HIV status without ART/with ART period

3.9.7 Respondent's HIV status with ART period

The majority of respondents (48.8%) as shown by Figure 5 had been on ART for the period ranging two to four years, 25.6% had been on ART for a period ranging between six months

to one year, 21.6% have been on ART for the period ranging five to six years, while four per cent had been on ART for more than six years. While the ART programme was launched in 2004 in the district, it shows that the initial uptake and response to the programme was rather slow. It only accelerated in the past four years. That was corroborated by local health officials who pointed out that it was after massive treatment campaigns and education sessions that people living with HIV and AIDS, started seeking assistance from clinics and hospitals. The number increased from 339 in 2004 to 1 389 in 2010 and then 2 543 in 2011 according to Ministry of Health and Child Welfare (Zimbabwe 2011).

3.9.8 Study limitations

- Some local health centre officials were not being cooperative.
- Some PLWHA might not answer all the questions.
- Failure of some PLWHA to provide honest answers.

3.9.9 Research ethics

The conduct of this research was in *tandem* with standards of the Research Council of Zimbabwe that established the following ethical considerations for medical research:

- Informed consent from all study participants: participants will willingly participate after receiving detailed information about the research.
- Voluntary participation: participation will be on voluntary basis and no payments whatsoever will be paid to participants. This must be made clear to the participants well beforehand.
- Rights to confidentiality: the researcher must assure confidentiality that no names of participants will be published, and no comments linked to participant's names will be given.
- Avoiding undue influence: if participation is voluntary, the research must refrain from using undue influence to coerce people to participate. They should rather choose freely to do so.
- Respect for persons incorporates two fundamental ethical considerations: (a) respect for autonomy, which requires that those who are capable of deliberation about their personal choices (community leaders, nurses, etc.) should be treated with respect. Their capability for self-determination, and (b) protection of persons with impaired or diminished autonomy (in this case the sick or ART beneficiaries), requires that those who are dependent or vulnerable be afforded security against harm or abuse.

3.10. Conclusion

Chapter 3 revealed research methodology, steps, and procedures taken in rolling out the research study in Nyanga rural district. The researcher was given the green light to proceed with the proposed research by district leadership and three critical tools were employed to collect primary data from the selected wards. These are focus group guide, key informant guide and individual head of household questionnaire. The researcher engaged five research assistants who were trained on how to administer as well as record primary data. The researcher interviewed 125 persons on ART (programme), conducted three focus group discussions, and interviewed 10 key informants. Collected data was analysed using SPPSS version 15.

CHAPTER 4: PRESENTATION AND DISCUSSION OF DATA

4.1 Introduction

This chapter presents data collected from the field through individual questionnaires, focus group discussions and key informants interviews. The data collected looked at rural livelihoods of patients on antiretroviral treatment in Nyanga rural district. To ensure that the impact of ART on rural livelihoods was clearly brought out, the researcher looked at three critical life stages of the respondents. He firstly explored livelihood situations before acquiring HIV and AIDS (commonly referred to as pre HIV and AIDS period), then secondly, livelihoods of the respondents during HIV status without ART period, and thirdly and lastly the current phase experienced by people on ART regarding livelihoods (commonly referred to as HIV status with ART period).

Thus, how households earned their living (food and income) at these various junctures was examined and would be discussed. These three stages will point out the impact of ART on rural livelihoods, and more importantly see if ART has indeed reversed the decline in livelihoods of rural people affected by HIV and AIDS recorded in the past decade. This data and discussion will also lay the foundation for the last chapter that flags out key recommendations regarding rural livelihoods of people on ART to development agencies and policy makers in government and the private sector.

4.2 Household Food Production

The following food production variables were examined to see any trends emerging because of the impact of ART on rural livelihoods:

4.2.1 Area under cultivation

- **Pre HIV and AIDS period**

  The collected data as indicated by the Figure 6 show that before acquiring HIV and AIDS (pre HIV and AIDS period) 40.8 % of the respondents cultivated between three to four acres every season, 37.6% cultivated between five and seven acres every season, 10.4% cultivated eight acres and above while 11.2% cultivated between nil to two acres every season.

- **HIV status without ART period**

  During this period data collected as indicated by Figure 6 show that 70.4% of respondents cultivated between nil to two acres, 24% respondents cultivated between three to four acres, 4.8% respondents cultivated between five to seven acres while 0.8% cultivated eight acres and above during this period.

- **HIV status with ART period**

  In this period, data collected and analysed indicates that 32.8% of the respondents cultivated between nil to two acres while 48.8% cultivated between three to four acres. Furthermore, during this period (HIV status with antiretroviral treatment) 16.8% of the respondents cultivated between five to seven acres and 1.6% of the respondents cultivated more than eight acres.

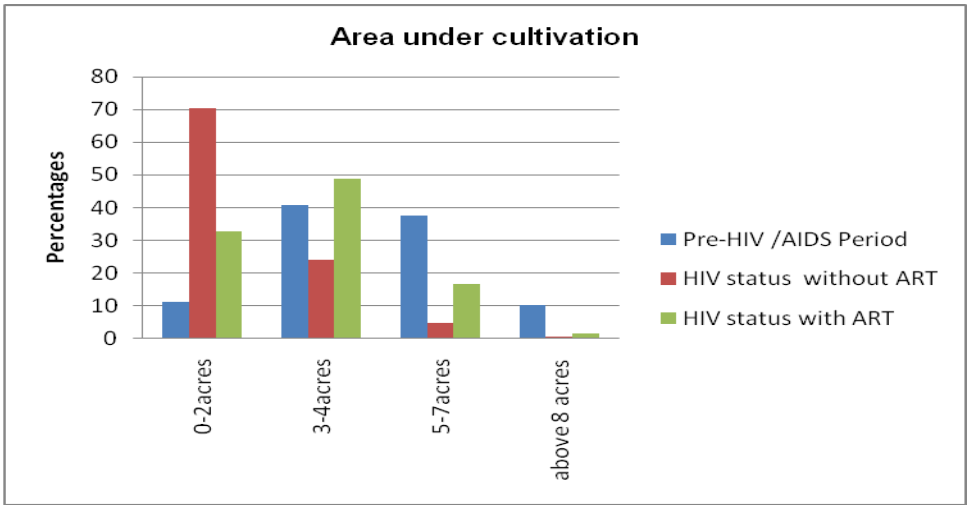


Figure 6: Area under cultivation

- **Discussion of data**

  The majority of respondents indicated that during the pre HIV and AIDS period, their livelihood situation was much better, as there was no sickness and they had all the energy to work on the land. Focus group discussion and key informants also pointed out that during pre HIV and AIDS period, more land was brought under cultivation, as the majority of people were able-bodied, and relied heavily on agriculture for their food and income. The main reason given by the respondents who were cultivating between nil and two acres every season in this period (pre HIV and AIDS period) was lack of enough inputs.

  However, the situation changed after acquiring HIV and AIDS and not yet being on antiretroviral treatment (HIV status without ART period). During this period, data

collected and analysed reflects a big jump of 59.2% in the number of respondents who were then cultivating nil to two acres per season as compared to the pre HIV and AIDS period. In the same period 24% respondents cultivated between three to four acres and this reflects a decline of 16.8% as compared to the pre HIV and AIDS period. Furthermore, 4.8% respondents cultivated between five to seven acres while 0.8% cultivated eight acres and above during this period. Therefore there was a decline of 32.8% and 9.6% in the five to seven acres range as well as eight acres and above respectively during the period of HIV status without ART as compared to the pre HIV and AIDS era. Overall collected data showed great reduction in area under cultivation during the period of HIV status without ART as compared to the pre HIV and AIDS era. The main reason cited by respondents for this massive reduction was lack of adequate labour to work on the land, lack of inputs as well as the progression of the disease to full blown AIDS made it impossible for the respondents to work or invest in agriculture.

Based on the collected data indicated above it shows that the rolling out of antiretroviral treatment came as a great relief to the lives of thousands of families in the Nyanga rural district. Thus, the data shows that there was a decline of 37.6% in the number of respondents cultivating between nil to two acres during this period, as compared to the HIV status without ART period. However, when comparing this period to the pre HIV and AIDS period, 32.8% was still high as there were only 11.2% respondents cultivating between nil and two acres. Again, the three to four acres category witnessed a positive jump of 24.8% to 48.8% from 24% in the HIV status without ART period.

This figure is a little bit higher than the pre HIV and AIDS era where only 40.8% cultivated three to four acres of land. Furthermore, during this period (HIV status with antiretroviral treatment) 16.8% of the respondents cultivated between five to seven acres of land as compared to the 4.8% of the respondents who cultivated similar acreage during the HIV status without ART period. However, this number (16.8%) is still lower than the number of respondents (37.6%) who cultivated similar pieces of land during the pre HIV and AIDS era. Only 1.6% of the respondents cultivated more than eight acres during the period of HIV status with ART period signifying a jump of 0.8% as compared to the HIV status without ART period. Nevertheless 1.6% is a drop in the ocean as compared to 10.4% of respondents who cultivated more than eight acres of land during the pre HIV and AIDS era.

The data collected in Nyanga district indicates a clear pattern of increased area under cultivation by patients on ART as compared to HIV status without ART period.

The majority respondents reported improved health and capacity to work on the land because of antiretroviral treatment. The once bedridden and homebound patients are now able to walk and work on the land as a result of ART. In addition, respondents in Nyanga district pointed out that since their health has greatly improved, income is now being channelled to agriculture and other sectors. Access to inputs and knowledge has increased as compared to the previous HIV status without ART period. However, it was noted that 32.8% of the respondents were still cultivating between nil and two acres in this period (HIV status with ART period) and their main reason was that though their health has stabilised, they could not participate in labour intensive work for longer periods, which impacted negatively on area of land cultivated. One of the respondents actually said, *'handifungi kuti simba rangu richadzokera paraiva riri, saka tavakuda mabasa asingadi simba rakanyanya.'* (Literally translated this means I do not think all my lost energy will be restored to its maximum level, we now need less labour intensive activities). This comment seems to be true for most of the respondents when one analyses and compares data of area under cultivation during pre HIV and AIDS era and during the HIV status with ART period. It is clear that though there has been an improvement of area under cultivation, the majority of respondents were yet to hit the peak attained during the pre HIV and AIDS period.

This reason resonated with all three focus group discussion held, the main outcry was despite significant improvement on health, and quality of life by people on ART, there remains challenges on regaining their full strength and energy. As one focus group participant said***,*** *isu tangova maduracell batteries, tinopota tichipera simba saka battery charger inofana kugara padhuze'.*(literally translated this means we are now just like duracell batteries that run out of energy after a while hence the charger should always remain on sight).

The 1.6% respondents who managed to cultivate eight acres and above during the HIV status with ART period indicated that on top of improved health as result of ART, the household had access to draught power, farming implements such as ox-drawn ploughs, and the high number of young adults who were providing the bulk of the farm labour. One of the key informants (Agriculture extension officer from Ruwangwe) said, 'we are now witnessing an increase in number of people demanding agriculture-related information and training as compared to HIV status without ART period'. The agriculture extension officer revealed that there was still a long way before attaining standards set during the pre HIV and AIDS era, despite recent remarkable improvements in the area under cultivation in the ward.

4.2.2 Labour contribution of respondents to agricultural work

- **Pre HIV and AIDS period**

  Figure 7 indicates data collected and analysed concerning labour contribution of respondents to agricultural work. The data from Nyanga study indicates that 81.7% of the respondents worked on the land, to a very large extent during the pre HIV and ADS era. Another 10.5% and 4.8% of the respondents worked on the land to a fair and limited extent respectively, while three per cent of the respondents never worked on the land at all during the pre HIV and AIDS era. During this period, in terms of gender and age, 80% of the respondents pointed out that adults, especially females provided the bulk of the agricultural work since most men were either employed in town/plantations or participating in other income generating activities.

- **HIV status without ART period**

  As reflected by Figure 7, 4.8% of respondents provided agricultural labour largely during this period, while 55.6% of the respondents provided labour to a limited extent during the HIV status without ART period. During this same period the data also revealed that 4.9%% of the respondents contributed agricultural labour to a fair extent while 34.7% of the respondents never worked at all. The data from Nyanga also revealed that during the period of HIV status with no ART, 65% of the respondents reported that children provided the bulk of the agricultural labour force.

- **HIV status with ART period**

  The data collected as shown by Figure 7, indicates that 30.4% of the respondents reported providing agricultural labour largely during this period while 33.8% and 20.8% respondents provided fair and limited agricultural work respectively in the same period. During this same period 15% of the respondents mentioned not being able to provide agricultural labour at all. Furthermore, data from the Nyanga study revealed that the majority of respondents reported that adults (both males and females) were now providing the bulk of the labour force as compared to children.

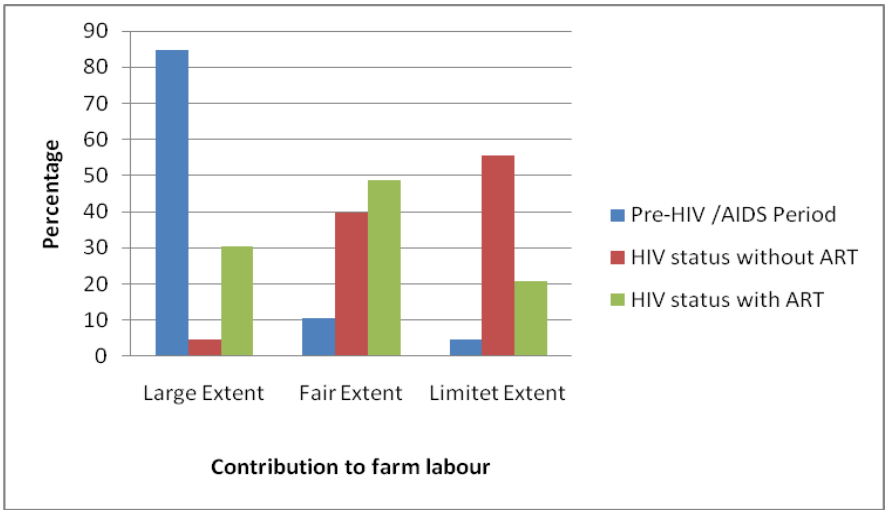


Table 7: Labour contribution of respondents to agricultural work

- **Discussion of data**

  The data from Nyanga rural district indicates a decline of respondents that provided labour largely, namely 81.7% in pre HIV and AIDS period to 4.8% in HIV status without ART period. It was indeed noted that the deteriorating health condition of respondents was the main reason behind the steep decline. However, numbers of respondents significantly increased to 30.4% in HIV status with ART period as compared to the 4.8% reported during the HIV status without ART period. The main reason cited by respondents for the increase was significant improvement in health status of the respondents because of ART. In addition, 33.8% and 20.8% respondents provided fair and limited extent of agricultural work respectively during HIV status with ART period. Therefore there was a drop in the number of people from 55.6% who provided limited agricultural labour during the HIV status without ART period, while the number of respondents who provided labour to a fair extent increased from 4.9% in HIV status without ART period to 33.8% during HIV status with ART period. Nevertheless, 33.8% and 20.8% fair and limited labour contribution respectively recorded during the HIV status with ART period was still high when compared to 10.5% and 4.8% fair and limited labour contribution recorded during the pre HIV and AIDS period.

  The data obtained in Nyanga indicate that adults especially females contributed to a large extent to agriculture as compared to males as well as children during the pre HIV and AIDS period. The number of respondents that never worked on agriculture during the pre HIV and AIDS period was only three per cent and this figure increased to 34.7% during the HIV status without ART period. The majority of three per cent that never provided agricultural labour during the pre HIV and AIDS period were males owing to regular employment in plantations and urban areas. The majority of

34.7% respondents that never provided agricultural labour during the HIV status without ART period cited deteriorating health status as the main constraint. The number of respondents that never provided agricultural labour dropped to 15% during the HIV status with ART when compared with the HIV status without ART period. The majority of respondents not providing agricultural labour that period (HIV status with ART period) mentioned poor health status as the major constraint.

The data from the Nyanga study also revealed that adults, especially females, provided the bulk of agricultural work during pre HIV and AIDS period and this changed during the HIV status without ART period. Children took over from adults and became major players in the rural agricultural sector. According to key informants interviewed in Nyanga, the number of children undertaking key agricultural activities increased tremendously during the HIV status without ART period as parents and adults succumbed or were confined to hospital beds as HIV and AIDS progressed. However, respondents in the study revealed that this trend was reversed with the commencement of ART as adults (both male and females) had become major labour contributors in the agricultural sector. The role of children is still very high during this period as compared to the pre HIV and AIDS period. Therefore ART has significantly improved the health of the people on ART, but like the last variable (land under cultivation), the improvements evidenced in Nyanga rural district are yet to reach the levels recorded during the pre HIV and AIDS period.

4.2.3 Crop yields

- **Pre HIV and AIDS period**

The data on crop yields collected as indicated by Figure 8 show that the majority (37.9%) of the respondents harvested more than 501kgs of cereal per season while 33.1% of the respondents harvested between 251 to 500kgs of cereal during the pre HIV and AIDS period. Another 13.7% and 12.1% of the respondents recorded yields between 51 to 150kgs and 151 to 250kgs of cereal per season respectively during this same period. In this same period, the data collected from Nyanga rural district showed that only 3.2% of the respondents recorded between 0 to 50kg of cereal per season.

- **HIV status without ART**

Data collected in the Nyanga study shown by Figure 8 indicate that 43.1% of the respondents indicated that harvesting between nil to 50kg of cereal per season, 36.6% of the respondents in Nyanga harvested between 51 to 150kgs while 14.6% of

the respondents harvested between 151 to 250kgs of cereal per season. In addition, 4.1% and 1.6% of the respondents harvested between 251 to 500kgs and more than 501kgs of cereal per season respectively during this period.

- **HIV status with ART**

Data collected in the study as shown in Figure 8 indicate that 11.3% of the respondents harvested between nil to 50kgs while 42.7% and 26.6% of the respondents indicated harvesting between 51 to 150kgs and 151 to 250kgs of cereal per season respectively. The data also show that 14.6% of the respondents harvested between 251 to 500kgs during this period while 4.8% of the respondents harvested more than 501kgs of cereal per season.

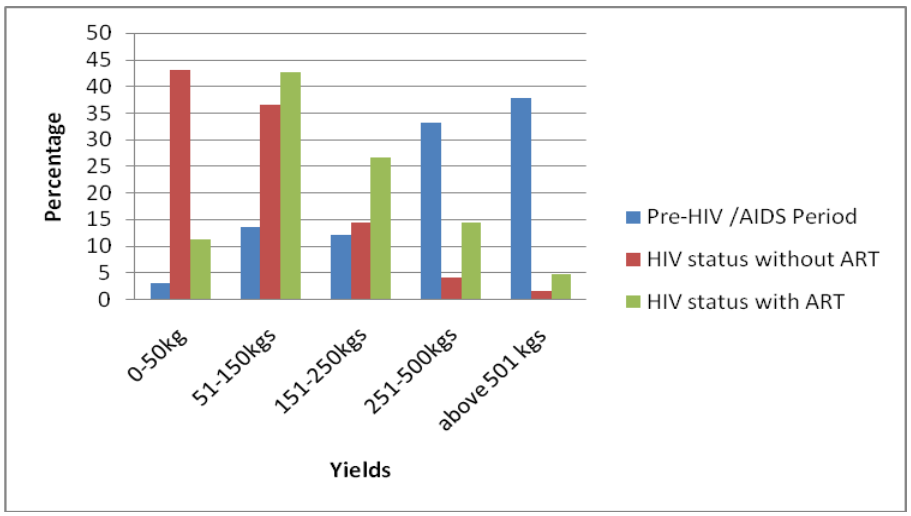


Figure 8: Crop yields

- **Discussion of data**

The above data shows that only 3.2% of the respondents harvested between nil to 50kgs of cereal per season during the pre HIV and AIDS period. The major reasons pointed out were lack of inputs and inadequate draught power. However, during the HIV status period data collected in Nyanga district showed that 43.1% of the respondents indicated harvesting between nil to 50kg per of cereal per season. That showed a significant jump of 39.1% of respondents recording poor crop yields per season as compared to the pre HIV and AIDS period. In that period (HIV status without ART period), 36.6% of the respondents in Nyanga harvested between 51 to 150kg while 14.6% of the respondents harvested between 151 to 250kg of cereal per season. Another 4.1% and 1.6% of the respondents harvested between 251 to 500kg and more than 501kgs of cereals per season respectively.

The data shows that respondents recorded huge declines in crop yields during the HIV status period without ART as compared to the pre HIV and AIDS period. For example, 37.9% of respondents recorded more than 501kgs of cereal per season during the pre HIV and AIDS era and this figure plummeted to only 1.6% of the respondents who recorded more than 501kgs of cereal during the HIV status without ART period. About 78% of the respondents mentioned lack of labour to work on the land and lack of inputs as the major constraints they faced during that period. Respondents were most of the time bedridden hence unable to work on the fields as compared to the pre HIV and AIDS period.

The data from the Nyanga study shows that crop yields for people living with HIV and AIDS improved significantly with the commencement of antiretroviral treatment as evidenced by only 11.3% of the respondents who harvested between nil to 50kgs of cereal per season. This is a big improvement when compared to 43.1% of the respondents who reported harvesting between nil to 50kgs of cereals during the HIV status period without ART. Nevertheless, 11.3% is still high when compared with the 3.2% of the respondents who reported recording between nil to 50kgs of cereal per season during the pre HIV and AIDS period. In addition, 42.7% and 26.6% of the respondents indicated harvesting between 51 to 150kgs and 151 to 250kgs of cereal per season respectively. It was a slight increase from 36.6% and 14.6% of the respondents who harvested between 51 to 150kgs and 151 to 250kgs of cereal respectively during the HIV status without ART period.

There was also a big jump from 1.6% during the HIV status without ART period to 4.8% of respondents who harvested more than 501kgs of cereal during the HIV status with ART period. Again 4.8% of the respondents were much lower as compared to the 37.9% who recorded more than 501kgs of cereals during the pre HIV and AIDS era. The main reason given by respondents to explain the changes in crop yields was significant improvement in health status enabling people on ART to work on the land to a fair extent as compared to the HIV status period without ART. Nyanga District AIDS coordinator said, ‘While food remains one of the major priorities for people on ART during the period (HIV status with ART), demand for food handouts has declined when compared during the HIV status without ART period as more people on ART are recording improved crop yields’.

4.2.4 Adequacy of own production

- **Pre HIV and AIDS period**

The data collected in Nyanga study as illustrated by Figure 9 below, also show that the majority of respondents (46.0%) harvested cereal (own produce) to last them more than ten months during the pre HIV and AIDS period. Another 38.7% and 12.1% of the respondents revealed that own produce lasted them between seven to ten months and four to six months respectively during the same period. Only 3.2% of the respondents in this period recorded own produce that lasted between nil to three months.

- **HIV status without ART period**

Data collected indicate that 52.4% of the respondents harvested own produce that lasted between nil to three months while 31.5% of the respondents recorded own produce that lasted between four to six months. In addition, 8.8% and 7.3% of the respondents reported recording own production that lasted seven to ten months and more respectively.

- **HIV status with ART period**

During the HIV status period with ART, data collected revealed that 40.8% of the respondents produced own produce that lasted them between four to six months per season. Of the respondents, 30.4% indicated producing own produce that lasted between nil to three months per season and 16.8% and 12% of the respondents during this period harvested own produce that lasted between seven to ten months and more than ten months per season respectively.

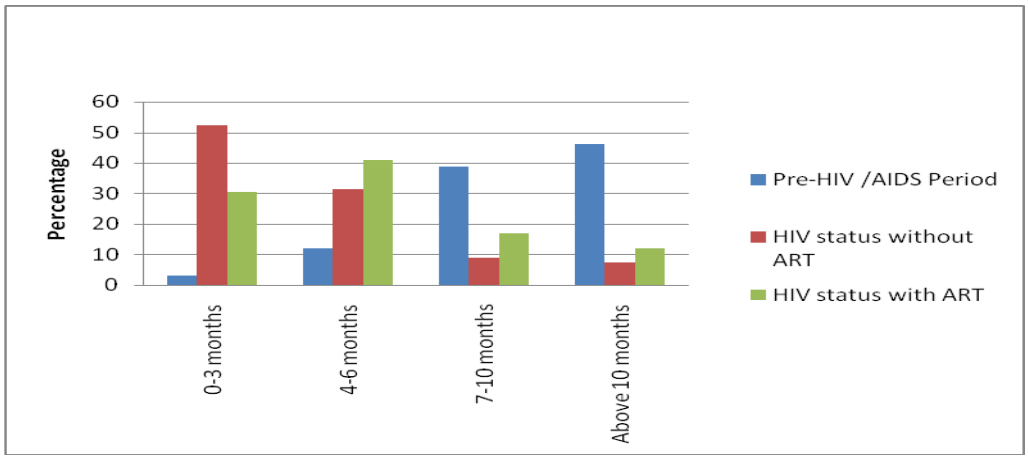


Figure 9: Months of adequate cereals from own produce

- **Discussion of data**

Therefore the above presented data indicates that the majority of respondents were in a better position in terms of food security during the pre HIV and AIDS period. During the HIV status without ART period, data from Nyanga study indicated that

52.4% of the respondents recorded own produce that lasted between nil to three months. That indicated a major decline when compared to 3.2% of the respondents who recorded own produce that lasted between nil to three months during the pre HIV and AIDS era. The collected data also indicated that only 7.3% of the respondents were able to produce cereal that lasted them for more than ten months indicating a huge decline from 46% of respondents who recorded own production of cereals that lasted them more than ten months during the pre HIV and AIDS period. The majority of respondents cited ill health as one of the major constraints faced during the HIV status without ART period, hence keeping most of the respondents in bed or at local health centres seeking medical attention.

During the HIV status period with ART, data collected revealed that 40.8% of the respondents produced own produce that lasted them between four to six months per season showing a slight improvement from 31.5% of respondents who recorded own produce during the HIV status without ART period. In the same period, only 30.4% of the respondents indicated producing own produce that lasted between nil to three months per season , which shows an improved percentage as compared to 52.4% of, respondents who produced own produce that lasted between nil to three months during the HIV status without ART period. In addition, 16.8% and 12% of the respondents during this period showed that produce from own production lasted between seven to ten months and more than ten months per season respectively. The majority of respondents (84.2%) pointed that antiretroviral treatment has enabled them to make a meaningful contribution to household food production activities such as crop production when compared with the HIV status without ART period.

4.2.5 Livestock ownership

- **Pre HIV and AIDS period**

The data collected in the Nyanga study shows that 34.1% and 22.0% of the respondents owned goats and cattle only respectively during the pre HIV and AIDS period. Another 26.1% of the respondents owned chickens only and 14% of the respondents owned cattle, goats and chickens. The data collected and analysed indicated that 3.8% of the respondents owned other types of small livestock such as rabbits and guinea fowls.

- **HIV status without ART period**

During the HIV status without ART period, 71.4% of respondents indicated owning chickens only, 24% of the respondents indicated that they owned goats only, three

per cent of the respondents owned cattle only, while 1.2% of the respondents owned cattle, goats and chickens during the HIV status period without ART. The study in Nyanga rural district revealed that another 0.4% of the respondents reported owning other types of small livestock such as rabbits and guinea fowls during this period.

- **HIV status with ART period**

Data collected as shown by Figure 10 indicate that 62.6% of respondents reported owning chickens only during the HIV status with ART period, 30% of the respondents revealed owning goats only, four per cent of the respondents owned cattle only, 2.4% owned cattle, goats and chickens while one per cent of the respondents reported owning other types of small livestock such as rabbits and guinea fowls during this period.

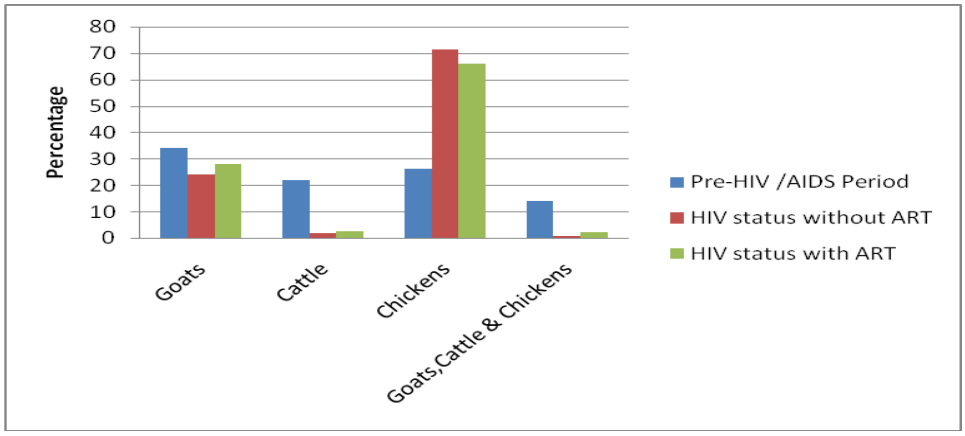


Figure 10: Livestock ownership

- **Discussion of data**

The majority of respondents pointed out that ownership of cattle would indeed make a huge difference to household income since cattle provided the much needed draught power as well as organic manure. During the HIV status without ART period, 71.4% of respondents indicated owning chickens only and this shows a big increase from 26.1% of respondents who owned chickens only during the pre HIV and AIDS era. Another 24% of the respondents indicated that they owned goats only while 3% of the respondents owned cattle only during the HIV status without ART period. This shows that there was a drop of 10.1% and 19% in the number of respondents who owned goats only and cattle only respectively during the HIV status without ART period when compared with pre HIV and AIDS period. The massive decline in livestock ownership was recorded in cattle with only three per cent respondents owning cattle only as compared to the 22.0% of the respondents who owned cattle only during the pre HIV and AIDS era.

The data from Nyanga study also shows that 1.2% of the respondents indicated ownership of cattle, goats and chickens during the HIV status period without ART. This indicates a significant decline when compared with 14% of the respondents who owned cattle, goats and chickens during the pre HIV and AIDS period. Data collected from Nyanga rural district further revealed that 0.4% of the respondents reported owning other types of small livestock such as rabbits and guinea fowls during the HIV status without ART period. There was a decline of 3.4% in the number of respondents who owned other small livestock such as rabbits and guinea fowls when compared with the pre HIV and AIDS era. The majority of respondents (73.9%) pointed out that there were increased sales of livestock during the HIV status without ART period as respondents were battling to generate enough income for medication and food. Cattle were the most affected because of the ability of livestock to obtain a significant amount of income when sold, as compared to goats and chickens.

The data from Nyanga district indicate changes in terms of ownership of livestock in the district during the HIV status with ART period. The majority (62.6%) of respondents reported owning chickens only during the HIV status with ART period. This was a slight decline from the 71.4% of the respondents who owned chickens only during the HIV status without ART period. Nevertheless 62.6% is still too high when compared with only 26.1% of respondents who owned chickens during the pre HIV and AIDS period. Another 30% of the respondents revealed owning goats only during the HIV status with ART period while four per cent of the respondents owned cattle only during the same period. The data collected indicated a slight improvement of six per cent and one per cent from the number of respondents who owned goats and cattle only respectively when compared with the HIV status without ART period.

Despite the improvement in goats and cattle ownership, livestock ownership of goats and cattle remained relatively little when compared to the pre HIV and AIDS period where data indicated that 34.1% and 22.0% owned goats and cattle respectively. There was also a slight increase of 0.6% of respondents owning other types of small livestock such as rabbits and guinea fowl in this period (HIV status with ART) when compared with HIV status without ART period.

The majority (88.6%) of respondents attributed reversing the negative decline of livestock ownership in Nyanga to improved health as a result of ART. One of the participants in the focus group discussion actually said, '*tava nehutano mwanangu saka zvekutengesa mombe tichitsvaka mari dzekurapwa nechikafu zvakapera, tavakuto pfuya iyezvino kuti shoma dzakasara dziwande' (*literally translated this

means our health has improved hence we are no longer selling cattle to earn money for medical bills and food requirements, but we are now tending and managing the few remaining such they will multiply). Agricultural extension officer from Gotekote ward pointed out that livestock, especially small livestock, is more in demand as compared to crop production as it is not as labour intensive and requires less investment.

4.2.6 Household food coping mechanisms

- **Pre HIV and AIDS**

  The data collected indicate that 44.1% of the respondents performed casual labour during times of food shortages while 14.4% resorted to selling of assets (productive and non-productive assets) to ensure food availability at household level during the pre HIV and AIDS period. Another 12.4% of the respondents revealed that they reduced the number and quantity of meals per day while 5.9% resorted to withdrawing children from school to contain food challenges at household level during this period. Furthermore, 3.2% of the respondents relied entirely upon other sources such as handouts from neighbours and relatives during the pre HIV and AIDS period.

- **HIV status without ART**

  During the HIV status without ART period 30.5% of the respondents reduced the number and quantity of meals per day as a strong measure to cope with food shortages at household level. The data collected also indicated that 29.7% sold productive and non-productive assets; 16.6% of the respondents performed casual labour, 4.2% of the respondents used other coping means such as handouts from relative and neighbours, and 19% of the respondents resorted to withdrawal of children from school as means of coping with food shortages.

- **HIV status with ART**

  The study in Nyanga shows that 40.2% of the respondents relied on casual labour, 24.7% of the respondents reported selling of productive and non productive assets, 18.6% of the respondents cited reduction of number and quantity of meals, 11.3% reported school drop outs and 5.2% of the respondents indicated that they relied on other coping measures such as handouts from relatives and neighbours during food shortage periods.

Table 11: Household Food Coping Mechanisms

Household Food Coping Mechanism			
	Pre-HIV and AIDS Period	HIV status without ART	HIV status with ART
Casual labour	64.1%	16.6%	40.2%
Selling Assets	14.4%	29.7%	24.7%
Reduce number of meals/day	12.4%	30.5%	18.6%
Withdraw children from school	5.9%	18%	12.3%
Other sources	3.2%	5.2%	4.2%

- **Discussion of data**

  The main types of casual labour during pre HIV and AIDS period were brick moulding, roofing, weeding, latrine construction and herding cattle. The data indicated that 12.4% of the respondents reduced number and quantity of meals per day while 5.9% resorted to withdrawing children to contain food challenges at household level during the pre HIV and AIDS period. Furthermore, 3.2% of the respondents relied entirely upon other sources such as handouts from neighbours and relatives in this period. During the HIV status without ART period 30.7% of the respondents reduced the number and quantity of meals per day as a strong measure to cope with food shortages at household level. This figure shows a big jump from 12.2% who reduced number and quantity of meals during the pre HIV and AIDS era to 30.5% respondents who did the same during the HIV status without ART period.

  The data collected also indicates that 29.7% sold productive and non-productive assets while 16.6% of the respondents performed casual labour as means of earning income to buy household food requirements during HIV status without ART period. The main types of casual labour performed during this period were collecting firewood, washing clothes, gardening and minding children. Of interest was that the data revealed a huge increase of 15.3% of respondents who sold productive and non-productive assets during this time when compared to the pre HIV and AIDS era.

  The number of respondents performing casual labour dropped from 64.1% during the pre HIV and AIDS period to 16.6% during the HIV status without ART period. The majority of respondents pointed out that poor health status prevented most of them undertaking casual labour especially labour intensive work like weeding and brick moulding. The data from Nyanga study also showed that 5.2% of the respondents used other coping means such as handouts from relative and neighbours indicating an increase of two per cent when compared with the pre HIV and AIDS era.

  The study in Nyanga show that 40.2% of the respondents relied on casual labour (during HIV status with ART period) as the main food coping measure, a significant

jump from 16.6% recorded during the HIV status without period. However, the nature of casual labour is not largely different with ones pursued during the HIV status without ART period. The common ones are firewood collection, gardening, herding cattle and laundry. Though there was a big jump compared to the HIV status without ART, the figure is slightly less than the 64.1% recorded during the pre HIV and AIDS period and more so the nature of work is also largely different when compared to this period.

Another 24.7% of the respondents reported selling of productive and non-productive assets, which was a slight decline from 29.7% of the respondents who sold assets during the HIV status without ART period. However, 18.6% of the respondents cited reduction of number and quantity of meals while 11.3% reported school dropouts as the main coping measure adopted in light of household food shortages. This data means there was a steep decline of 11.9% of respondents that resorted to reducing the number and quantity of meals while a significant drop of 5.7% was recorded in terms of school dropouts during the HIV status with ART period. Another 4.2% of the respondents showed that they relied on other coping measures such as handouts from relatives and neighbours during food coping measures indicating a one per cent decline as compared to the HIV status without ART period.

4.2.7 Household income

The following income generation variables were examined to see any trends emerging because of the impact of ART**.** The major income earners at household level are indicated in Table 12,

- **Pre HIV and AIDS**

  According to the data collected in the Nyanga study 51.8% of the respondents indicated that males were the major income earners while 36.8% of the respondents indicated that females were the major income earners during the pre HIV and AIDS period. The data also revealed that 8.8% of the respondents indicated that both males and females were major income earners, 1.6% indicated that children were major income earners while one per cent of the respondents reported relying on relatives and donations for their income in the same period.

- **HIV status without ART**

  During the HIV status without ART period, 38.0% of the respondents indicated that females were the major income earners in the household, 22.6% indicated that males were the main income earners in the household, that 6.4% of the respondents

showed that both males and females were major income earners, 27.8% of the respondents showed that children were the main income earners and that 5.2% of the respondents relied on income from relatives and other cash donations during that period.

- **HIV status with ART**

  During the period of HIV status with ART, 39.6% of the respondents indicated that females were the major income earners, 33.2% respondents showed that males were the main major income earners, 12% of the respondents indicated that children were the major income earners, 13% of the respondents indicated that both females and males were the major income earners and 2.2% of the respondents revealed that relatives and other cash donations were the major sources of income for the household.

Table 12: Major household income earners

Sources of Income	Pre-HIV /AIDS Period	HIV status without ART period	HIV status with ART period
Males	51.8%	22.6%	33.2%
Females	36.8%	38%	39.6%
Females & Males	8.8%	6.4%	13%
Children	1.6%	27.8%	12%
Other relatives	1%	5.2%	2.2%

- **Discussion of data**

  During the pre HIV and AIDS period, the majority respondents pointed out that most males were employed in plantations or towns as compared to females who worked on the land and looked after children during the pre HIV and AIDS period. The data also revealed that 8.8% of the respondents indicated that both males and females were major income earners during that same period. Moreover, 1.6% of the respondents indicated that children were major income earners while another one per cent reported relying on relatives and donations for their income during the pre HIV and AIDS period.

  During the HIV status without ART period 38.0% of the respondents indicated that females were the major income earners in the household while 22.6% indicated that males were the main income earners in the household. The majority of respondents revealed that more females were involved in income generation activities as a result

of death of the husbands or because males had returned from the plantations or town too sick to carry out any income generation activity. The data collected also indicated that 6.4% of the respondents showed that both males and females were major income earners during this period. In this same period 27.8% of the respondents showed that children were the main income earners in the household and that reflected a huge jump from 1.6% recorded during the pre HIV and AIDS period. The increase in the number of children partaking in income generation activities was because of increasing sickness of parents, demanding that children assume key roles once played by adults at a very young age. The data indicated that 5.2% of the respondents relied on income from relatives and other cash donations during that period.

During the period of HIV status with ART, 39.6% of the respondents indicated that females were the major income earners while 33.2% respondents showed that males were the major income earners at household level during the same period. Females continued to dominate during that period and the majority of respondents pointed out the main reasons were limited income generating activities that favour men in rural areas as compared to females. Most common activities that could be implemented with local available resources were gardening, small livestock especially chickens and those areas were dominated by females.

The data collected also showed that 12% of the respondents indicated that children were the major income earners while 13% of the respondents indicated that both females and males were the major income earners at household level. This data show that though there was a significant decline from 27.8% during the HIV status without ART period to 12% during the period with ART of respondents that reported children being major income earners. Children still played a significant role in income generation at household level during this period. A large number of children was involved in gardening and casual labour while others had dropped out of school and working full time in nearby cities such as Mutare and Rusape as house maids or garden boys. The number of respondents that relied on relatives/donations for income also declined to 2.2% during the HIV status with ART because the majority of respondents reported that to a large extent, they were now able to look after themselves as a result of antiretroviral treatment as compared to the period before.

4.2.8 Household sources of income

- **Pre HIV and AIDS period**

The data collected in Nyanga showed that 53.9% of the respondents indicated that crop produce was the major source of income, 20% cited casual labour as the major source of income, 16% of the respondents indicated that animal sales were the major source of income for the households, eight per cent and 2.1% mentioned regular employment and remittances/donations as major sources of income during this period respectively.

- **HIV status without ART period**

During the HIV status without ART, data collected from Nyanga showed that 20.2% of the respondents reported crop production as the major source of income, 54.1% of the respondents indicated that animal sales were the major source of income during that period, 10.5% of the respondents indicated that casual labour was the major source of income, 4.2% and 11% of the respondents cited regular employment and remittances/donations as the major sources of income during HIV status without ART period respectively.

- **HIV status with ART period**

Assessing sources of major sources of income at household level during the HIV status period with ART, data collected and analysed indicated that 35.8% of the respondents in Nyanga pointed out that causal labour was the major source of income, 31% said crop production was the major source of income during that period, 5.3% of the respondents revealed that regular employment was the major source of income. Of the respondents, 23.1% reported that animal sales were the major source of income during the same period while 4.8% of the respondents indicated that remittances/donations were the major source of income during the HIV status with ART period.

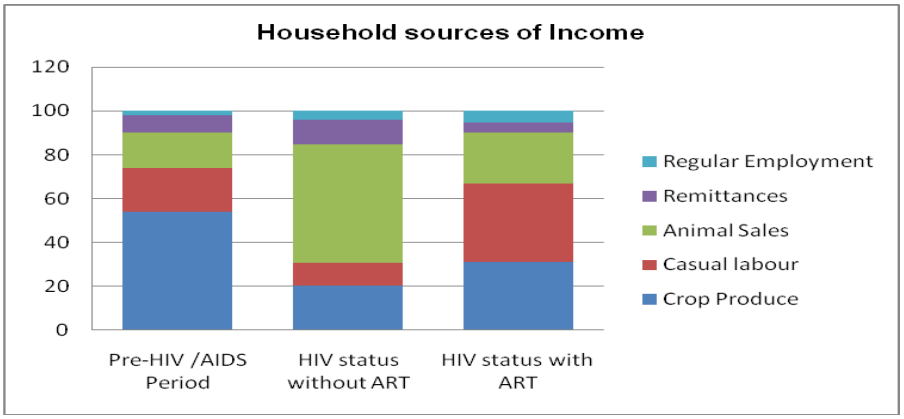


Figure 13: Household sources of income

- **Discussion of data**

  The data shows that crop production as reported by 53.9% respondents was the major source of income during the pre HIV and AIDS period while regular employment was the least source of income during the same period. During the HIV status without ART period, data collected from Nyanga showed that 20.2% of the respondents reported crop production as the major source of income while 54.1% of the respondents indicated that animal sales were the major source of income during this period. The data show that there was a huge decline of 33.7% of respondents that reported crop production as the major source during that period when compared with the pre HIV and AIDS period. The majority (72.4%) of respondents pointed out that crop production plummeted during that period as a result of ill health and lack of agriculture inputs as most of household income was now being channelled to health and food.

  The data also indicates that there was an increase of 38.1% of respondents that reported animal sales as the major source of income during this period (HIV status without ART) when comparing with the pre HIV and AIDS era. Another 10.5% of the respondents indicated that casual labour was the major source of income, which showed a decline of 9.5% when compared with 20% respondents who reported casual labour as the major source of income during the pre HIV and AIDS era. It was reported that the majority of people partaking in casual labour during these period were children as compared to both adult males and females owing to poor health status of parents. Nyanga study further indicated that 4.2% and 11% of the respondents cited regular employment and remittances/donations as the major sources of income during HIV status without ART period respectively. These figures show that respondents mentioning regular employment declined by 3.8% while those reporting remittances/donations and other sources as major source of income increased by 8.9% when compared with the pre HIV and AIDS era.

  The above-mentioned data shows that major sources of income at household level changed during the HIV status with ART period as compared to the HIV status without ART period. The collected and analysed indicate that 35.8% of the respondents in Nyanga pointed out that causal labour was the major source of income while 31% said crop production was the major source of income during that period. One of the respondents in Gotokote ward said, '*mapiritsi aya akachinja hupenyu hwangu, ndakanga ndongomirira zuva rekufa asi iyezvino ndavakutokwanisa kuita mabasa ose epamba kane nemwame madiki okuita nawo mari akaita se kutema huni nekupfirira dzimba.*' (literally translated this means antiretroviral drugs have indeed changed my life, I had given up hope and just

waiting for my death but because of these drugs I am now able to do all household chores as well as partaking in casual labour activities such as firewood collection and roofing). The data also showed that there was a significant change in age of people participating in causal labour activities and more adults were now involved compared to children as was reported during the HIV status without ART period. The number of respondents relying on crop production increased as major source of income by 10.8% when compared to the HIV status without ART period.

However, the reported 31% is still lower than 53.9% of the respondents that relied on crop production as the major source of income during the pre HIV and AIDS era. Another 5.3% of the respondents revealed that regular employment was the major source of income while 23.1% of the respondents showed that animal sales was the major source of income during the same period. Livestock sales declined by 15% during the period and the majority of respondents indicated that re-stocking was their current priority as compared to the HIV status without ART period where the majority of households had to rely on animal sales for income due to poor health condition. Although the number of respondents has declined during this period, 23.1% was still high when compared with 16% of respondents that reported animal sales as the major source of income during the pre HIV and AIDS period.

The data collected indicated that 4.8% of the respondents said that remittances/donations were the major source of income during the HIV status with ART period. Therefore regular income slightly increased while remittances/donations declined by 6.2%% during this period when compared with the HIV status without ART period. Nevertheless, the number of respondents reporting regular employment was lower by 2.7%, while those reporting relying on remittances/donations were slightly higher by also 2.7% when compared with the pre HIV and AIDS era. The District AIDS coordinator mentioned that income-generating activities were very limited in rural areas hence most males are finding it difficult to engage meaningful in activities that result in realisation of significant household income as compared to females who dominate activities such as gardening and other household activities.

4.2.9 Reliability of sources of income

- **Pre HIV and AIDS period**

A total of 40% of the respondents indicated that household sources of income were reliable, 36% of the respondents showed that household sources of income were fair, 24% of the respondents indicated that household income sources were unreliable.

- **HIV status without ART period**

  During the HIV status without ART period 79.8% of the respondents indicated that sources of household income were unreliable, 11.3% of the respondents showed that household income sources were fair and 8.9% of the respondents reported that sources of income were not reliable

- **HIV status with ART period**

  During this current period 26% of the respondents reported reliable household sources of income, 48.8% of the respondents reported fair sources of household income while 25.2% of the respondents indicated that sources of household income were unreliable.

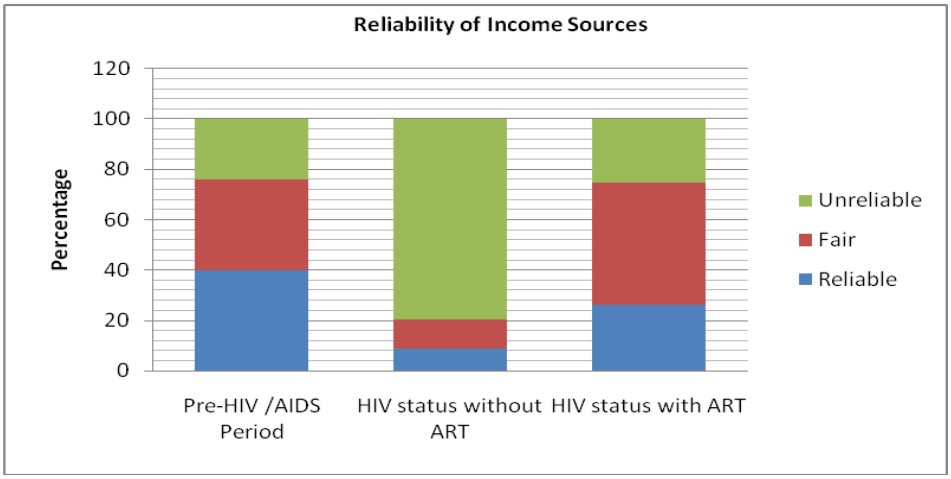


Figure 14: Reliability of sources of income

- **Discussion of data**

  The data presented above indicate income reliability was very high during the pre HIV and AIDS period, took a nosedive during the HIV status without ART period, and improved with the commencement of antiretroviral treatment. In addition, the majority of respondents in the Nyanga study revealed that regular employment; crop production and animal sales were reliable household sources of income during the pre HIV and AIDS period. During the HIV status without ART period 79.8% of the respondents indicated that sources of household income were unreliable while 11.3% of the respondents showed that household income sources were fair. One of the focus group discussion participants said, '*zvakanga zvakaoma panguva yekurwara mapiritsi asati auya,nzira dzekuwana nadzo mari dzakanga dzonetsa nekuda kwekurwara,takanga tongomirira rufu chete'* (literally translated this means it was very difficult during HIV status without ART period, the usual ways of earning income were no longer there due to illness hence we were now painfully waiting for our

death). Only 8.9% of the respondents reported that household income sources were reliable during the HIV status without ART period.

The majority that reported reliable sources of income during this period relied on other people's income such as remittances from children. The commencement of antiretroviral treatment in the district improved the situation as indicated by 26% of the respondents who reported reliable household sources of income during that period. Gardening and poultry production were cited as reliable sources of income during the HIV status with ART period. Thus an increase of 17.1% was witnessed during this period (HIV status with ART) when compared with 8.9% of the respondents who reported reliable household income sources during HIV status without ART period. However, 26% is lower than 40% of the respondents who reported reliable sources of household income during the pre HIV and AIDS period. Another 48.8% of the respondents reported fair sources of household income while 25.2% of the respondents indicated that sources of household income were unreliable. This showed that there was a significant improvement in the number of respondents who reported fair sources of household income during this time when compared with 11.3% respondents recorded during the HIV status without ART period. A significant decline of 54.6% of respondents showing unreliable sources of income was recorded this time when compared with the HIV status without ART period indicating improvement in income reliability and predictability because of antiretroviral treatment.

4.2.10 Household expenditure patterns

- **Pre HIV and AIDS period**

The data collected indicated that 37.2% of the respondents reported spending their major household income on education, 33.8% reported that their major expenditure was on food, 24.7% and 3.3% of the respondents reported that their major expenditure was agriculture and shelter respectively.

- **HIV status without ART**

During HIV status without ART period 46.2% spent their income on food, 38.1% of the respondents spent their income on health, 15.2% of the respondents reported spending their income on education, while 0.5% of the respondents spent their income on agriculture during the HIV status without ART period

- **HIV status with ART**

  In this period data collected indicated that 37% of the respondents indicated major income was spent on food, 32.5% respondents indicated that major income was being spent on education, 15.4% spent the income on health, while 15.1% of the respondents reported spending their income on agriculture.

Table 15: Household expenditure patterns

Expenditure patterns at household level	Pre-HIV /AIDS Period	HIV status without ART	HIV status with ART
Education	37.2%	15.2%	32.5%
Food	33.8%	46.2%	37%
Health	1%	38.1%	15.4%
Agriculture	24.7%	0.5%	15.1%
Shelter	3.3%	0%	0%

- **Discussion of data**

  The study in Nyanga rural district as presented above revealed that expenditure incurred on shelter and health costs were almost insignificant during the pre HIV and AIDS period. The agricultural sector received significant investment in the same period and challenges related to food availability as result of various reasons such as recurrent droughts meant that huge costs went to food purchases during this same period. However, during HIV status without ART period 46.2% spent their income on food while 38.1% of the respondents spent their income on health. Therefore data collected indicate that expenditure on food increased by 12.4% when compared with the pre HIV and AIDS period while expenditure on health, which was insignificant during the pre HIV and AIDS period, became one of the major expenditure areas during the HIV status without ART period. Another 15.2% of the respondents reported spending their income on education while 0.5% of the respondents spent their income on agriculture during the HIV status without ART period.

  This shows that expenditure on education and agriculture declined by 22% and 24.2% respectively when comparing with the pre HIV and AIDS period. The majority of respondents (74%) indicated that due to illness, education, shelter, and agriculture had to be scarified with immediate needs such health and food requirements. Introduction of ART in the district showed that there were significant changes to the lives of people living with HIV as 37% of the respondents indicated major income was spent on food while 32.5% respondents indicated that major income was being spent

on education. The collected data indicate that percentage of respondents indicating major expenditure on food declined by 9.2% while there was a big increase of 17.3% of respondents reporting education as the major expenditure area when compared with the HIV status without ART period. However, the number of respondents citing education as the major expenditure area was still lower by 4.7% when compared to the pre HIV and AIDS period.

Another 15.4% spent income on health while 15.1% of the respondents reported spending their income on agriculture. The number of people reporting health as the major expenditure area declined by 22.7% while those who indicating agriculture increased by 14.6% when compared with the HIV status period without ART. This data showed that 15.4% recorded on health was still very high when compared to insignificant values recorded during the pre HIV and AIDS era, while 15.1% on agriculture recorded this time with (HIV status with ART) is lower by 9.6% when compared with the pre HIV and AIDS period.

However, the data collected indicate that people on ART are now investing in long term and productive activities such as agriculture compared to the previous period. This was revealed by ward based agriculture extension officers who pointed out that most people on ART were visible in the agriculture sector undertaking a variety of both crop and animal farming. In the past (HIV status without ART) this group of people only survived on handouts but now some of them were the biggest producers of both crop and animal produce in the district.

4.2.11 Conclusion

Overall data collected and analysed from Nyanga rural district study indicated that livelihoods changes had taken place between the three different life stages of people living with HIV and AIDS. The changes that were brought about as a result of head of households HIV status as well as livelihood changes that were being realised as a result introduction of antiretroviral treatment in the district to the lives of people living with HIV and AIDS. All the food and income variable factors that were assessed as highlighted above indicated the positive livelihoods impact that had been brought about because of ART.However, data collected also indicate that although significant livelihood changes are being witnesses as a result of ART, people on ART still face various livelihood challenges that demand urgent attention from policy markers and development agencies. Thus livelihood levels obtained during the pre HIV and AIDS era are yet to be attained hence more livelihood support in addition to provision of ART is urgently required in rural areas. This chapter laid the foundation for Chapter 5 where conclusions will be drawn and recommendations made, based on the data that was collected and analysed.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study aimed at reaching the following objectives:

- To examine the impact of ART on rural livelihoods of PLWHA.
- To recommend appropriate and key actions that both government and humanitarian actors should adopt in response to improving rural livelihoods of people living with HIV and AIDS.

In the conclusion, literature as listed and discussed in Chapter 2 of this report, is compared with the findings of Nyanga rural district research study. Therefore this chapter will summarise key findings regarding the impact of ART on rural livelihoods make appropriate recommendations that should be adopted by government and humanitarian agencies responding to rural livelihoods of people on ART.

5.2 Impact of ART on Rural Livelihoods

The Nyanga study revealed that ART had a positive impact on the following key rural livelihood factors:

- **Area under cultivation**

  The data analysed from Nyanga rural district showed that more than 50% of the respondents from Nyanga rural district increased area under cultivation as a result of ART as compared to the previous HIV status without ART period. However, this increase in area cultivated by the same respondents during HIV status with ART period is lower when compared with area cultivated during the pre HIV and AIDS period.

- **Labour contribution to agriculture**

  Availability of ART in Nyanga rural district enabled respondents to increase labour contribution to agricultural activities when compared to HIV status without ART period. The Nyanga rural district study revealed that adults, especially females, contributed more labour to agriculture as compared to males during the HIV status with ART period and children's role on agriculture significantly dropped as compared to the previous HIV status without ART period. Therefore ART has significantly improved the health of respondents on ART, but like the last variable (land under

cultivation), the improvements evidenced in Nyanga rural district are yet to reach the levels recorded during the pre HIV and AIDS period.

Zivin *et al.* (2007), in a study done in Western Kenya, revealed that after six months of antiretroviral treatment, the supply of labour increased by 20% and the weekly time spent working increased by 35%. Using a difference-to-difference evaluation methodology, the study showed an increase in the participation rate of 85.4% and an increase of 26 hours of working time. This shows an important outcome of ART treatment on study respondents. It is shown that women receiving ART have higher labour force participation than men because women tend to take medicine properly and accurately, while the majority of defaulters are men. Being under ART increases female labour supply by 20.8% more than that of the male (Zivin *et al.* 2007). These research findings resonate with findings from Nyanga research study with regards to increase in the supply of labour force as well as females providing the bulk of labour force because of antiretroviral treatment.

- **Crop yields**

The data from the Nyanga study shows that crop yields for people on ART improved significantly with the commencement of antiretroviral treatment that has enabled improvements in adult labour contribution to agriculture and area under cultivation in rural areas. Nevertheless, it was noted in the study that yields being obtained currently (HIV status with ART period) were still lower when compared to yields obtained during the pre HIV and AIDS period.

- **Adequacy of own production**

The majority of respondents pointed out that antiretroviral treatment had enabled households to realise yields that lasted longer periods as compared to the previous HIV status without ART period. Increase in yields were being realised because of ART. However, when compared to the pre HIV and AIDS period, adequacy of own production levels were lower than the pre HIV and AIDS period.

- **Livestock ownership**

Livestock ownership in Nyanga has significantly improved especially regarding small livestock (goats and chickens) because of availability of antiretroviral treatment in the district. While percentage of people owning cattle witnessed one per cent increase as compared to HIV status without ART period, there was a huge increase of more than 20% of people who owned goats and chickens during the HIV status with ART

period. Despite a significant improvement in ownership of chickens and a slight improvement in cattle, overall livestock ownership, especially for goats and cattle remained low when compared to the pre HIV and AIDS period where analysed data indicated that 34.1% and 22% owned goats and cattle respectively.

- **Household food coping mechanisms**

The commencement of antiretroviral treatment in Nyanga rural district witnessed significant decline in respondents reporting adoption of harmful food coping mechanisms such as selling of productive assets, withdrawal of children from school and reduction in the number of meals during the HIV status without ART period. Casual labour became the main measure adopted by households as a measure of coping with food shortages during HIV status with ART period.

- **Household income earners**

Nyanga study revealed that more females were becoming major income earners in rural areas as compared to males and children as a result of ART. During the period of HIV status with ART, 45.6% of the respondents indicated that females were the major income earners while 27.2% respondents showed that males were the main major income earners at household level during this same period. Females continued to dominate during this period and the majority of respondents pointed out the main reason was limited income generating activities that favour women in rural areas as compared to males. Most common activities that could be implemented with local available resources were gardening and small livestock especially chickens and those areas were dominated by females.

The study also revealed that while contribution of children to income had declined, they still played a critical role concerning income generation at household level. Zivin *et al.* (2007) show that with respect to the impact of ARV treatment on the household of the patient and intra-household resources allocation, the Western Kenya study shows that the use of ART decreases significantly the need for children to work, and simultaneously increases their school attendance. Indeed, the work of family members (i.e. children and older people) is a poor substitute for the work of adults who become incapacitated by HIV and AIDS. The uptake of ART by parents increases the probability of children going to school (Zivin *et al.* 2007). On the one hand, the increase in the labour capacity of a patient has a positive income effect, which reduces the likelihood to work or the working time of other household members. Furthermore, the improvement of health of the patient reduces the burden of care, and the time spent on household work by family members. This allows these

members to assign more time to paid job and leisure activities. Intra-household time allocation is strongly influenced by the use of ARVs.

- **Household income sources**

  Commencement of ART in the district saw changes in major sources of income at household level changing during this period as compared to the HIV status without ART period. The collected and analysed data indicate that 35.8% of the respondents in Nyanga pointed out that causal labour was the major source of income while 31% said crop production was the major source of income during this period. Thus, casual labour and crop production were now major income sources as compared to animal sales that recorded 54.1% respondents during the HIV status without ART period.

- **Reliability of household income**

  The commencement of antiretroviral treatment in the district improved the situation as indicated by 26% of the respondents who reported reliable household sources of income during this period. Gardening and poultry production were cited as reliable sources of income during the HIV status with ART period. Thus an increase of 17.1% was witnessed during this period (HIV status with ART) when compared with 8.9% of the respondents who reported reliable household income sources during HIV status without ART period. However, 26% was lower than 40% of the respondents who reported reliable sources of household income during the pre HIV and AIDS period.

- **Household expenditure patterns**

  Introduction of ART in the district witnessed great reduction in income being spent on health while there was an increase in investment of education and agricultural activities in the district. The collected data indicated that percentage of respondents indicating major expenditure on food declined by 9.2% while there was a big increase of 17.3% of respondents reporting education as the major expenditure area when compared with the HIV status without ART period. However, the number of respondents citing education as the major expenditure area was still lower by 4.7% when compared to the pre HIV and AIDS period. Another 15.4% spent the income on health while 15.1% of the respondents reported spending their income on agriculture. The number of people reporting health as the major expenditure area declined by 22.7% while those indicating agriculture, increased by 14.6% when compared with the HIV status period without ART.

Overall, while ART has led to significant improvement in the quality of life for people on ART as discussed above, hence this study resonate with previous research findings done in Western Kenya and Khayelitsha in South Africa by Zivin *et a*l (2007) and Coetzee *et al* (2004) respectively. The research findings in Nyanga have revealed that despite the increase people on ART are yet to reach livelihood levels recorded during pre HIV and AIDS period clearly indicating that ART alone cannot restore lost livelihoods hence the need to research on other structural and societal changes required to ensure attainment of sustainable rural livelihoods for people on ART. The Nyanga study also revealed reversal of gender roles with women becoming major income earners at household level as compared to men during the HIV status with ART period as compared to pre HIV and AIDS period. Therefore, impact of antiretroviral treatment on gender relations might be another area that needs more research. The following section outlines key recommendations that were made by various stakeholders as means of promoting and protecting sustainable rural livelihoods for people on ART.

5.3 Recommendations

The following recommendations are meant to enhance rural livelihood opportunities for people on ART and these key suggestions are informed by the current livelihood challenges facing people on ART as well as critical recommendations from key informants, focus group discussions, as well as respondents who participated in the Nyanga research study. The following recommendations are seen as critical factors that will enhance rural livelihood opportunities for ART patients:

- **Scale up access to antiretroviral treatment:** the results of antiretroviral treatment on rural livelihoods has indicated major improvements on people's livelihoods and income security hence the first recommendation to governments and other policy makers is to scale up roll out and uptake of antiretroviral treatment in all rural areas of the country. This will ensure improvement in rural livelihoods as people on ART recover and regain their skills and strength.

- **Re-tooling of small holder farming:** the study in Nyanga revealed that the majority of people living with HIV and AIDS lost their productive assets (ox-drawn ploughs, scotch-carts and other agricultural equipment) during the HIV status without ART period, as families sought to raise income for food and medication purposes. Therefore the majority still lacked adequate and basic agricultural tools required for optimum use of land. The re-tooling exercise will focus on distribution of agricultural equipment (hoes, ox-drawn ploughs, scotch-carts and harrows) to people on ART in addition to free antiretroviral treatment. Most farmers are relying on neighbours and

relatives' ox-drawn ploughs and other necessary agricultural tools and this means people on ART are being forced not to maximise optimum and recommended times of planting, weeding or other critical crop management events. Therefore embarking on a smallholder farmer re-tooling programme that targets people on ART, will address lack of farming implements, and boost crop productivity to levels similar if not higher than recorded during the pre HIV and AIDS period.

- **Promoting access of inputs (seeds and fertilisers):** the data from Nyanga research study indicates that people on ART are recovering from high levels of food and income insecurity. Therefore targeting people on ART with inputs (seeds and fertilisers) will indeed expedite a strengthened recovery process in terms of food and income. For long periods people living with HIV and AIDS have been focussing on consumptive activities (health and food) and with their health now recovering, focus should be shifted to increasing access to productive livelihoods resources such as seeds and fertilisers for crop production.

Figure 16.Seed and fertiliser distribution to vulnerable farmers in Nyanga during the last agricultural season.

- **Promotion of early maturity crops/varieties:** early maturing crops and varieties are suitable for people on ART as this means less time required for crop management as well as boosting food availability at an earlier period as compared to long-term or medium-term maturing varieties. Thus in terms of maize early maturing varieties such as R201 **(***Mukadzi Hawuende* brand) can be successfully promoted amongst people on ART in Nyanga district.

- **Promotion of less labour intensive labour technologies:** while the data from Nyanga indicates that labour contribution by people on ART has significantly

improved as compared to HIV status without ART period, respondents clearly pointed out that because of their condition (HIV positive status) it was no longer possible to exert as much effort and energy on agriculture when compared to the period before (pre HIV and AIDS era) hence calling for promotion of less labour intensive technologies and approaches to farming. Approaches such as mechanised conservation agriculture can be scaled up and target people on ART.

- **Promote expanded low input gardens:** home and community gardens have proved to be reliable sources of vegetables and food diversity in the district. Hence, expanding these gardens as well as adopting conservation farming techniques to ensure that households reap maximum vegetable output from minimum input is recommended.

Figure 17.Expanded Low Input Garden in Nyanga rural district

- **Promoting small livestock production:** the Nyanga research study indicated that the majority of people on ART were doing well in terms of small livestock production and management, and the main reason was that that type of farming did not require significant labour force. Government and other players focussing on livelihoods of people on ART should scale up this component in terms of numbers, quality and skills to ensure that farmers realise better returns from this livelihood activity. Chickens and goats were favoured by most respondents because of their ability to multiply quickly as well as adapting to local conditions**.**

- **Access to draught power:** access to draught power is critical in agricultural driven livelihoods hence government and other players such as non-governmental organisations should promote programmes and policies that afford people on ART the ability to acquire cattle or other types of draught power as means of enhancing livelihoods opportunities for people on ART in rural areas. Draught power increases area under cultivation as well as reducing labour requirements during land

preparation and weeding. In addition, both small and large livestock provides organic manure that is a critical nutrient resource in the fields and home gardens.

- **Rolling out unconditional cash transfers:** rural areas in Zimbabwe and Nyanga, in particular, are facing serious liquidity crises mainly because of the recent dollarization of the national economy. Limited income generating activities in rural areas mean that the majority of people, especially vulnerable groups such as people on ART, survive on barter and most transactions are paid in kind hence there is a strong need to scale up unconditional cash transfers in rural areas. This proposed cash injection will stimulate local economy as well as remove exploitative and abusive barter or in kind payments/transactions. Unconditional cash transfers are empowering as they provide beneficiaries with choices on what to spend the money on or invest in.

Figure 18

Nyanga cash transfer beneficiary

Figure 19

Another cash transfer beneficiary from Nyanga

- **Income savings and lending schemes (ISALS):** in light of lack of financial service providers in rural areas as well as limited ability of vulnerable and poor households to provide collateral security to few financial services available in rural areas, it is recommended that people on ART should be trained on internal saving and leding scheme (ISAL) methodology. This approach emphasise on pooling together of financial resources by poor and vulnerable households and give loans to group members who in turn will invest in small to medium business activities. The loans do not require collateral or other stringent conditions as demanded by established financial institutions and the interest charged is reasonable considering that it is agreed by all group members. This approach has seen communities establishing their own village banks hence effectively becoming own creditors and debtors. This approach complements unconditional cash transfers and will indeed address funding constraints faced by people on ART as they seek to diversify their portfolio to less labour intensive livelihood activities. The pictures below show some of the basic books being kept by Tawananyasha ISAL club.

Figure 20:Tawananyasha cash book

Figure 21:Tawananyasha constitution

Figure 22:Tawanyasha ISAL group treasurer showing group fund amounting to USD 1,300

- **Supporting vocational skills training:** greater number of males and females who have returned from urban centres as a result of ill health can be supported to acquire vocational skills that can be used to provide services in the community thereby earning much needed income. Most respondents revealed they are interested in

learning skills such as building, carpentry and sewing as these are skills that are highly in demand in the district.

- **Strengthen market linkages:** with both animal and crop production significantly improving in rural areas, there is need to train rural communities on markets and value chain analysis to ensure that rural producers get fair prices for the produce. Currently in some areas there is over production of tomatoes however the tomatoes are thrown away as the local market is too small to consume all the produce hence emphasis on market linkages and value chain analysis will increase earnings for the rural producers.

5.4 Conclusion

Nyanga research study on the impact of antiretroviral treatment on rural livelihoods clearly showed that ART had positively influenced rural livelihood activities in the district. This was brought out by comparing the three critical stages of ART patients, that is, (1) the pre HIV and AIDS period, (2) HIV status without ART, (3) and HIV status with ART. The study revealed significant livelihood changes that occurred in each stage with high levels of income and food insecurity being recorded during the HIV status without ART period. In this period owing to deteriorating and poor health, the majority respondents reduced the area under cultivation, recorded poor yields, had fewer and poor quality of meals per day, resorted to harmful coping mechanisms such as withdrawing children from school to cope with food shortages and high rising medical costs, selling of productive and non productive assets became the main source of income, as well as sources of income, became very unreliable.

However, the introduction of antiretroviral treatment in the district has reversed the plummeting rural livelihood situation for people living with HIV and AIDS as this saw areas under cultivation significantly increasing yields; adequacy of own production recording new high levels; number and quality of meals improved; diversification of sources of income; and significant investment on productive areas such as agriculture. Therefore overall antiretroviral treatment has managed to arrest free fall that had characterised the rural livelihood situation compounding people living with HIV and AIDS.

Nevertheless, significant improvements that have been ushered because of ART on rural livelihoods are yet to reach levels recorded during the pre HIV and AIDS period. This clearly indicates that antiretroviral drugs alone cannot restore sustainable livelihood opportunities for people on ART; more support is required in addition to antiretroviral treatment. Other

measures that need to be adopted in addition to ART that have been recommended as well as informed by the respondents and key informant figures from Nyanga include re-tooling of the rural agriculture targeting ART patients, significant cash injection in rural areas through unconditional cash transfers and internal savings and lending schemes, increasing access to inputs (seeds and fertilisers), promoting early maturing crop varieties, promoting less labour intensive technologies, expanding low input gardens, promoting small livestock production, increasing access to draught power, promoting vocational skills training and promoting market linkages as well as value chain analysis.

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Annex 1: Key Informant Interview guide

Discussion Guide for Key Stakeholders

1. What are general food production trends in the ward

2. What are general food production trends for those living with a chronically sick head of household

3. What are the general income trends for those living with chronically sick head of household

4. What has been the impact of Antiretroviral Treatment in the ward with regards to food and income generation in the district

5. What do you think should be done more to improve livelihoods of people on Antiretroviral Treatment

6. Any other comments

Annex 2: Focus Group Discussion Guide

Date	Province	District	Ward	Total number of Participants	Males	Females	Duration on ART (each member participating)

Theme	Question	Probes	Responses
Food Production	What are food production trends (pre HIV,HIV status without ART and HIV status with ART) Is food available and accessed by people on ART What are the common crops grown by people on ART What other initiatives are being pursued by people on ART to ensure food availability and security at household level		
Productive Assets	What are the common productive assets owned (trend analysis) Ownership of small and large livestock (trends)		
Income Generation	What are the sources of income (trends) What are major sources of income (trends) Who generates income at household level Who are the major generators of income at household level What is the average annual income per household What is the money used for (trends) Bulk of the money is used on what item (trends only one item)		
Labour Availability	Who works in the fields (trends) Who provide bulk of the work in the fields(trends) What is the role of people on ART with regards to agriculture work(trends)		
Community Participation	Which activities are people on ART participating in?(trends) Any people on ART sitting on leadership structures at community level		

Annex 3: Individual Head of Household Questionnaire

University of Free State (DIMTEC-Masters in Disaster Risk Management)

TOPIC: The impact of antiretroviral treatment (ART) to rural livelihoods. The case of Nyanga Rural District in Zimbabwe

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Objectives: The overall objective of the research is to investigate the impact of antiretroviral treatment (ART) on rural livelihoods. Agriculture is the backbone of rural livelihoods in Nyanga District hence the tools are developed to explore level of participation in this sector by ART patients. In order for the researcher to be able to see the changes that have developed over time and especially role of ART on rural livelihoods, three reference points have been identified **(1) Pre HIV and AIDS era:** this focuses on livelihoods activities being pursued before HIV and AIDS **(2) HIV status without ART**: this focuses on livelihoods activities obtained during the period when client were sick without access to ART **(3) HIV status with ART:** this is the now period, livelihood being obtained by chronically sick with ART. Thus the before and after scenario, will provide adequate comparison hence being able to see the role of ART and its impact on rural livelihoods.

NB: The researcher has developed three tools for the purposes of this study namely (1) **Individual/Household Questionnaire:** this is targeting programme living with HIV and on ART and a total of 125 People on ART will be reached, (2) **Focus Group Discussion:** targeting people living with HIV and on ART. Three FGDS (each group with 13 members) will be conducted (one FGD per ward), (3) **Key Informants Interviews:** three key informants have been targeted (one per ward) and these are ward based agricultural extension officers and District AIDS Coordinator.

Introduction

I, Tawanda Guvi, a student from University of Free State (UFS) undertaking a Masters Degree in Disaster Risk Management degree will be conducting a survey on the impact of ART on rural livelihoods. This questionnaire serves to extract the relevant information on the contribution of ART on rural livelihoods. Information obtained from your cooperation will only be used for educational purposes and will be circulated within the University without reference to your name, unless you wish to be explicitly quoted.

Section A: Personal Details

Name of recorder

Date

District **Village**

Ward

Name of Respondent

No		NUMBER	CODES			
1	Name of HH					
2	Age					
3	Gender (M/F)					
4	Education level		**1**=no schooling **2**=primary **3**= secondary **4**= tertiary **5**=other			
5	Marital status		**1** married, **2**=widowed, **3** divorced, **4=**single			
6	Number of wives/husbands					
7	How long have you been chronically sick		**1**= 6 months to 1 year **2**= 2 to 4 years **3**=5 to 6 years **4** = 6 years and above			
8	How long have been on ART		**1**= 6 months to 1 year **2**= 2 to 4 years **3**= 5 to 6 years **4** = 6 years and above			
9	Number of own children	Males	<5yr			
			>5yr			
		Females	<5yr			
			>5yrs			
10	Total number in Household		0-5yrs			
			6-12yrs			
			13-17yrs			
			18-50yrs			
			51-65yrs			
			>65yrs			
			Total			

Section B: Household Food Production

No	Question/s	Pre HIV and AIDS Period	HIV status Without ART Period	HIV status With ART (Now)	Explain Changes	Key
11	What is the total area under cultivation?					**1**=0 to 2 acres;**2**=3 to 4 acres ;**3**= 5 to 7 acres ;**4**=8 acres and above
12	What are the major crops grown?					**1**= cereals;**2**=legumes;**3** =roots and tubers;**4**=vegetables;**5**=other (specify)
13	To what an extent do you work on the land or any other agricultural					**1**=large extent **2**=fair extent **3**=limited extent **4**=none

	activity?					
14	Who provides bulk of the labour for agricultural activities					**1**=children; **2**=wife and children; **3**=husband and children ;**4**= none;**5** = other (specify)
15	What is the average crop (cereals) yield per season?					**1**=0 to 50kg;**2**= 51 to 150kg;**3**=151 to 250kg;**4**=251 to 500kg;**5**= 501 and above
16	Does your family have access to community or household garden?					**1**= Yes **2**= No
17	How important is the garden to your daily food needs?					**1**=Very Important ;**2**= Important ;**3**=fair ;**4**= Not important
18	How long will your own produce last you after harvesting?					**1**=0 to 3 months;**2**=4 to 6 months;**3** =7 to 10 months;**4** =11 months and above
19	Number of livestock owned					**1**= 0 to 5; **2**=6 to 11; **3**= 12 to 17 **4**= 17 and above
20	Type f Livestock Owned					**1**= cattle; **2** goats; **3**= chickens,**4** cattle, goats and chickens;**5** other (specify)
21	Number of Meals Per Day					**1**=3 meals; **2**= 2 meals;**3**= 1 meals **4**;0 meals
22	Quantity of Food Per Meal					**1**=not enough;**2** fair; **3** good
23	Quality of Food Per Meal					**1**=Very poor;**2**=poor;**3**=fair;**4**=good **5**=very

						good
34	Food Shortages Coping Measures					**1**=Reducing number and quantity of meals; **2**=School dropouts; **3**=casual labour; **4**=selling of assets; **5**= other specify....
25	Other Agricultural Productive Assets Owned					**1**=plough, harrow and hoes; **2**= hoes and harrow;**3**= hoes;**4** harrow**5**= none;**6** other (specify)

Section C: Sources of Income for the Household

No	Question/s	Period Before HIV and AIDS	HIV status without ART	HIV status with ART Explain Changes	Key
26	What are your household sources of income?				**1**=crop produce ;**2**=regular employment;**3** = casual labour;**4**=remittances ;**5** =animal sales; **6**= beer brewing;**7**=brick making;**8**= other sources (specify)
27	What are your household major sources of income?				**1**=crop;**2**=regular employment;**3** = casual labour;**4**=remittances ;**5** =animal sales;**6**=other

					sources (specify)
28	Is there any major income generation activity you are participating in? If yes ,specify				**1**=Yes **2**=No
29	What is the average household annual Income?				**1**=0 to $50;**2**=51 to $100;**3**=101 to $150;**4**=151 to $200;**5** =$201 and above
30	How reliable is your annual income?				**1**=Reliable;**2**= Fair **3**=Unreliable
31	Who are your major income earners in the household?				**1**=father ;**2**=mother ;**3**=Children ;**4**=both mother and father ;**5** =Other (specify)
32	What do you most spend your household income on?				**1**=food; **2** = education; **3** =health; **4** =agriculture **5**=Shelter; **6**=other (specify).....
33	Do you own non agricultural assets				**1**= sawing machine; **2**=Bicycle; **3**=Television; **4**=radio;**5** = Other (specify)

Section C: Community Participation

No	Question/s	Period Before HIV and AIDS	HIV status without period	HIV status with ART (Explain Changes)	Key
34	Do you participate in the community meetings and gatherings				**1**=Yes **2**= NO **3**= Sometimes
35	Do you hold any position in any community group/committee or association				**1**= Yes **2**= No
36	In future would you want to hold any position in these community structures or groups				**1**=Yes **2**=No
37	What else can be done to improve livelihoods of people on ART				

Thank you so much for your participation