EFFECTS OF HIV/AIDS ON FOOD SECURITY IN KILOLO DISTRICT, IRINGA, TANZANIA

BY

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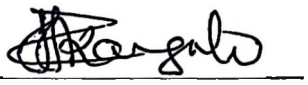
DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMEMTS FOR THE DEGREE OF MASTER OF ARTS IN RURAL DEVELOPMENT OF SOKOINE UNIVERSITY OF AGRICULTURE. MOROGORO, TANZANIA.

ABSTRACT

This study examined impact of HIV/AIDS on household food security in Kilolo District. Specifically, the study identified socio-economic problems associated with HIV/AIDS and food security; determined the differences in bahaviour with regard to food security between the affected and non-affected households and ascertained the existence of known linkages between HIV/AIDS and households food insecurity in Kilolo District. Data were collected through interviews using structured questionnaires for households and checklist for key informants. Purposive sampling technique was used to obtain 154 households (77 affected and 77 non-affected) and 10 key informants. Findings have ascertained the main linkages of HIV/AIDS and households food security by comparing the affected and non-affected households in the following: more burden of dependants among affected (72.7%) compared to non-affected (51.9%); Lack of agricultural knowledge (66.2% compared to 46.7%); Not using improved agricultural inputs (64.5% compared to 37.3%); Produce no crop (14.3% compared to 2.6%); Decreased land cultivated (48.1% compared to 11.7%); Shifted from mixed farming to single crop (36.1% compared to 5.3%). Others are: bigger proportion has higher category of expenditure on treatment (53.2% compared to 32.4%); fewer do invest on agriculture and education (19.5% compared to 50.7%). Greater proportion reported greatest category of time lost for caring the sick (32.5% compared to 7.8% of non-affected); also more children pulled out of school for caring the sick family members (15.6% compared to only 1.3% of non-affected). Other socio-economic problems that affect the HIV affected households more than the non-affected include; increased number of orphans, child labour, selling of household's assets, and failure to participate in community activities. It is recommended that efforts should be made to provide labour saving technologies, appropriate knowledge on agriculture, income generating activities and access to credits to the affected households.

DECLARATION

I, ERIKO HELASTA KAWANGA, do here by declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work and has neither been submitted nor being concurrently submitted for degree award in any other Institution.



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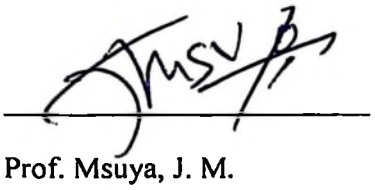

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DEDICATION

To my mother Esnath Mahenge and my late beloved father Helasta Kawanga Nkenzah who died in 1995 and laid the foundation of my education.

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LIST OF ABREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CBO	Community Based Organizations
DCI	Development Cooperation Ireland
ESRF	Economic and Social Research Foundation
FAO	Food and Agriculture Organisation of United Nations
FBO	Faith Based Organisations
GDP	Gross Domestic Product
HH	Household
HIV	Human Immunodeficiency Virus
MDG	Millennium Development Goal
MVC	Most Vulnerable Children
NACP	National AIDS Control Program
NGO	Non Government Organizations
NMB	National Micro finance Bank
NMSF	National Multi-Sectoral Strategic Framework
NSGRP	National Strategy for Growth and Reduction Poverty
PLWHA	People Living With HIV/AIDS
REPOA	Research on Poverty Alleviation
SACAS	Saving and Credit Associations
SACCOS	Saving and Credit Cooperative Society
SPSS	Statistical Packages for Social Science
TAHEA	Tanzania Home Economics Association
TB	Tuberculosis
TDHS	Tanzania Demographic and Health Survey

TShs	Tanzanian Shillings
TV	Television
UNAIDS	United States Agency for International Developments
UNICEF	United Nations Children Fund
URT	United Republic of Tanzania
WB	World Bank
WDF	Woman Development Fund
WHO	World Health Organization
YDF	Youth Development Fund

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) epidemic and food security interact in many ways. HIV/AIDS worsens food insecurity through draining key resources such as farm labour, access to credit and farming knowledge (Sunga *et al.*, 2005). The wide-spread of food insecurity makes people vulnerable to HIV infection by weakening or destroying individual's autonomy against decision making and hence engages in risky survival activities. In Sub-Saharan Africa, HIV/AIDS and food insecurity are most widespread and severe, HIV infected individuals with inappropriate diet faced with AIDS situations which reduce labour force, time and money used to get food (Michael and Gillespie, 2003).In Uganda a family member from affected household because of food insecure might opt on sending wives and girls to look for food which put them on the risk of unsafe sex (Baylies, 2004).

The effects of HIV/AIDS in food security manifest itself in the waves of ways which start from the point of HIV infection, opportunistic diseases, and AIDS (illness) to the impact of death. These waves affect food security in two ways. Firstly at the point of individual's households and community being susceptible to HIV infection through participating in risky survival activities. Secondly, an individual, household and community being affected by death of a member of household and loosing resources such as productive labour force and wages. It has also been revealed that malnutrition contributes to faster progression of AIDS whereby People Living With HIV (PLWH) have increased nutritional requirement of up to 50% greater for protein and 15% for energy (Preble and Piwoz, 2000).

The loss of adult labour leads to the change from long-term outlook to the short-term outlook of investments. For example, the children left behind after death of their parents may not acquired enough skills to perform some key agriculture and economic activities. This increases food insecurity especially where children are taken out of school as a result of increasingly involved in adult responsibilities such as petty trading. For example, it has been reported in Mozambique, that women switched from agricultural production to petty trading activities, while child-headed households coped by renting out unused farms and huts (Petty, John and Kerry, 2004).

1.2 Problem Statement

To date, the HIV/AIDS epidemic is having major impacts in both rural and urban societies in many countries. According to FAO (2000), all dimensions of food security namely availability, stability, access and use of food are affected where the prevalence of HIV/AIDS is high. Since most of the people who are affected with HIV/AIDS are in the economic productive age, and majority of the Tanzanians especially in Kilolo District depend on agriculture as their main source of food, it is likely that production in the community will decline due to reduced labour force caused by HIV/AIDS.

1.3 Justification of the Study

A research study on the effects of HIV/AIDS on food security in Kilolo District is important for planners, policy makers and community as a basis for designing interventions to reduce HIV/AIDS infection and increase food security. Several studies have been done on HIV/AIDS and food security issues elsewhere. They include impact of HIV/AIDS on food security and income in Sub-Sahara Africa (Kayunze and Mwageni, 2006), impact of HIV/AIDS on agriculture in Tanzania, Uganda and Zambia (FAO, 2002), and impact of HIV/AIDS on household food security in Shinyanga,

Morogoro Rural and Kilosa (Ishengoma, 1998) and Mwanza (Liere, 2002). However, no specific research study has been conducted in Kilolo District on HIV/AIDS in relation to food security. Hence there is insufficient information on the linkages between food security and HIV/AIDS in the District. The study seeks to address the knowledge gap that exists concerning the linkages between food security and HIV/AIDS pandemic in Kilolo District.

This study is on line with Tanzania Development vision 2025 and National Strategy for Growth and Reduction Poverty (NSGRP) which is committed to the Millennium Development Goals (MDGs) of reducing poverty, hunger, illiteracy, child mortality, maternal mortality and diseases such as HIV/AIDS, TB and malaria (URT,2001). Tanzania formulated the National Policy and National Multi-sectoral Strategic Framework (NMSF) on HIV/AIDS, which provides the general framework for the response to the HIV/AIDS pandemic. The policy also emphasizes on research activities in HIV/AIDS and promotes dissemination and use of research findings (URT, 2005). It is no doubt therefore that this study is within this important framework.

1.4 Objectives

1.4.1 General objectives

The general objective of this study is to determine the contributions of HIV/AIDS on food insecurity among communities in Kilolo District.

1.4.2 Specific objectives

1. To identify the socio-economic problems associated with HIV/AIDS and food security in the District.

2. To determine the differences in behaviour with regard to food security between the affected and non-affected households
3. To ascertain the existence of the known linkages between HIV/AIDS and household food insecurity in Kilolo District.

1.5 Research Questions

1 What are the socio-economic problems facing households due to the persistence of food insecurity and HIV/AIDS?

2 Are there differences in behaviour with regard to food insecurity between the affected and non-affected households?

3 Are the known linkages between HIV/AIDS and households food security also applicable i.e. holding true in Kilolo District?

1.6 Conceptual Framework

This study assumes that food security is influenced by agricultural production, social capital, income and expenditure. A conceptual framework is depicted in Figure 1. The food insecurity affects the nutrition status and contributes to faster progression from HIV to AIDS. Households that are food insecure tend to engage in risky survival activities to HIV susceptibility as coping strategies (WHO, 2003). Table 1 summarizes the variables and indicators used for analysis in this study. The indicators for agricultural production include: labour force ratio, knowledge and skills, land size cultivated, and pattern and range of products. The indicators for social capital are access to credit, migration, orphans and dependence. The amount of money earned and spent per month are indicators for income and expenditure.

The number and composition of meals taken per day. frequency of consumption of inferior and luxury foods, and amount of crops and livestock produced per season are indicators of food security. Selling of land and livestock, selling of labour, sending out wives and young girls, sending of children to work. borrowing food. reduction of the number of meals, and pulling children out of school are coping strategies for households that are food insecure.

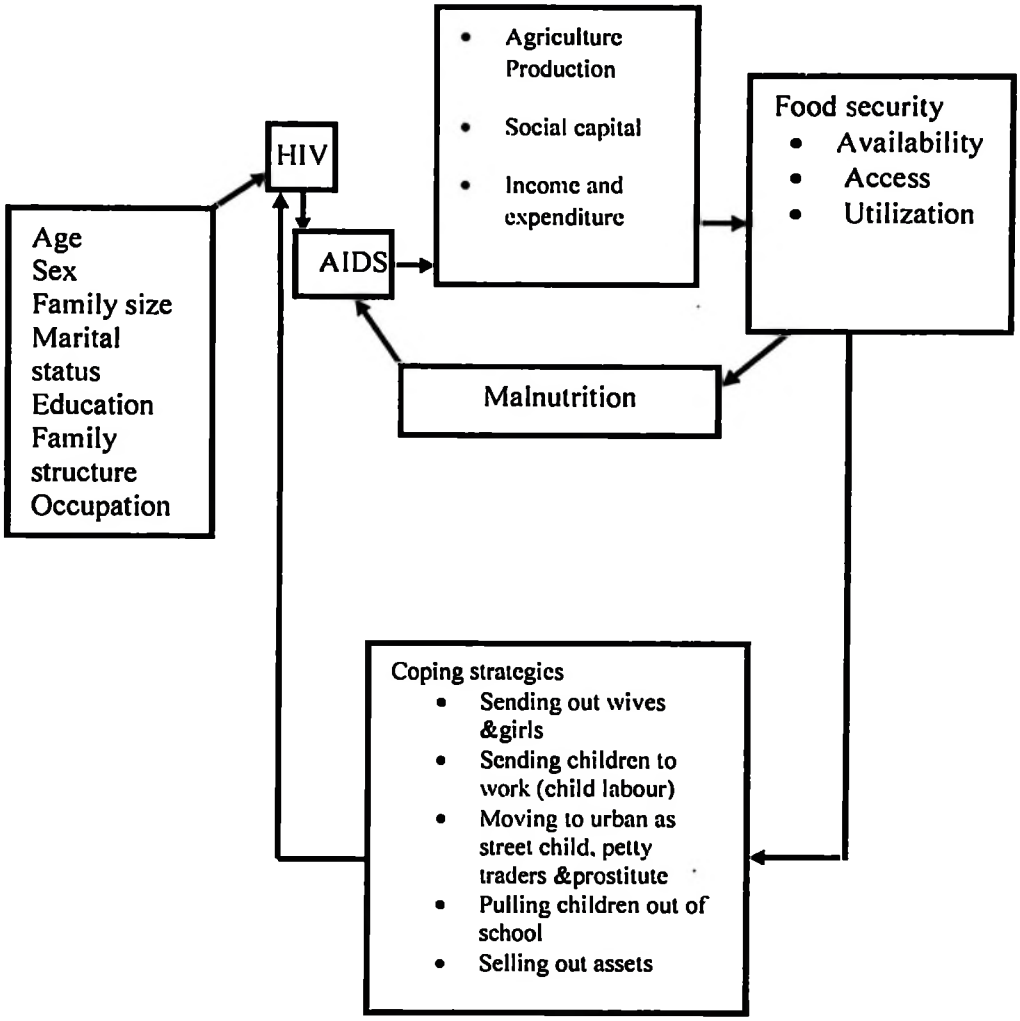


Figure 1: A conceptual framework on the linkages between HIV/AIDS and food security.

Table 1: Definition of key variables used in the study

Variables	Indicator
Age	Number of years since one was born
Sex	Being male or female biologically
Family size	Total number of members present in the family
Marital status	Being married/single/separated/divorced/ or widowed
Family structure	Family headed by both/single/orphan or grand parents
Education level	Number of years one spent in school
Occupation	Main source of income of a person
Agriculture production	Size of plot cultivated, number of crops/livestock grown/kept
Agricultural knowledge	Awareness of an individual in relation with agriculture production
Access to credit	Ability to get money charged with an interest used for investment
Cultivated land size	Land that is used for cultivation in acreage
Labour force	Economically active individual of 15-65 years
Crops and livestock products	Ability of an individual to produce varieties of products
Orphan	An individual of below 18years who lost both parents
Dependants	People aged 0-14 and above 65 in a household
Social networking	Ability of an individual/household to adhere to social networking
Income	Monetary earning of a household or individual per month
Expenditure	Amount of money used by household per month
Hours on caring the sick	Hours lost without working any member in the household because of sick related problems
Man-days lost	Days lost without working for the sick individual
Care givers days lost	Failure to attend their duties by number of days because of being responsible for caring sick
Food security	Number of meals taken per day (3 for adults and 5 for children); Composition of meals taken (Protein/energy and vitamin); Number of days per week for inferior and superior food; Number of bags of cereal and livestock produced per season
Coping strategies	Response to poor production and inability to purchase food (food shortage).
Affected households	At least one family member living with HIV/AIDS/ orphan/chronically ill/died/widow as a result of AIDS
Non-affected household	No any family member living with HIV/AIDS/ orphan/chronically ill/died/widow as a result of AIDS.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Food Security

WHO (2003) defined food security as physical and economic access by all people at all times to sufficient food to meet their dietary requirements for productive healthy life. According to FAO (2002), food availability refers to the capacity of producing enough food. At the household level this translates into the capacity of household to produce enough food for all its family members at all time. For the households affected by HIV/AIDS productive forces are reduced and hence fail to produce enough food. Access to food relates to the stock of food in the market as well as purchasing power created by saving money and assets, including in form of livestock. Households with sufficient assets and purchasing power all the time are considered to be food secured.

2.2 The National Policy on HIV/AIDS in Tanzania

The national HIV/AIDS policy in Tanzania was formulated in 2001 by the Tanzania Commission for AIDS (TACAIDS) which is under the Prime Minister's Office (URT, 2001).The policy is geared to fight against the HIV/AIDS pandemic and every one has a role to play and be fully involved in the struggle against HIV/AIDS pandemic. However the policy will continue to be reviewed and updated in relation to emerging development issues in the society (URT, 2001).

The overall objective of the national HIV/AIDS policy is to provide a framework for leadership and coordination of the national multisectoral response to the HIV/AIDS epidemic. It also provides for a framework for strengthening the capacity of institutions, communities and individuals in all sectors to arrest the spread of the epidemic (URT, 2001). The specific objectives includes prevention of transmission of HIV through HIV

testing care for people living with HIV/AIDS, sectoral roles and financing research legislation and legal issues (URT,2001).

2.3 Agricultural Sector Response to HIV/AIDS

Agricultural sector based strategies on HIV/AIDS has a crucial role to play in the prevention, care and mitigation dimensions of the HIV/AIDS epidemic. For rural men, women and children that are already affected by the epidemic, the agricultural-based mitigation interventions can contribute to the recovering of affected households and achieving a degree of self-sufficiency by transferring agricultural knowledge and entrepreneurial and life skills to rural orphans, promoting access to labour-saving technologies and practices, and improving rural income and food security of affected households (URT, 2005).

2.4 Impact of HIV/AIDS on Agricultural Production and Food Security

Massele et al. (1991) argued that most of developing countries obtain their incomes from agricultural production, which is labour intensive. The adverse effects of HIV/AIDS morbidity and mortality on rural households disrupt the interface between productive and domestic labour. The disruption inflict a shock to the livelihood system of many agrarian communities, thus undermine food security.

According to Devereux (2001), female-headed households in Ethiopia are renting out their land on crop sharing agreements with a male farmer by which they get only 25% of the harvest. The harvest they get from this arrangement cannot feed their families for the whole year. Therefore, they engage in sexual activities with the number of people, which increases the risk of transmission of HIV/AIDS. The impact of HIV/AIDS on agriculture can be explained through its impacts on labour quantity and quality, credit accessibility,

knowledge and agricultural management skills, income and expenditures and social capital. These are explained below.

2.4.1 Labour quantity and quality

HIV/AIDS has substantial economic and social impacts on the affected individuals, households and the whole community as a result of a reduction in labour availability. FAO (2001) estimated that 27 of the most affected countries are in Africa, including Tanzania where labour force has decreased ranging from 10% to 26%. Nelson *et al.* (2000) noted in Tanzania that households in which there was a single AIDS patient, almost 30% of household labour was devoted to patient care and funeral-related work.

2.4.2 Credit accessibility

Sunga *et al.* (2005) suggested that an area of particular importance to poverty reduction and therefore food security is community institutions/systems involved in micro-credit to farmers. Financial capital is accessed in rural communities through informal and group-based micro-credit. Therefore, when the male head of households is infected, the household may lose access to credit when farming operations may require inputs. Credit for agricultural production may also be diverted to meet medical care of sick relatives, funeral and food expenses. This results in the reduction of crop yield and loss of income causing families to default loan repayments or sell assets (UNAIDS/WHO, 2002).

2.4.3 Knowledge of agricultural management skills

The death of adults has strong inter-generational consequence in that it limits the ability of the next generation to acquire relevant livelihood skills. Because adults die before passing down their knowledge, many rural children are not acquiring the skills related to working the land or the management of farms (Sunga *et al.*, 2005). In effect, the

indigenous local knowledge of such as that of plant and animal biodiversity, the cropping cycle, proper nutrition, and the availability and use of traditional medicines is being lost.

2.4.4 Income and expenditures

Topouzis (1999) pointed out that in Kenya the impact of HIV/AIDS on urban and rural household income, shows that rural households are the most severely affected, with AIDS costs representing 78% of household income the first year and 167% the second year of AIDS impact. According to UNAIDS (1996), Uganda rural households can spend up to a third of their annual cash income on monthly medical care or on a single funeral. Rugalema *et al.* (1999) noted that in Tanzania the main constraint to food security following the death of the spouse is not labour shortage but cash income, given that men are often the main cash income earners.

2.4.5 Break down of social cohesion

The long-term illness and the attendant care required of the sick, as well as the stigma that remains attached to this disease, are contributing to a decline in traditional social cohesion as sick adults and their care-givers are unable to participate in the kinds of traditional activities that hold societies together (Barnett and Whiteside, 2002). Such activities include communal meetings, political meetings, group economic efforts, and ceremonial gatherings such as weddings. Social stigma can lead to isolation of families leading to more rapid decline in social security and welfare. Other related issues with social capital implications include increasing orphans (Gardner, 2000; Mwakalobo, 2003), rural to urban out migration (Mwakalobo, 2003), and increased dependence ratio among affected households (TDHS, 1997; UNAIDS, 2001).

2.5 HIV/AIDS and Malnutrition

According to Shumba (2003), malnutrition contributes much to people's susceptibility to HIV infection as well as opportunistic infection diseases. Micronutrient deficiencies increase the likelihood of an individual to HIV transmission and may lower the resistance of penetration of HIV in human's body. The increased insufficient dietary intake by people living with HIV/AIDS leads to nutritional deficiencies as well as suppression of human immune system which leads to fast progression to full blown AIDS.

In the households coping with HIV/AIDS, food consumption generally decreases as the family may lack food and the time and means to prepare meals, especially when the mother dies. Research findings in Tanzania show that per capital food consumption decreases by 15% in the poorest households when an adult dies (*Kean et al., 1999*). Study carried out in Uganda by FAO (2002) showed that food insecurity and malnutrition were foremost among the immediate problems faced by female-headed AIDS affected households.

2.6 Coping Strategies used by Households with Regard to Food Shortage

Households directly affected by AIDS face significant challenges in trying to pay for medical treatment and, ultimately, funeral costs (Preble and Piwoz, 2000). These costs lead to a steady decline in the household asset base, and in some cases, households sell their agricultural productive resources, including land, animals, equipment and inputs, to cope with the burden. Wagao (1991) reported diversified strategies to lessen the adverse effects of food shortage through reducing the frequency of and changing the content of meals consumed daily, more undertaking of income earning activities and buying or borrowing from either relatives or friends in rural Tanzania.

Literature reveals that affected households send children to live with relatives (UNAIDS, 2005). Relatives will then be responsible for meeting the children food requirements. This is done in anticipation of future reciprocation.

Rugalema *et al.* (1999) reported some members of households to be migrating to urban areas in search of employment so that they can remit some cash to their relatives in Zambia and Kenya. In Rungwe District households that do not have the ability to diversify sources of income are particularly vulnerable to the HIV/AIDS pandemic whereby young girls are driven to have sex to fulfill short-term income needs (Mwakalobo, 2003).

A study done by UNICEF Tanzania (2005) in Makete cited by REPOA (2008) indicted strategies taken by households to include selling of household's assets, reduction in the number of meals, out migration in search of employment, child labour and selling of farms and livestock.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Description of the Study Area

The study was conducted in Kilolo District, which is one of Districts in Iringa region. Data was collected between November, 2008 and January, 2009.The other Districts include: Iringa rural, Iringa municipality, Mufindi, Njombe (new Region), Makete and Ludewa. The area has been selected because it is among the ten mostly affected Districts in Tanzania by HIV/AIDS with prevalence rate of 11.5 % and frequently affected by food shortage (URT, 2007). In the year 2006-07, the District was among the Districts that received food relief from the government.

It has two agro-ecological zones; Highland with altitude between 1 600-2 700 m above sea level and good rainfalls of between 600-1 000 mm annually. Peoples in this area are engaged mostly in crops production of maize, wheat, potatoes, coffee, bananas, tomatoes pigeon peas and fruits. Livestock production of pigs, poultry, and goats is also common together with lumbering. Lowland with altitude of between 900-1 200 m above sea level has low rainfalls of 500-600 mm annually. This zone is mostly for livestock production such as cattle and poultry and crop production such as rice, onions, millet, maize and fruits. The other important livelihood options include petty trading. According to population census (2002) and its projection on 2007-08, the District has a total population of 223 787 of which 114 554 are female and 109 233 are male. Administratively, the District has 3 divisions namely Kilolo, Mazombe and Mahenge. Also it has 12 wards, 83 villages, 418 hamlets and 42 006 households (Kilolo District Council, 2007).The study was conducted in Irole and Image wards in Mazombe Division and in Dabaga and Bomalang'ombe wards in Kilolo Division. Figure 2 shows the location of the study area.

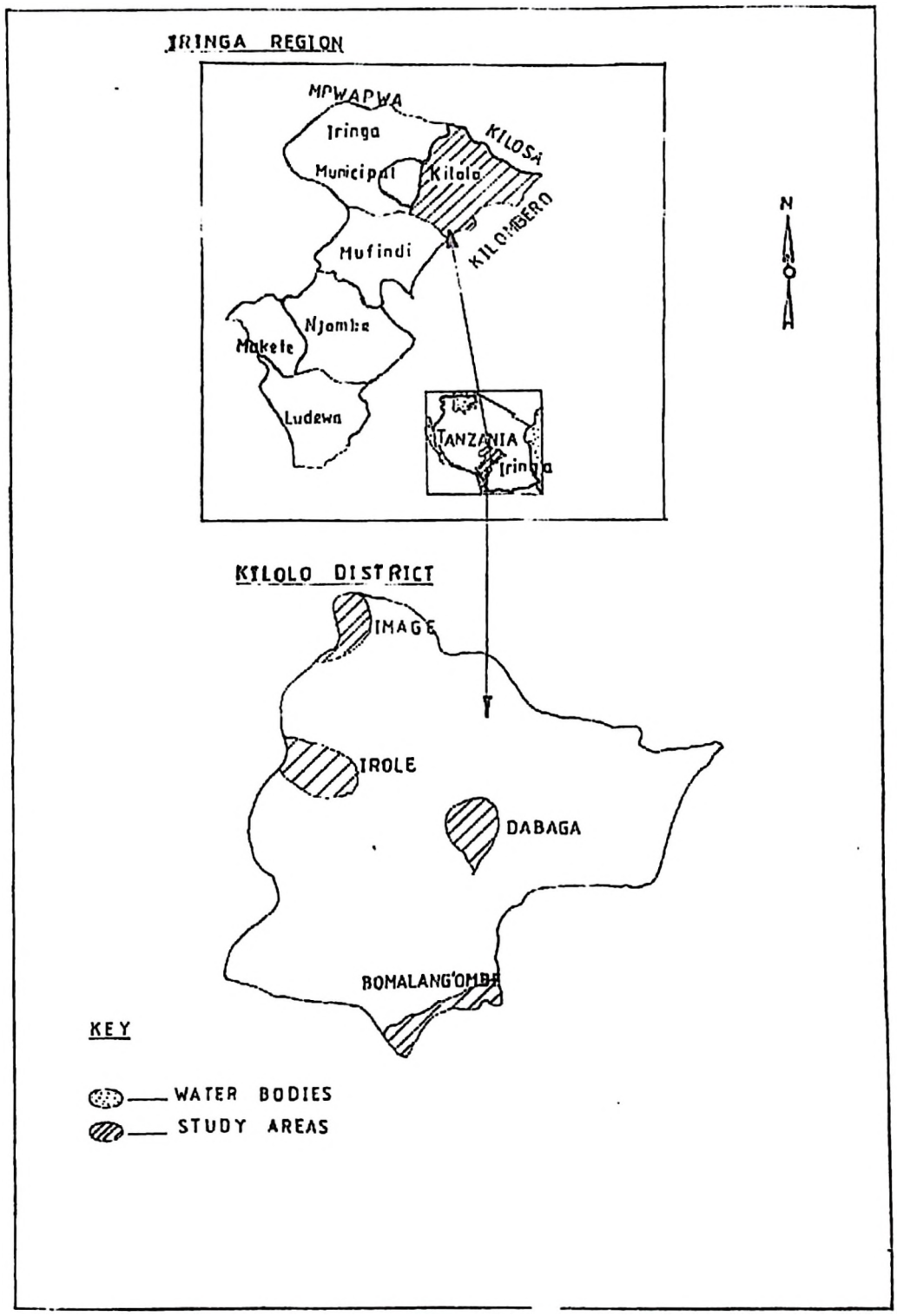


Figure 2: A Map of Kilolo District showing the study area

3.2 Research Design

Across-sectional research design was used. The design allows collection of in-depth data on different groups of respondents at one point at a time. According to Bailey (1994), the design provides accurate information at minimum time and financial requirements.

3.3 Sampling Procedures

3.3.1 Population and sample size

The population involved heads of household aged 15 years and above and key informants from health, community development and agriculture departments in the District Council. The sampling unit was a household, which include households affected by HIV/AIDS and non- affected households. The total sample size for the study was 164 respondents. The sample size was derived from the following formula;

$$n = \frac{Z^2 pq}{d^2}$$

Where:

n = desired sample size (when population is greater than 10 000).
Kilolo has 42 006 households hence is greater than 10 000.

Z = Standard normal deviate set at 1.96 corresponding to 95% confidence level.

P = proportion in the target population estimated to have a particular characteristics (in this case 10% affected by HIV/AIDS).

q = 1.0-p =1-0.1=0.9

d = degree of accuracy desired for this case set at 0.05.

Then:

$$n = \frac{(1.96)^2 * 0.9 * 0.1}{(0.05)^2} = 138.2976 = 138.30$$

Ten percent was added to take care of non-responsive respondents and therefore the total sample size was 164 respondents. The distribution was as following;

- 154 households including 77 affected by HIV/AIDS households and 77 non-affected households.
- Four Wards from two Divisions whereby each ward involved two villages to make a total of eight villages
- From each village, at least 19 respondents (households) involving not less than 9 from affected households and 9 from non-affected were included.
- A total of ten key informants selected from the departments of Health, Community Development and Agriculture in the District council.

3.3.2 Sampling method

Both probability and non-probability methods were employed. Because of the variations in HIV/AIDS prevalence rate among wards in Kilolo District, for selection of specific ward of high prevalence rate, a purposive technique was used to obtain four wards out of 12 wards in two Divisions. In order to each village from selected wards to have equal chance to be selected, a simple random sampling technique by lottery method was used to obtain 8 villages two from each ward. A total of 77 respondents from affected households and 77 respondents from non- affected households were included. The sampling was facilitated by the community counsellors who had been trained to provide care and support to affected households.

3.4 Data Collection

3.4.1 Primary data

Quantitative and qualitative data on effects of HIV/AIDS on food security based on the linkages between HIV/AIDS and food security were collected by interviews using a

questionnaire to household's respondents and checklists for key informants. The questionnaire was translated into Kiswahili to facilitate easy communication during data collection (Appendix I).

3.4.2 Secondary data

Secondary data from different sources such as government offices, official files and reports, institutional policies and web sites were used in order to complement the information obtained from the primary data.

3.5 Data Processing and Analysis

The collected data was verified, coded and analysed using statistical computer software. Statistical Package for Social Sciences (SPSS) version 12 was used to analyse empirical data. Descriptive statistics (frequencies, percentages and means) were computed for use in the analysis. Chi-square statistics was used to test for significance differences of the study variables between the HIV-affected and non-affected households. The study used five percent level of significance at $P \leq 0.05$.

3.6 Ethical Considerations

In understanding that among the key research participants some were the PLWHA themselves, effort was made to make sure that each individual was informed of the objectives of the study before the data collection.The study maintained confidentiality of the information obtained in all aspects based on the existing laws, cultural perspectives and research rules. The research participation was voluntary whereby a verbal consent was sought from each sampled respondent. Proper language, respect for gender relationship and reasonable dressing were observed throughout for creation of harmony between researchers and respondents as well as the community in general. Research

permission was granted by the University authority as well as the Kilolo District Council.

3.7 Limitation of the Study

During the survey the following problems were encountered:

(a) Some respondents in two villages demanded to be paid money before they could provide information, especially among the affected households. Based on their experience they expected to be provided with support. After a long discussion with them they agreed to continue with the study. Some commitment from these few respondents might have been lost due to their unmet expectations.

(b) Because of inadequate infrastructure especially during rainy seasons some places were difficult to reach by vehicle. Researchers had to walk about 5 kilometres in some areas. This unexpected situation caused much delay in reaching those areas something that resulted in inconveniences to the respondents.

(c) In some cases community events and personal responsibilities interrupted the data collection exercise. Such events included funerals, research assistant personal commitments, and presence of public meetings by the government leaders. All these caused unexpected delays.

(d) Most of the respondents did not have the habit of keeping written records of their activities including incomes and expenditures. Therefore wherever such data was required, they relied on their memories to recall, which might not be quite accurate.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Results

This section presents the results obtained from the respondents in the surveyed households (77 affected by HIV/AIDS and 77 not affected). The section begins by giving the socio-demographic and economic characteristics of respondents. Then information on agricultural production, income earning and expenditure and caring of the sick are shown. The section also presents the social problems faced by households, food security situation and strategies employed by households to cope with food insecurity.

4.1.1 Characteristics of Surveyed respondents

Two main characteristics of respondents were considered, namely the socio-demographic and socio-economic characteristics. The socio-demographic characteristics included age, sex, household size, marital status, family structure and education levels. On the other hand, socio-economic characteristics included extent of dependants, occupation, income source and source of food.

4.1.2 Socio-demographic characteristics

(a) Sex

Results in Table 2 show that 50.6% of the respondents were males while 49.4% were females. Among the affected households 58.4% were females and 41.6% were males. The percentages were slightly different for the non-affected households where males are many compared to females (59.4 to 40.6) %.

(b) Age

The respondents were grouped into five age groups ranging between 15 and 64 years. Results show that majority of respondents were within the age group of 35-44 years with 32.7% of affected households and 42.8% of non- affected households. In the age group of 15-24 years both affected and non-affected households were of the same proportion (5.1%). In the age groups of 45-54 and 55-64 years there were more affected households (28.4% compared to16.9% of non-affected and 9.1% compared to 3.8% of non-affected households).

(c) Household size

The results in Table 2 show that 55.8% of the affected households and 59.7% of non-affected households had 4-6 individuals. Also 20.7% of affected households and 27.2% of non-affected households had 7-9 persons. Affected households had greater proportions in 1-3 and 10-above categories with respectively 19.7% and 3.8% of the affected compared to 11.8% and 1.3% of the non-affected.

(d) Marital status

Results in Table 2 show that 75.3% in non-affected households were married while in the affected households it was only 40.3%. Also 41.6% of the affected households were widowed compared to 14.4% of the non-affected households. Orphan headed households were 1.3% of affected households and none among the non-affected.

(e) Family structure

Households with both parents were 74% among the non-affected and 32.5% of the affected. Affected households had more female headed households (49.4%) than the non-affected households (19.6%). Child headed households were 3.8% among affected

households and only 1.3% of non-affected. The grand parents caring grand children were 6.5% of affected households and only 1.3% of non-affected households.

(f) Education levels

Respondents were comprised of different levels of education (Table 2). Those with primary education were 81.8% of the non-affected and 73.3 % of the affected households. About 5% of the non-affected households had only informal education compared to 15.6% of the affected. Only few had secondary school education (7.8% of non-affected and 3.9% of affected households).

Table 2: Percentage distribution of respondents by their Socio-demographic characteristics

Categories	%Affected HH (n=77)	%Non-affected HH (n=77)	%Total (N=154)
(i)Sex			
Male	41.6	59.4	50.6
Female	58.4	40.6	49.4
(ii)Age (in years)			
15 – 24	5.1	5.1	5.1
25 – 34	24.7	31.4	27.9
35 – 44	32.7	42.8	37.8
45 – 54	28.4	16.9	22.7
55 - 64	9.1	3.8	6.5
(iii)Household size			
1 – 3	19.7	11.8	15.6
4 – 6	55.8	59.7	57.8
7 – 9	20.7	27.2	24
10 - above	3.8	1.3	2.6
(iv)Marital status			
Single	7.8	5.2	6.4
Married	40.3	75.3	57.8
Widowed	41.6	14.4	27.9
Divorced	5.2	1.3	3.4
Separated	3.8	3.8	3.9
Orphan headed HH	1.3	0	0.6
(v)Family structure			
Male parent	7.8	3.8	5.8
Female parent	49.4	19.6	34.6
Child-headed HH	3.8	1.3	2.6
Grand parents	6.5	1.3	3.8
Both parents	32.5	74	53.2
(vi)Education			
Informal	15.6	5.2	10.5
Adult education only	5.2	5.2	5.1
Primary school	73.3	81.8	78.6
Secondary school	3.9	7.8	5.8

4.1.3 Socio-economic characteristics

Respondents were categorized based on their socio-economic characteristics in which included having a dependant in the household, main occupation and source of income and food.

(a) Having a dependant in the household

Individuals aged below 15 years old and those above 64 years were considered to be dependants. Results on Table 3 show that 72.7% of affected households had at least a dependant compared to 51.9% of non-affected households.

(b) Occupation of respondents

Table 3 shows that most of the respondents were engaged in agricultural production (96.1% of non-affected and 89.6% of affected households).This is followed by small businesses (3.9% of non-affected and 2.6 % of affected households). Also the results show that from the affected households 3.9% were doing nothing compared, to none among the non-affected. Temporal wage earners were also found among the affected (2.6%) and none among the non-affected households.

(c) Income source

For the source of income (Table 3), 45.5% of non-affected households were depending on selling crops compared to 18.2% of affected households. Most of the affected households were engaged in piecework with 38.9% compared to 20.5% of non-affected households. This is followed by beer brewing (22.1% for both affected and non-affected households). Sale of livestock was almost equal between the affected and non-affected households (10.4 to 9.1) %. Also 1.3% of affected households indicated to have no income source compared to none among non-affected.

(d) Source of food

Non-affected households depended more on producing their own food (59.7%) compared to 38.9 % of affected households (Table 3). Both producing and buying was 38.9% among the affected and 37.6% of non-affected households. Also results show that 11.7% of affected households depended on buying food compared to none among non-affected. Large proportion of affected households depended on relatives as source of food (10.5%) as compared to only 2.6% of non-affected households.

Table 3: Percentage distribution of respondents by their socio-economic characteristics

Categories	% Affected HH (n=77)	%Non-affected H(n=77)	%Total (N=154)
(i)Extent of dependants			
Dependant (1 - 14 and 65+ years old)	72.7	51.9	62.3
Non-dependant (15 – 64 years old)	27.3	48.1	37.7
(ii)Occupation			
Agriculture	89.6	96.1	92.8
Student	1.3	0	0.6
Small businesses	2.6	3.9	3.4
Temporal wage	2.6	0	1.3
Nothing	3.9	0	1.9
(iii)Source of income			
Sale of crops	18.2	45.5	31.8
Sale of livestock	10.4	9.1	9.7
Piecework	38.9	20.5	29.9
Aid	9.1	2.8	5.9
Beer brewing	22.1	22.1	22.1
Nothing	1.3	0	0.6
(iv)Source of food			
Producing own food	38.9	59.7	49.3
Buying	11.7	0	5.8
From relatives	10.5	2.7	6.6
Producing/buying	38.9	37.6	38.3

4.1.4 Agricultural production

The source of agricultural knowledge among respondents and the capacity to have and use agricultural inputs were considered.

4.1.4.1 Source of agricultural knowledge

Parents were reported to be the main source of agricultural knowledge (Table 4) by 66.2% of affected and 46.7% of non-affected households. This is followed by extension workers (44.2% of non-affected and 20.8% of affected households). Affected households also depended on neighbours (11.7%) compared to only 3.9% of non-affected households. Non-affected households also used TV, radio and magazine (5.2%) compared to only 1.3% of the affected households.

4.1.4.2 Use of fertilizers

Results (Table 4) indicate that 64.5% of affected households were not using any fertilizer or improved seeds compared to 37.3% of non-affected households. Non-affected households used more manure from livestock (28.8% compared to 19.7% of affected households). This is followed by households using chemical fertilizers (23.2% of non-affected and 12.9% of affected households). Chemical fertilizers and improved seeds were used more by non-affected households (10.7% compared to 2.9%) of affected.

Table 4: Percentage distribution of respondents Source of agricultural knowledge and use of fertilizers among respondents

Categories	%Affected HH(n=77)	%Non-affected HH(n=77)	%Total (N=154)
(i)Source of knowledge			
Parents	66.2	46.7	56.5
Extension workers	20.8	44.2	32.5
TV, radio and magazine	1.3	5.2	3.2
Neighbours	11.7	3.9	7.8
ii)Use of fertilizers			
Chemical	12.9	23.2	18.3
Chemical fertilizer and improved seeds	2.9	10.7	7.8
Livestock manure	19.7	28.8	24.9
Not using any	64.5	37.3	49.

4.1.4.3 Changes in agricultural production practices

In establishing changes in agricultural production practices, current practices were compared with three years before the study (2008-09). Issues considered include types of crops, livestock produced, size of cultivated land and farming practices.

(a) Types of food crops produced

Types of crops produced by respondents are maize, beans and potatoes with maize being the main crop. Results (Table 5) show that affected households decreased maize crop production and increased production of beans. The change was from 89.6% to 75.3% for maize and from 3.9% to 7.8% in beans. On the other hand, non-affected households decreased production of maize from 89.9% to 83.1%. Perhaps the more striking feature was the increase of those who did not produce from 3.9% to 14.3% among the affected households. The increase was only from1.3% to 2.6% among the non-affected households.

(b) Types of livestock kept

Results in Table 5 show that those who were not keeping any livestock increased from 11.7% to 23.4% (affected households) and from 1.3% to 7.8% for the non-affected households.

Table 5: Proportions of respondents who reported changes in food crops and livestock production (year 2008 and 3 years before)

	Year 2008			Three years before survey		
Categories	**%Affected HH (n=77)**	**%Non-affected HH (n=77)**	**%Total (N=154)**	**%Affected HH (n=77)**	**%Non-affected HH (n=77)**	**%Total (N=154)**
(i)Food crops						
Maize	89.6	83.1	79.2	3 89.6	89.6	89.6
Beans	3.9	3.9	5.4	3.9	3.9	3.9
Potatoes	5.2	10.4	6.3	2.6	5.2	3.9
Not produce	1.	2.6	9.1	3.9	1.3	2.6
(ii)Types of livestock						
Cattle	3.9	2.6	3.3	9.1	6.5	7.8
Goats	6.6	6.5	6.5	5.1	9.1	7.1
Poultry	41.6	38.9	40.2	44.2	40.2	42.2
Pigs	24.5	44.2	34.4	29.9	42.9	36.4
Not keep	23.4	7.8	15.6	11.7	1.3	6.5

(c) Area cultivated

The results in Table 6 show that the affected households cultivating one or two hectors have increased from 36.4% in past three years to 48.1% in the year 2008. For the non-affected households there was only a slight increase from 9.1% in the past three years to 11.7% in the year 2008. On the other extreme, the affected households who were cultivating four or more hectors declined from 19.5% to 15.6% while it increased for the

non-affected households from 36.4% to 39%. The differences were significant at P≤ 0.001.

Table 6: Proportions of respondents who reported changes in area cultivated (year 2008 and 3 years before)

	The year 2008**			Three years before survey*		
Land size cultivated(ha)	%Affected HH(n=77	%Non-affected HH (n=77)	%Total (N=154)	% Affected HH (n=77)	% Non-affected HH (n=77)	% Total (N=154)
One or two	48.1	11.7	29.9	36.4	9.1	22.7
Three or four	36.4	49.4	42.9	44.2	54.5	49.4
Four or more	15.6	39	27.3	19.5	36.4	27.9

* Chi-Square value =17.372 degree of freedom (df) =2 Significance level= P≤ 0.001

**Chi-Square value=26.273 degree of freedom (df) =2 Significance level= P≤ 0.001

(d) Types of cash crops produced

It is interesting to note that the affected households that were not producing any cash crops increased from 42.9% to 70.1%. The increase was only from 16.9% to 35.1% for the non-affected households (Table 7).The differences were significant at P≤ 0.001.

Table 7: Proportions of respondents who reported changes in cash crops produced (year 2008 and 3 years before)

	The year 2008**			Three years before survey*		
Types of cash crops	% Affected HH(n=77)	% Non-affected HH (n=77)	% Total (N=154)	%Affected HH (n=77)	% Non-affected HH (n=77)	% Total (N=154)
Onions	9.1	5.1	7.1	7.8	7.8	7.8
Pigeon	11.7	37.7	24.7	24.7	42.9	33.8
Tomatoes	9.1	22.1	15.6	9.1	20.6	14.9
Not produce	70.1	35.1	52.6	42.9	16.9	29.9
Sunflower	0	0	0	15.6	11.7	13.6

*Chi-Square value= 16.415 degree of freedom (df) = 4 Significance level= P≤ 0.05

**Chi-Square value=24.0511 degree of freedom (df) =3 Significance level= P≤ 0.001

(c) Farming practices

Affected households participating in mixed farming decreased from 48.6% in the past three years to 30.6% in the year 2008 while the non-affected did not change in the past three years. Also results show that affected households practicing single crop farming increased from 18.1% to 36.1% in the year 2008 while the non-affected households practicing single crop decreased from 5.3% to 3.9% (Table 8).

Table 8: Proportions of respondents who reported changes in farming practices (year 2008 and 3 years before)

	The year 2008**			Three years before survey*		
Farming practices	**% Affected HH (n=72)**	**% Non-affected HH (n=76)**	**% Total (N=148)**	**% Affected HH (n=72)**	**% Non-affected HH (n=76)**	**% Total (N=148)**
Mixed farming	30.6	67.1	49.3	48.6	67.1	58.1
Mixed cropping	33.3	28.9	31.1	33.3	27.6	30.3
Single crop	36.1	3.9	19.6	18.1	5.3	11.5

*Chi-Square value=7.839 degree of freedom (df) =2 Significance level= $P \leq 0.05$

** Chi-Square value =29.763 degree of freedom (df) =2 Significance level =$P \leq 0.001$

4.1.4.4 Quality of agricultural production

The agricultural quality was categorized into three types namely excellent, good and poor. Excellent was the situation when the farmer experienced no cases of crop or livestock been attacked by diseases, lacking nutrients or dying; good category involved less than three cases, while poor was for more than three cases.

(a) Quality of farm plot

In affected households the level of excellent production decreased from 5.3% in the past three years to 1.3% in the year 2008. Non-affected households increased from 5.2% to 6.5% in the year 2008 (Table 9). For the poor category, affected households increased from 55.8% in the past three years to 74% in the year 2008 while non-affected households decreased from 57.1% to 41 percent.

(b) Quality of livestock

Results in Table 9 show that affected households decreased in the good category from 42.9% to 33.8%. Poor production of livestock increased from 54.5% to 63.6% among the affected households while the non-affected households decreased from 40.3% to 39.4% in the year 2008.

Table 9: Proportions of respondents who reported changes in the quality of agricultural production (year 2008 and 3 years before)

	Year 2008			Three years before survey		
Category of quality	% Affected HH (n=77)	% Non-affected HH (n=77)	%Total (N=154)	%Affected HH (n=77)	%Non-affected HH (n=77)	% Total (N=154)
(i)Quality of farm plot						
Excellent	1.3	6.5	3.9	5.3	5.2	5.2
Good	24.7	32.5	28.6	38.9	37.7	38.3
Poor	74	61	67.5	55.8	57.1	56.5
(ii)Quality of livestock						
Excellent	2.6	6.4	4.6	2.6	9.1	5.8
Good	33.8	54.2	38.9	42.9	50.6	46.8
Poor	63.6	39.4	56. 5	54. 5	40.3	63.6

4.1.4.5 Reported reasons for agricultural changes

The three aspects of agricultural changes namely area cultivated, reduction in livestock production and decreased quality of production were considered. Table 10 summarizes the results.

(a) Reduction in cultivated land area

Table 10 shows the reported reasons for changes in cultivated land area. About 16% of affected households sold the land for cash compared to 7.8% of non-affected. Also reduced labour was another reason with 35.1% from affected households and 6.5% of non-affected. Other reasons are also given.

(b) Reduction in livestock

Results show that most of respondents do not have time for livestock production (Table 10). From affected households 10.4% reported lacking time compared to only 3.9% from non-affected. Also it was reported that 27.4% among affected households were lacking labour compared to 9.1% from non-affected.

(c) Reduction in production quality

Reasons for reduction in quality of production included lack of resources by 31.2% of affected households and 38.9% of non-affected. Also lack of labour was 23.4% among affected households compared to only 5.2% from non-affected (Table10).

Table 10: Reported causes of changes in agricultural production among respondents

Category	% Affected HH (n=77)	% Non affected HH(n=77)	%Total (N=154)
(i)Reduction in cultivated land area			
Lack of resources	28.6	48.1	38.5
Poor timing	6.5	2.6	4.5
Sold the land for cash	15.6	7.8	11.7
Reduced labour	35.1	6.5	20.7
Land taken by relatives	3.8	6.5	5.1
Land increased	10.4	28.5	19.5
(ii)Reduction in livestock			
Lack of resources	40.3	49.9	41.8
Do not have time	10.4	3.9	7.3
Don't have the feeds	11.7	27.8	26.6
Lack of labour	27.4	9.1	16.9
Do not keep at all	10.2	9.3	7.4
(iii)Reduction in quality			
Lack of resources	31.2	38.9	35.4
Don't have time	20.4	10.8	15.6
Don't have the feeds	22.4	41.2	31.5
Lack of labour	23.4	5.2	14.3
Not involved	2.6	3.9	3.2

4.1.5 Income earning and expenditure

The research intended to establish the average household income per week and its main expenditure with an intention specifically on expenditure in care and treatment for the sick member on health related problems.

(a) Average income per week

Results in Table 11 show that those earning income of less than Tshs. 900 per week were more among the affected (9.1%) and none among the non-affected households. High incomes were dominated by the non-affected households (36%) compared to only 18.2% from the affected group.

(b) Expenditure on treatment per week

From Table 11, respondents who use less than Tshs. 900 in medical treatment were more among non-affected (6.5% compared to only 1.3% from affected households).
High expenditures on treatment were dominated by the affected households (53.2%) compared to 32.4% from non-affected.

(c) High expenditure items

Results from Table 11 show that high expenditure items for the affected households were special diets or medical bills with 35.1% compared to only 10.4% of non- affected. On the other hand, the affected households invested less on education and agriculture with 19.5% compared to 50.7 percent from non-affected.

Table 11: Income earning and expenditure among respondents

Categories	% Affected HH (n=77)	Non-affected H(n=77)	Total (N=154)
(i)Average income per week (Tshs.)			
<900	9.1	0	4.8
1000-5500	57.1	44.2	51.9
6000-10500	15.6	20.1	18.8
11000- and above	18.2	36	24.5
(ii)Money used for medical treatment per week (Tshs.)			
<900	1.3	6.5	3.9
1000-5500	45.5	61.1	53.2
6000-and above	53.2	32.4	42.9
(iii)High expenditure items			
Buying food	23.4	11.7	17.6
Special diets/medical bills	35.1	10.4	22.7
Basic (salt and soap)	20.7	25.9	23.4
Education and agricultural	19.5	50.7	35
Building house	1.3	1.3	1.3

4.1.6 Caring for sick in the household

The study considered the time lost in the past two weeks (prior to the interview) without working in terms of hours spent on caring the sick, man-days lost for the sick individual, days lost for the care givers and responsible individuals for caring the sick member. Results are summarised in Table 12.

(a) Hours spent on caring the sick

Table 12 shows that low hours were dominated by the non-affected households (41.6% compared to 10.4% of affected). On the other hand, high hours were dominated by affected households with 32.5% compared to only 7.8% of non-affected.

(b) Man-days lost because of sickness in two weeks

Results (Table 12) show that low man-days were dominated by the non-affected households (48.1%) compared to affected (15.6%). The high numbers were dominated by the affected households (42.9% compared to 22% of non-affected).

(c) Days lost without work by care givers

Results (Table 12) show that low numbers were dominated by non-affected (53.2% compared to only 16.9% of affected households). High numbers were dominated by the affected households (54.5% compared to 31.2% of non-affected).

(d) Responsible individual for caring the sick

Results in Table 12 show that the use of vulnerable individuals such as school children was mostly common in the affected households (15.6% compared to only 1.3% of non-affected). Also grand parents were commonly used in the affected households (37.7% compared to 22.1% of non-affected households)

Table 12: Reported pattern of time for caring the sick in households

Categories	% Affected HH (n=77)	% Non-affected HH(n=77)	%Total (N=154)
(i)Hours per day spent in caring the sick			
<1 hour	10.4	41.6	25.9
1-3 hours	20.8	22.2	21.6
4-6 hours	32.5	7.8	20.1
7-and above hours	36.3	28.4	32.4
(ii)Man-days lost by the sick individual in two weeks			
<1 Man-day	15.6	48.1	31.8
1-3 Man-days	35.1	20.8	27.9
4-6 Man-days	6.5	9.1	7.8
7-and above Man-days	42.9	22	32.5
(iii)For care givers days lost without work in two weeks			
<1 day	16.9	53.2	35
1-3 days	28.6	15.6	22.1
4-6 days	7.8	2.6	5.1
7-and above days	54.5	31.2	37.6
(iv)Responsible individual for caring the sick			
Grand parents	37.6	22.1	29.9
School age children	15.6	1.3	8.5
Spouse	20.8	49.4	35
Relatives	20.8	24.6	22.7
Him/her self	5.2	2.6	3.9

4.1.7 Social problems facing the respondents

Several social problems were investigated including frequency of falling sick by members of household, orphans in the household, children who dropout of school (and their specific reason), and household assets sold and reason to sell those assets.

(a) Frequency of falling sick in the household per week

Results in Table 13 show that half of the non-affected households (50.6%) did not fall sick compared to only 10.4% from affected households. Also 55.8% of affected households were falling sick once or twice per week compared to 29.8% of non-affected households. Those falling sick more than four times were 23.4% from affected households and only 10.4% of non-affected.

(b) Number of orphans cared in the household

Households caring two orphans were 18.2% of affected compared to 6.5% of non-affected households (Table 13). Households caring three or more were 29.8% of affected households and only 7.8% from non-affected.

(c) School-age children not attending school

Results in the Table 13 show that 20.8% of affected households had more than one school-age child not attending school compared to only 8.8% among the non-affected households.

(d) Reasons for not attending school

Results in Table 13 show that 14.3% from affected households compared to 6.5% of non-affected did not have school requirements. Also 1.3% from both affected and non-affected households engage in cultivation and therefore had to dropout of school.

(e) Reasons for selling of household land

Results in Table 13 show that 19.5% of affected households sold land because of cash need for treatment while only 2.7% of non-affected reported the same. Shortage of food as a reason for selling land was reported by 7.8% of affected and 3.8% of non-affected households.

(f) Selling of household assets in order to take care of family problems

Affected households who sold their hoes or axes were 5.2% compared to only 2.6% of non- affected households. Results in Table 13 also show that 2.6% from affected households sold kitchen wares compared to none from the non-affected. Those who sold bed or mattress were none from non-affected households compared to 3.9% from the affected.

Table 13: Reported social problems facing the respondents

Social problems	%Affected HH(n=77)	%Non-affected HH(n=77)	%Total (N=154)
(i) Frequency of falling sick per week			
None	10.4	50.6	30.6
Once or twice	55.8	29.8	42.9
Three times	10.4	9.2	9.7
More than four times	23.4	10.4	16.8
(ii) Number of orphans cared in the HH			
None	32.5	71.4	51.9
One only	19.5	14.3	16.8
Two	18.2	6.5	12.3
Three or more	29.8	7.8	19
(iii) Children of school-age who do not attend school			
None	79.2	91.2	85.8
More than one	20.8	8.8	14.2
(iv) Reasons for not attending school			
Doing petty trade	2.6	0	1.3
Do not have school requirements	14.3	6.5	10.4
Migrated to urban	1.3	0	0.6
Cultivation	1.3	1.3	1.3
Attending school	77.9	92.2	75
(v) Purpose of selling land			
Buying food	7.8	3.8	5.8
School requirements	1.3	7.8	4.5
Treatment	19.5	2.7	7.3
Not sale at all	71.4	85.7	82.4
(vi)Assets sold in- order to take care of family problems			
Hoe or Axes	5.2	2.6	3.9
Kitchen wares	2.6	0	1.2
Furniture	11.7	6.4	9.2
Bed or Mattress	3.9	0	1.9
Not sold	76.6	91	83.8

4.1.8 Social networking in the community

Three issues were considered namely access to credit, participation in community activities and assistance to others.

4.1.8.1 Access to credit

Respondents indicated several reasons for not having access to credit (Table 14). Affected households who have no specific project were 14.3% compared to 2.6% of non-affected. Also 32.5% of affected households have no information about credits compared to 22.1% of non-affected households.

4.1.8.2 Participation in community activities

Table 14 shows reasons for not participating in community activities among respondents. Sickness was mentioned by 45.5% affected households compared to 7.8% of non-affected. Also 11.7% of affected households lacked time compared to none of non-affected. No money for group's contribution was reported by 28.6% of affected households compared to only 9.1% of non-affected.

4.1.8.3 Assistance to others

Results from Table 14 show that 25.9% of non-affected households give food as assistance to others compared to 11.7% from affected. Also 32.5% of non-affected households assist others by giving money compared to only 6.5% from affected households. Two thirds (66.2%) of the affected households reported to have nothing to give compared to only 31.2% of the non-affected households.

Table 14: Reported extent of social networking in the community

Networking aspects	% Affected HH (n=77)	% Non-affected HH (n=77)	%Total (N=154)
(i)Reasons for not having access to credit			
Have not joined groups	11.7	22.1	16.6
Have no tittle deed	25.9	23.4	24.7
Have no specific project	14.3	2.6	8.4
Have no information	32.5	22.1	24.7
Have access	15.6	29.8	25.6
(ii)Reasons for not participating in community activities			
Sickness	45.5	7.8	26.6
Lacking time because of caring	11.7	0	5.8
Has no money to contribute	28.6	9.1	18.8
Participate	14.3	83.1	48.7
(iii) Assistance given to others			
Food	11.7	25.9	18.8
Clothes	7.8	6.5	7.3
Money	6.5	32.5	19.4
Labour	7.8	3.9	5.8
Have nothing to give	66.2	31.2	48.7

4.1.9 Response to food insecurity

Results in Table 15 indicate that most of respondents were unable to eat the preferred food with 94.8% from affected households compared to 64.9% of non-affected. Respondents also reported to eat just limited variety of foods by 94.8% of affected households compared to 55.8% of non-affected. Those eating food they really do not want to eat were 94.8% of affected compared to 57.1% of non-affected households. Also many households were reported to eat fewer meals in a day (84.4% of affected

households and 33.8% of non-affected). Those respondents going to sleep hungry were 27.3% of affected households and 5.2% of the non-affected. None among the non-affected households reported to go without eating the whole day and night compared to 23.4% of the affected households.

Table 15: Reported responses to food insecurity among respondents

Issue considered	%Affected HH (n=77)	%Non-affected HH (n=77)	%Total (N=154)
Worry about not having enough food	77.9	31.2	54.5
Not worried	22.1	68.8	45.5
Unable to eat preferred food	94.8	64.9	79.8
Able to eat	5.2	35.1	20.2
Eat just limited variety of foods	94.8	55.8	75.3
Eat many varieties	5.2	44.2	24.7
Eat food they really do not want to eat	94.8	57.1	75.9
Eat only want food	5.2	42.9	24.1
Eat a smaller meal	77.9	40.3	59.1
Eat enough meal	22.1	59.7	40.9
Eat fewer meals in a day	84.4	33.8	59.1
Eat required meals	15.6	66.2	40.9
No food of any kind in the household	45.5	14.3	29.9
Have food in the HH	54.5	85.7	70.1
Go to sleep hungry	27.3	5.2	16.2
Eat and go to sleep	72.7	94.8	83.8
Go a whole day and night without eating	23.4	0	11.7
Eats day and night	76.6	100	88.3

4.1.10 Household coping strategies to food insecurity

Table 16 summarizes the coping strategies reported by respondents. Use of stored food as a coping strategy was reported by15.6% of non-affected households compared to 12.9% of affected households. Reduction of number of meals was reported by 12.9% of both affected and non-affected households. Selling of household's assets was reported by

3.9% of affected households and none of the non-affected. Child labour was reported by 33.8% of affected households compared to 22.1% from non-affected households. Both affected and non-affected households migrate for aid as coping strategy (1.3%).

Table 16: Reported household coping strategies to food shortage

Strategy	% Affected HH (n=77)	%Non-affected HH(n=77)	%Total (N=154)
Use stored food	12.9	15.6	14.4
Selling of livestock	19.5	32.5	26
Reduction in the number of meal	12.9	12.9	13
Selling of household assets	3.9	0	1.9
Substitute with cheaper commodity(porridge)	15.7	12.9	14.3
Sending children to live with relatives	0	1.3	0.6
Child labour (send children to work)	33.8	22.2	27.9
Female members go to seek food	0	1.3	0.6
Migrate for aid	1.3	1.3	1.3

4.2 Discussion

4.2.1 Overview

This section presents research findings on the effects of HIV/AIDS in household's food security in the study area. The first section discusses the known linkages between HIV/AIDS and food security in Kilolo District. The second section examines the socio-economic problems associated with HIV/AIDS in the households. The last section discusses the differences in household behaviour with regard to food security between the affected and non-affected households.

4.2.2 Linkages between HIV/AIDS and food security in Kilolo District

4.2.2.1 Socio-economic characteristics of households

HIV/AIDS pandemic in Kilolo District has affected the performance of agricultural activities in different ways. From the research findings, most of affected households in Kilolo District faced increases of dependants, change of investment outlook leading to change of source of income and food.

(a) The extent of dependants in affected households

The concept of dependants used in this study implies individuals per household aged below 15 years and those above 64 years (Table 1). Findings showed that greater proportion of the affected households have dependants (72.7%) compared to non-affected households (51.9%). The situation is so probably because AIDS affects mostly the sexually active individuals who are mostly in non-dependants age leaving behind the children and elderly (dependants). These findings concur with findings from Ludewa District Tanzania where elderly women resumed the roles of parenting grand children and young girls provided care for their younger siblings because of AIDS consequences (ESRF, 2003).

(b) Source of income and food

Respondents indicated that sale of crops, livestock and beer brewing were the main sources of income. However affected households reported to depend more on piecework labouring (38.9% compared to 20.5% from non-affected). The situation could be due to the nature of affected individuals who tend to have short term outlook on investment making them engage in piecework causal labouring. These results are also consistent with findings documented in literature. REPOA (2008) revealed that a widow in Makete District Tanzania sold two plots of land to meet her husband's medical treatment but the

money was not enough. Hence she had to work in other people's farms as a casual labour so as to get money for more treatment cost of the husband which was yet not enough!

Most of non-affected households depended on producing their own food and buying while the large proportion of affected households depended on relatives as a source of food (10.4% as compared to only 2.6% of non-affected households). It is likely that the affected households were spending more on medical expenses leading them to depend from relatives as source of food. TAHEA (2002) reported that most of affected households especially households with a widow and orphans in Makete District needed food aid from relatives and other supporting mechanisms.

4.2.2.2 Impact on agricultural production

(a) Source of agricultural knowledge

From the research findings, parents were reported to be the main source of agricultural knowledge among affected (66.2% and 46.7% among the non-affected households). This finding implies that death of one or both parents affects the transfer of agricultural knowledge to the next generation. The results concur with the findings from Muleba Kagera and Makete Iringa Tanzania that most of orphans engage in piecework because of lack of the traditional knowledge in agriculture, which increases food shortage among vulnerable children (FAO, 2008).

(b) Use of fertilizers

Research findings show that most of affected households in Kilolo District do not use fertilizers in their farming practices (62.3% compared to 36.4% of non-affected households). This perhaps is due to shortage of money to buy fertilizers among affected households. Affected households fail to buy the required agricultural inputs and hence

lower the quality and quantity of agricultural products leading to household's food insecurity. The results support the findings from Ulanga Morogoro Tanzania whereby because of treatment, diets, and transport costs more than 67% of affected households were spending less on farm inputs such as seeds and fertilizers (ESRF, 2004).

(c) Changes in agricultural production practices

The study compared agricultural practices among affected and non-affected households in three years before the study and the current practices. Issues considered were area of land cultivated and the pattern and range of crops and livestock production. Each one is discussed below.

(i) Cultivated area

Findings indicate that the proportion of affected households who were cultivating one or two hectors increased in the past three years from 36.4% to 48.1%. On the other hand, the proportion of non-affected households who were cultivating four or more hectors increased in the past three years from 36.4% to 39%. The changes in the amount of land cultivated between affected and non affected households could be due to selling of land among affected households because of cash need for treatment and buying food. Also, it is likely that less area was cultivated because of sickness and labour demand for caring the sick in the households of affected.

However for the non-affected households increase in area cultivated is probably because of their long term outlook in investment. Results of the chi-square test showed that there is a significant difference on area cultivated at $p \leq 0.05$ between the affected and non-affected households. The results concur with findings from Kilosa District in Morogoro

Tanzania where individuals suffering from HIV/AIDS failed to utilize all their land for crop cultivation (Itika, 2002).

(ii) Pattern and range of crops and livestock production

Kilolo community had different farming practices such as mixed farming, intercropping, livestock production and single crop production. Mixed farming demand more labour and time followed by intercropping. Less labour and time is needed for a single crop production. Results showed that most of affected households in Kilolo community shifted from mixed farming (crops and livestock) to single crop. Research findings indicate that affected households practicing mixed farming decreased from 48.6% to 30.6% with increased single crop from 18.1% to 36.1% in the past three years. On the other hand, non-affected households practicing mixed farming remained high by 67.1% and those producing single crops decreased from 5.3% to 3.9% in the past three years.

Also it was observed that affected households decreased the range of crops and livestock production whereby those not producing both food and cash crops increased from 42.9% to 70.1 percent. Also those who were not keeping any livestock increased from 11.7% to 23.4% in the past three years. This could be due to a combination of factors resulting from the HIV/AIDS impact such as short outlook in investment and shortage of production resources. Results of the chi-square test proved to have significant difference at $p \leq 0.05$ in the changes of farming practices between the affected and non-affected. These results concur with findings from literature. In Kagera Tanzania, for example, labour shortage due to death or chronically ill household members resulted into households changing cropping pattern such as shifting from cash crop production to subsistence crops or crops that require less capital and labour such as cassava, sweet potatoes, yams and pulses (Rugalema, 1999).

(iii) Quality of agricultural production

Findings show that the proportion of affected households having poor quality of farm plots and livestock products increased from 54.5% to 63.6% in the past three years compared to non-affected which decreased from 40.3% to 39.4%. This worsening agricultural situation might be the result of HIV/AIDS impact of reducing time and money which could be spent on the farm plots and animal rearing or buying agricultural inputs. Related findings have been reported in Bukoba District in Kagera region Tanzania by Twende (2003) whereby because of patient care and death most affected households lost man power, time and money. The situation reduced the ability to control crop pests and weeding together with animal diseases which led to poor quality of agricultural products as well as household's food insecurity.

(iv) Reported reasons for agricultural changes

Respondents from Kilolo District reported that reasons for deterioration of agricultural situation were the reduction of labour quantity and quality (35.1 percent from affected households compared to only 6.5 percent of non-affected) .They also reported to have no time to participate fully in agricultural production (20.4 percent from affected households and 10.8% of non-affected). These results may possibly be due to producers being chronically ill or devoted much of their time in caring the sick and attending funerals. Similar findings were reported in Ulanga and Kilombero Districts whereby AIDS affected households spent less than 60% time on agriculture production than non-affected households (ESRF, 2004).

4.2.2.3 Impact of HIV/AIDS on income earning and expenditure

Findings indicate that most of respondents in Kilolo District receive low income ranging from less than Tshs.900 to more than Tshs 11,000 per month. Affected households are

more among those receiving less than Tshs. 900 per month (9.1%) compared to none among non-affected households. The non-affected households reported to receive the highest income category compared to affected households (36% against18.2%, respectively). These results are perhaps due to reduction of days for working because of being sick or caring the sick among the affected households.

On the other hand, highest household's expenditures appear to be dominated by the affected households. More than half of the affected households (53.2%) compared to only about one third of the non-affected households (32.4%) spent Tshs.6, 000 or more on treatment in the past month. Also affected households invest less on education and agriculture by 19.5% compared to 50.7% of non-affected. These results are consistent with the study from Muleba- Kagera and Makete- Iringa both in Tanzania whereby many widow headed households following the illness and death of the spouse lost farming assets and opportunities for saving and receiving income (Kweka, 2008).

4.2.2.4 Caring for sick individuals in household

Findings in this study show that greater proportion of care givers in affected households (54.5%) than in non-affected households (31.2%) spent seven days or more in two weeks time in caring the sick. This is likely to be because members from affected households spent days on attending hospital, finding medicine and preparation of special diet. These results are consistent with findings from Ludewa District in Iringa Tanzania whereby members from affected households lost up to 25 days per month because of AIDS related problems (ESRF, 2003).

Also results show that different individuals were responsible for caring the sick members in the households. Grand parents and school children were reported to be mostly used in the affected households (37.7% compared to 22.1% from non-affected households; and

15.6% compared to only 1.3% respectively). Similar findings have been reported in Makete whereby grand-parents and school children carry the responsibilities of caring the sick members and orphans (UNICEF, 2005).

4.2.3 Socio-economic problems associated with HIV/AIDS and food insecurity in the district

Research findings in the current study have indicated several socio-economic problems faced by respondents in the area. They include frequent falling sick in the household, caring of orphans in the household, school-age children not attending school, selling of household land, selling of household assets, lack of access to credit. failure to participate in community activities, response to household food insecurity and to provide assistance to others. Each of these socio-economic problems are discussed below.

4.2.3.1 Frequency of falling sick in the household

The frequency of falling sick among members of the household seems to be higher for the affected households with 50.6% compared to 10.4% from non-affected. This might be a problem because of time lost by the sick individual and household's members taking care of the sick which otherwise, could be used in production. It has also been reported from Mwanza Tanzania that when a household member is chronically ill, the other members won't work in the field to their full capacity because some of the time will be set aside to take care of the sick member (Van Liere, 2003).

4.2.3.2 Number of orphans cared in the household

Findings indicate that 28.9% of affected households compared to only 7.8% of non-affected households were having more than 2 orphans. The problem increases burden in those households because most of these orphans are dependants (i.e. can not produce).

This situation will reduce investment because most of resources are located in caring those orphans. Similar findings have been shown in Bukoba rural District in Kagera region whereby 45 percent among the affected households had three to four orphans (Josephat, 2002).

4.2.3.3 School-age children not attending school

Findings indicate that 20.8% of affected households reported to have more than one school-age children who were not attending school compared to only 8.8% from non-affected households. A study conducted in Kenya found similar findings whereby children orphaned by AIDS were less likely to be in school than non-orphaned children (Desmond *et al.*, 2000). They were also more absent from school than non-orphans and girls were nearly 20 percent more likely than boys to drop out of school following the death of a parent. However, findings in this study did not attempt to separate the results by sex.

4.2.3.4 Reasons for not attending school

Children who were not attending school reported to have no school requirements (14.3% from affected and 6.5% of non-affected households). This is perhaps due to affected households spending more money on health related problems than non-affected. The situations made children from affected households to participate more in petty trading than the non-affected. These results are consistent with those documented by Mwaipopo (2003) in Makete District whereby children engage in tough employment as child labour such as making gravel (*kokoto*) and carrying timbers for traders in order to feed their siblings.

4.2.3.5 Reasons for selling of household land

Affected households who sold land because of treatment were 19.5% compared to 2.7% of non-affected. This was followed by those who sold land because of shortage of food (7.8% of affected and 3.8% of non-affected households). The selling of land is an indication that investment in agriculture was diminishing among the affected households. This is likely to have a long term consequences to food production and therefore households food security situation. REPOA (2008) revealed that because of AIDS impact a widow would sell 3 cows, 3 tree farms. 13 goats and 3 saw-mills because of her husband treatments, transport and burial charges in Makete-Iringa.

4.2.3.6 Selling of household assets in order to take care of family problems

Hoes and axes were sold by 5.2% of affected households and 2.6% from non-affected. Affected households also sold kitchen wares by 2.6% and bed or mattress by 3.9%. This is probably due to the need of cash among affected households for health related family problems. Similar findings were reported in Makete District whereby affected households resorted to selling of assets such as radio cassette and video player because of treatment expenses and food insecurity (FAO, 2008).

4.2.3.7 Households access to credit

The opportunities for credit available in Kilolo District include Youth Development Fund (YDF), Woman Development Fund (WDF), Mazombe SACCOS and NMB. Findings indicated several reasons for the respondents not having access to credit. Most of affected households have no access to credit because of lacking information concerning credit (32.5%) compared to 22.1% of non-affected. Also affected households did not have much access to credit because of having no specific project to conduct (14.3%) compared to 2.6% percent of non-affected.

These results relate with the research findings from Uganda whereby affected households in rural Uganda failed to get sufficient information on issues related to credit, income generating activities and nutrition (Barnett, 2004).

4.2.3.8 Participation in community activities

Findings indicate that 45.5% of the affected households and 7.8% from non-affected could not participate in community activities because of sickness. This was followed by those having no money for contribution (28.6% from affected households and only 9.1% percent of non-affected).

This situation contributes to decline of the traditional social cohesion and destroying individual networking. Similar findings were found in Mpika, Mungwi, Isoka and Chilubi Districts of Northern Province in Zambia whereby affected households were excluded from group membership and failed to participate in community activities because of time and financial constraints (DCI, 2002).

4.2.3.9 Assistance to others

Research findings indicate that 25.9% from non-affected households provide food as assistance compared to only 11.7% from the affected. Also 32.5% of non-affected households assisted others by giving money assistance compared to only 6.5% of the affected.

This result relates with findings from Muleba- Kagera whereby affected households especially widow and orphans had no means to provide assistance to others except their own labour (Kessy, 2008). The situation caused them to engage in piecework causal labour for domestic activities and farm cultivation to earn money or food.

4.2.3.10 Response to household food insecurity

Research findings show that 94.8% of affected households are unable to eat preferred food compared to 64.9% from non-affected. In the study area affected households reported to eat just limited variety of food by 94.8% compared to 55.8% of non-affected households.

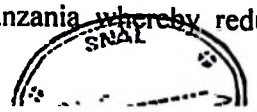
Also findings show that 84.4% of affected households reported to eat fewer meals in a day compared to 33.8% of non-affected. The research findings also discovered that in Kilolo District some individuals were going to sleep hungry (27.3% among affected households compared to only 5.2% of non-affected). This is perhaps because of disparity in their resources to produce and buy food among them. These results concur with the findings from Makete District in Tanzania whereby the major problems facing orphans and vulnerable children are under-fed, less meals and therefore poor nutrition (Mwaipopo, 2003).

4.2.4 The Differences in behaviour with regard to food insecurity between the affected and non-affected households

4.2.4.1 Household coping mechanisms to food shortage

People in Kilolo District have adopted several mechanisms to cope with food insecurity. Among the coping mechanisms include child labour (send children to work) reported by 33.8% of affected households compared to 22.1% from non-affected.

Also findings indicate that 12.9% from both affected and non-affected reported to reduce the number of meals to cope with the household's food insecurity. These results concur with ESRF (2003) in Ludewa Tanzania whereby reduction of the number of meals,



selling of households assets, selling of agricultural and livestock assets, sending of children to work and taking children out of school were reported.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This study in Kilolo District has ascertained the known linkages of HIV/AIDS and food security in households. The study has compared the HIV affected households with those non-affected. The main linkages, socio-economic problems and change of household's bahaviour are summarized as:

1. Affected households have a bigger burden of dependants (72.7%) than the non-affected (51.9%).
2. Parents are the main source of agricultural knowledge among the affected households (66.2%) compared to (46.7%) of non-affected. This implies that death of one or both parents affects the transfer of agricultural knowledge to a younger generation.
3. Affected households not use improved agricultural inputs such as fertilizer and improved seeds (64.5%) compared to (37.3%) of non-affected.
4. Affected households did not produce any crop (14.3%) compared to only (2.6%) from non-affected.
5. High number of affected households cultivating less than two hectors (48.1%) compared to (11.7%).from non-affected.
6. Large percentage of affected households shifted from the mixed farming to single crop production (36.1%) compared to (5.3%) of non-affected households.
7. The quality of crops produced is less among affected households (1.3%) compared to (6.5%) from the non-affected.
8. More affected households earn average income per week less than Tshs. 900 (9.1%) compared to none among non-affected. On the other hand, more non-

affected households earning more than Tshs. 11 000 per week (36%) compared to (18.2%) from affected households.

9. Higher expenditures on treatment among affected households (53.2%) compared to (32.4%) of non-affected.
10. Investment on agriculture and education are less among affected households (19.5%) compared to (50.7%) from non-affected.
11. Time lost because of caring the sick member without working is more among affected households (32.5%) compared to (7.8%) from non-affected.
12. Because of holding responsibility of caring the sick member, children are pulled out of school (15.6%) from affected households compared to (1.3%) from non-affected.
13. Other socio-economic problems that affect the HIV affected households more than the non-affected include the following; lacking information on income generating activities and access to credit, loss of social networking, increased number of orphans, child labour, selling of households assets, unable to eat the preferred food, going to sleep hungry, reduction on the number of meals, failure to participate in community activities, and unable to provide assistance to others.

5.2 Recommendations

The following recommendations are made following the findings from the study:

1. Because of increased number of dependants, reduction of area cultivated, change from mixed farming to single crop and increased number of orphans among households in Kilolo District, emphasizes should be put to facilitate the introduction of labour saving technologies. Simple technologies such as small pumps for vegetable irrigation, use of Ox- plough and small tractors for both traditional and modern farming.

2. Children should be given appropriate agricultural knowledge through special training. The training should go hand in hand with giving incentives and subsides to those children together with introduction of programme of keeping small animals which is cheap and nutritious.
3. HIV/AIDS mitigation programme should incorporate entrepreneurship knowledge and income generating skills. This will help to link affected households with financial institutions so as to have access to credits.
4. Facilitation on formation of socio-economic small groups and small scale processing industries together with labour sharing arrangements techniques. Groups should include informal social security insurance scheme among orphans, widows and PLWHA. This will reduce the problems of child labour and children dropping out of school.

The study recommends the following for future research;

Research findings show the problem of not attending school also existing among children from households non-affected by HIV/AIDS, hence further research is important.

The study found the association between malnutrition and HIV/AIDS, therefore a research on how nutrition contributes to transmission of HIV is important.

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APPENDICES

Appendix 1: Households questionnaire

Introduction and consent

My name is .....I am from Sokoine University of Agriculture. We are conducting a survey on effects of HIV/AIDS on food security. The main objective of the study is to document the contributions of HIV/AIDS in food security in Kilolo District community.

I want you to share with me the experience you have in all matters concerning HIV/AIDS and food security. You have the right to ask questions or stop the interviewer at any time when you need more clarification .Although some of issues may be difficulty for you to discuss openly, I assure you that this will be a secret between us. I believe what you will share with us; therefore, there is no right or wrong answer. Your honest answer will help me better understand the linkages between HIV/AIDS and food security. This will help the policy makers to design better strategies for eliminating food insecure and improve food security.

Your participation is completely voluntary but your experience could be very helpful to the community and country at large.

Do you have any questions? Yes/No

A. Questionnaire identification

Date of interview .....

Interview No .....

Village .....Ward .....Division .....

Household category: .....

1=Affected Household

2= Non-affected Houschold

B.Background information

1. Sex of the respondent.....

   1=Male

   2=Female

2. What is age of the respondent .....(yrs)

3. What is the total number of people living in this houschold?.....

NAME	AGE	SEX

4. What is your marital status? .....

   1= Single

   2= Married

   3= Widowed

   4= Divorced

   5= Separated

   6= Other (specify).....

5. What is your family structure ?.....

   1=Single male parents

   2=Single female parent

   3=Orphanage parent

   4=Grand parents

   5=Other(specify).....

6. What is your highest level of education?.....

   1= Informal education only

   2=Adult education

3=Primary school education

4=Secondary school education

5=Post secondary school education

7. What is your main occupation?.....

1=Agriculture/livestock keeping

2=Student

3=Business

4=Temporal wage employee

5=Formal employed

6=Others (specify) .....

C. Known linkages between HIV/AIDS and household food security

8. What is the main source of your daily food .....

1=Producing

2=Buying

3= from relatives

4= Own produce and buying

5= Others (Specify).....

9. How many hectors of cultivable land did you own three years ago..... (hectares)

10. How many hectares of cultivable land do you own now..... (Hectares)

11. If the area for cultivation has been changed give reasons?

1= Lack of resources to purchase agricultural inputs

2= Poor timing for essential farming operation

3= You sold because you want to obtain cash

4= Few labour force to cultivate

5= Others (specify).....

12. During the last three years what types of farming did you practice?.....

1=Mixed farming (livestock and crops)

2=Intercropping (mixed cropping).

3=Livestock production

4=Single crop production

13. What type of farming do you practice now?.....

14. During the last three years what types of food crops did you cultivate?.....

1=Maize, amount produced.....amount sold.....

2=Beans, amount produced.....amount sold.....

3=Potatoes, amount produced.....amount sold.....

4= Others (specify).....

15. What types of food crops do you cultivate now?.....

1= Maize, amount produced.....amount sold.....

2=Beans, amount produced.....amount sold.....

3=Potatoes, amount produced.....amount sold.....

4= Others (specify).....

16. During the last three years which types of cash crops were you cultivating?

.....

1=Onions amount produced.....

2= Pigeon beans amount produced.....

3= Tomatoes amount produced .....

4=Others (specify).....

17. Which types of cash crops do you cultivate now?.....amount.....

18. If changes have occurred give major reasons for that?.....

1=Lack of resources to purchase inputs

2=Don't have time to take care of the crops

3=Low soil fertility

4=Few labour force

5=Others (specify).....

19. Why did you sell some of your food crop? .....

1=Lack of resources to purchase storage facilities

2=Don't have time to process the food

3=Want to obtain cash

4=Surplus

5=Others(specify).....

20. During the last three years what types of livestock did you keep?.....

1=Cattle number.....

2=Goats &sheep number.....

3=Poultry number.....

4=Pigs number.....

5= Others (specify).....

21. What types of livestock do you keep now?.....

1=Cattle number.....

2=Goats &sheep number.....

3=Poultry number.....

4=Pigs number.....

5=Others (specify).....

22. Give main reasons for the change in number of livestock?.....

1=Lack of resources to purchase livestock

2=Don't have time to take care of it

3=Don't have feeds to feed it

4= Lack of labour power

5=Others (specify).....

23. Please rate the quality of the shamba in producing three years ago.....

1=Excellent

2=Good

3=Poor

24. Please rate the quality of the shamba in producing now.....

25. Please rate the quality of livestock production three years ago.....

26. Please rate the quality of livestock production now.....

27. Can you state why kinds of quality rated above happen?.....Refer question no.22 above.

28. Where do you get knowledge that you use in agricultural production?

.....

1=From parents

2=Extension workers

3=From TV, radio, magazines

4=From neighbourhood

5=Others (specify).....

29. Which farming practice do you use?.....

1=Chemical fertilizer

2=Improved seeds

3=Chemical fertilizer and improved seeds

4=Livestock manure

5=Not use

6=Others (specify).....

30. What are the main source of your household income?.....

1=Sale of crops

2=Sale of livestock

3=Employment

4=Piecework

5=Beer brewing

6=Aid

7=Others (specify).....

31. What is your average monthly income from activities mentioned above?.....

1=BelowTsh.3000

2=Tsh.3001-5000

3=Tsh.5001-7000

4=Tsh.7001-9000

5=Tsh.9001-11000

6= Others (specify).....

32. In your household money expenditure how much is used for health care (treatment) per month?.....Refer question no.31 above.

33. What is your main expenditure in your household income?.....

1=Buying food for the household

2=Buying special diets/medical bills

3=Buying basics (salt and soap)

4=School fees/uniform

5=Purchase agriculture inputs

6=Others (specify).....

34. In the past four weeks how many hours per day spent in caring a sick member in your household?.....

35. In the past four weeks how many man days lost without work for a sick person because of sickness?.....

36. For the care givers because of sickness how many man days lost without work in the past four weeks?.....

37. In the past four weeks how often your household member falling sick?.....

0=Nil

1=Once or twice

2=Three times

3=More than four times

D: Socio- economic problem associated with HIV/AIDS and food security

38.Among children whom are less than 18 years olds in this household, is there any one who is an orphan?.....

1=Yes

2=No

39. If Yes how many orphans are in this household.....

40. Have you ever received loan for the past three years .....

1=Yes

2=No

41. If the answer is no do you think why?.....

1=You have not joined in groups / cooperatives

2=You have no title deed

3=No specific project to conduct

4=No information for credit

5=Others(specify).....

42. If the answer is yes how you have used the loan.....

1=Used to buy agricultural inputs

2=Used to buy food

3=Used for pupils requirements

4=Used for treatments

5=Others (specify).....

43. When one of your family member is sick who are responsible for taking care for the sick.....

1=Grand parents 2=School-age children

3=Spouse 4=Others (specify)

44 Are you able to participate fully in two of the following communities networking activities taking place in the village (wedding, cooperatives, CBOs, and labour-sharing arrangements)?.....

1=Yes

2=No

45.If no why?.....

1=You are sick and no energy

2=No time because of caring sick

3=No money as contributions

4=Community stigmatization

5=Other(specify).....

E: Difference in behaviour with regard to HIV/AIDS and food security among affected and non-affected households.

46 In your households how many school-age children do you have?.....

47 In your household do you have any school-age children who not attend school?.....

1=Yes

2=No

48.If the answer is yes how many of them?.....

49 What are the main reasons causes the problem?.....

1=Going to do petty trades

2=Going to find household wild food

3=No school requirements

4=Migrated to urban to find job.

5=Others (specify).....

50. Have you ever sold a piece of land?.....

1=Yes

2=No

51. If Yes what is the total area sold?.....hectares

52. Give reasons for selling land.....

1=Building house

2=Buying food

3=Paying for school requirements

4=Treatment

5=Ceremony

6=Others(specify).....

53. Have you ever sold livestock because of problems in the family?.....

1=Yes

2=No

54. If Yes what types and number of livestock..... Refer question no.20

55. Give reasons for selling livestock..... Refer question no.52.

56. Because of problems in the family what other asset have you sold?..... (You may choose more than one)

1=Hoe 6=Chair

2=Axe 7=Bed

3=Pot 8=Mattress

4=Knife 9 Other (specify)

5=Table

57 Have you ever received any kind of aid from your relatives?.....

1=Yes

2=No

58. If Yes what type of aid you received?.....

1=Maize

2=Beans

3=Cooking oil

4=Livestock (specify).....

5=Money

6=Medicine

7=Others(specify).....

59. What did you do with/give reasons for receiving the aid.....

1=Food

2=Treatment

3=Business

4=School requirements

5= Others (specify).....

60. Have you ever given aids to others in the past two weeks?.....

1=Yes

2=No

61. If the answer is yes what kinds of aids did you give?.....

1=Food

2=Clothes

3=Money

4=Labour

5=Other(specify).....

F: Access to food among affected and non-affected households

62. In the past four weeks, did you worry that your household would not have enough food?.....

0=No (skip to Q63)

1=Yes

62 a. How often did this happen?.....

1=Rarely (once or twice in the past four weeks

2=Sometimes (three to ten times in the past four weeks

3=Often (more than ten times in the past four weeks

63. In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of alack of resources?.....

0=No (skip to Q64)

1=Yes

63 a. How often did this happen?.....Refer Question no.62a above.

64. In the past four weeks, did you or any household member have to eat a limited variety of foods due to lack of resources? .....

0=NO (skip to Q65

1=Yes

64a.How often did this happen?.....Refer Question no.62a above.

65. In the past four weeks ,did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?.....

0=No (skip to Q66)

1=Yes

65 a How often did this happen?.....Refer Question no.62a.

66. In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?.....

0=No (skip to Q67)

1=Yes

66 a.How often did this happen?.....Refer Question no.62a.

67. In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?.....

0=No (skip to Q68)

1=Yes

7 a. How often did this happen?.....Refer Question no.62a.

68 In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?.....

O=No (skip to Q69).

1=Yes

68 a.How often did this happen?.....Refer Question no.62a.

69. In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?.....

0=No (skip to Q 70

1=Yes

69 a.How often did this happen?.....Refer Question no.62a.

70.In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?.....

0=No

1=Yes

70 a.How often did this happen?.....

1=Rarely (once or twice in the past four weeks)

2=Sometimes (three to ten times in the past four weeks

3=Often (more than ten times in the past four weeks.

71. When you have food shortages which coping mechanism do you use to meet household requirements? (You may choose more than one)

1=Use stored food

2=Selling of livestock

3=Reduction in number of meals per day

4=Selling of household assets

5=Substitute cheaper commodities (eg porridge instead of ugali)

6=Sending children to live with relatives

7=Child labour

8=Wives and girls go to find food

9=Migrating for aids

10=Others (specify).....

Thank you for your Cooperation

Appendix 2: Checklist for key informants

A: Agricultural department

1. In which ways does HIV/AIDS contributes to food insecurity in the District?

2. Do you remember any food insecurity occurred in your District in past 5 years?

3. What were the major causes?.....

4. How did the department respond in support of vulnerable groups to food security?

   Orphans.....

   widow.....

   Unemployed youth.....

5. In your department do you have any programme of labour saving technologies?

6. If the answer is yes which practices have you conducted/expecting to be conducted?

.....

.....

7. Do you have any disposable income and assets programme for those affected households by HIV/AIDS?

8. Does HIV/AIDS affects the range and pattern of crop production and livestock keeping?

9. What should be done to solve the problem of HIV/AIDS and food insecurity?

Thank you for your Cooperation

B: Community Development department

1. Does HIV/AIDS contributes to food security?
2. If the answer is yes how HIV/AIDS contributes to food security?
3. Do you have any disposable income and assets programme for those affected households by HIV/AIDS?
4. Do you have any programme to support vulnerable of HIV/AIDS to participate in community based networking?
5. Is there any linkages between HIV/AIDS. Gender inequalities and food insecurity in Kilolo community?
6. If the answer is yes which are they?.....
7. Is there any case of property grabbing for vulnerable by HIV/AIDS in the District?
8. How those vulnerable are supported to get their rights?
9. What should be done to solve the problem of HIV/AIDS and food insecurity?

Thank you for your Cooperation

C; Health department

1. Is there any linkages between food insecurity and HIV/AIDS?
2. How malnutrition contributes to HIV transmission?
3. How food insecurity contributes to AIDS?
4. Do you have any programme to reduce malnutrition among vulnerable of HIV/AIDS?
5. Does traditional food and medicine plants used in your District to alleviate HIV/AIDS related nutritional needs?
6. Does food security relates with processes of prevention, care and treatments and impact mitigations of HIV/AIDS in the Districts?
7. What should be done to solve the problem of HIV/AIDS and food insecurity?

Thank You for your Cooperation