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THE ECONOMIC AND SOCIAL IMPACTS OF HIV/AIDS IN TANZANIA

FINAL REPORT

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RESEARCH TEAM

The Swedish International Development Agency (SIDA) commissioned the Economic and Social Research Foundation (ESRF) to undertake a study on ***"The Social and Economic Impacts of HIV/AIDS in Tanzania."*** The research team was comprised of six Researchers. In addition, 12 Research Assistants were recruited for fieldwork. The core research team was comprised of:

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ACP	AIDS Control Program
AIDS	Acquired Immune Deficiency Syndrome
AIM	AIDS Impact Model
AMO	Assistant Medical Officer
AMREF	African Medical and Research Foundation
ANC	Antenatal Clinic
ARV	Antiretroviral Therapy
BBC	British Broadcasting Corporation
BIDPA	Botswana Institute of Development and Policy Analysis
CAER	Consulting Assistance on Economic Reform
CCBRT	Comprehensive Community Based Rehabilitation in Tanzania
CDR	Crude Death Rate
CEDPA	Center for Development and Population Activities
CGE	Computable General Equilibrium
CIHI	Center for International Health Information
COMOCAH	Community Mobilization Comprehensive Approach for HIV/AIDS
CTI	Confederation of Tanzania Industries
DCT	Diocese of Central Tanganyika
ESARO	Eastern and Southern Africa Regional Office
ESAURP	Eastern and Southern African Universities Research Program
ESRF	Economic and Social Research Foundation
FANR-RVAC	Food, Agriculture, and Natural Resources-Regional Vulnerability Assessment Committee
FDI	Foreign Direct Investment
GDI	Gross Domestic Investment
GDP	Gross Domestic Product
GTZ	Germany Tanzania
HAAH	HIV/AIDS Affected Household
HAART	Highly Active Antiretroviral Therapy
HAUH	HIV/AIDS Unaffected Household
HCF	Health Care Facilities
HIV	Human Immunodeficiency Virus
HPA	High Prevalence Areas
IEC	Information, Education and Communication
IFPRI	International Food Policy Research Institute
IIEP	International Institute for Education Planning
ILO	International Labor Organization
IMR	Infant Mortality Rate
ISS	Institute of Social Science
LF	Labor Force
LPA	Low Prevalence Areas
MCH	Maternal and Child Health
MoH	Ministry of Health
MTP	Medium Term Plan
MUCHS	Muhimbili College of Health Sciences
NACP	National AIDS Control Program
NGO	Non-Governmental Organization
NIC	National Insurance Corporation
NIMR	National Institute for Medical Research

NMSF	National Multi-Sectoral Strategic Framework
NORAD	Norwegian Development Cooperation
NSSF	National Social Security Fund
OLG	Overlapping Generations Model
OPD	Outpatient Department
OTTU	Organization of Tanzania Trade Unions
PASADA	Pastoral Activities and Services for People with AIDS in Dar es Salaam Archdiocese
PLWHA	People Living with HIV/AIDS
PMCT	Prevention of Mother to Child Transmission
PPF	Parastatal Pension Fund
PRSP	Poverty Reduction Strategy Paper
RTI	Research Triangle Institute
RTP	Rate of Technical Progress
SADC	Southern Africa Development Community
SHIDEPHA+	Service, Health and Development for People Living With HIV/AIDS
SPSS	Statistical Package for Social Science
SSA	Sub-Saharan Africa
STIs	Sexually Transmitted Infections
TACAIDS	Tanzania Commission for AIDS
TANESCO	Tanzania Electricity Supply Company
TB	Tuberculosis
TBL	Tanzania Breweries Limited
TFR	Total Fertility Rate
TFTU	Tanzania Federation of Trade Unions
TGTS	Tanzanian Government Teachers Salary
TPAWU	Tanzania Plantation and Agricultural Workers Union
TRA	Tanzania Revenue Authority
TZS	Tanzanian Shilling
UNAIDS	Joint United Nations Program on HIV/AIDS
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNGASS	United Nations General Assembly Special Session
UNICEF	United Nations Children Fund
URT	United Republic of Tanzania
USAID	United States Agency for International Development
VCT	Voluntary Counseling and Testing
WAMATA	Walio Katika Mapambano ya UKIMWI (People in the Fight Against HIV/AIDS in Tanzania)
WHO	World Health Organization

EXECUTIVE SUMMARY

HIV/AIDS has moved beyond its initial status as a health sector problem to a wider scale as a development issue, having social, cultural, political and economic implications. Besides the cost in terms of loss of life, HIV/AIDS is having profound effects on Tanzania's economic development. The disease affects more the most reproductive and productive group that comprise the working force, and increasingly children who are the future work force. Thus, the pandemic poses a serious threat and has tended to erode the positive economic gains achieved so far through the ongoing poverty reduction initiatives.

This study analyzes the social and economic impacts associated with HIV/AIDS pandemic at individual, household, selected sectors and at the macro level. The overall objective of the study is to provide better empirically primary based information on socio-economic impact of HIV/AIDS on the Tanzanian social and economic development so as to divulge the magnitude of the impacts, understand the copping strategies employed, and propose ways through which the presented pandemic could be averted. At macro level this study focuses on changes on macro-economic variables and/or indicators such as the GDP, per capita GDP, and some demographic variables. At sectoral level the focus has been on 4 major sectors namely agriculture, industry, health and education, whereas at micro level the study covered the households and Individuals Living With HIV/AIDS (PLWHAs).

A total of 6 districts of the 5 mainland regions were studied. These districts are Kinondoni in Dar es Salaam region, Mbeya Rural and Mbeya Urban in Mbeya region and Simanjiro in Manyara region. Other districts include Dodoma Urban in Dodoma region and Kahama in Shinyanga region. The 5 sampled regions were purposively selected to capture the HIV/AIDS high, and low prevalence areas and rural-urban settings. This was a 12 months study out of which two months were allocated for the fieldwork. The survey was conducted between September and November 2002.

During the fieldwork, 4 instruments were used to facilitate data collection. These are structured questionnaire, interview checklist, documentation ad/or literature and physical observation. The structured questionnaire was administered to 1184 households, 301 workers of health facilities, 330 workers and orphans in the education institutions, 60 PLWHAs and 33 workplaces/industries. The interview guide was mainly used sporadically to hold discussion with officials at different levels and those working closely with the health centers in the districts. Relevant and HIV/AIDS related documents/articles were mainly collected at the district level, libraries, and internet. Observations during the fieldwork were meant to probe on issues beyond those, which were covered in the structured questionnaire and interview guide.

The study identified the following economic and social variables through which the HIV/AIDS pandemic impacts on affected and infected household, sectoral economic performance, as well as important macro economic variables:

Impact on Labor Supply

The pandemic has resulted to decreased labor supply at household and the sectors studied through HIV/AIDS related mortalities and morbidities. The study revealed that the majority of PLWHAs and individuals dying of HIV/AIDS related illness were in the economic and social productive years (age group 30-40 years). About 57 percent of households which experienced death one year prior to the survey mentioned HIV/AIDS as the main cause of death of their members. Respondents from health facilities surveyed reported that 31 individuals died of AIDS during the four-year period in the studied health facilities. Results from education sector revealed that, HIV/AIDS deaths comprise a bigger proportion of the total number of teachers reported to have died one year prior to the survey. The reported proportions at district level for year 2001 ranged from 40 percent to 100 percent. The total number of teachers' deaths per district due to HIV/AIDS related illness ranged from 2 to 16 in year 2002. At workplaces, the companies that provided data reported to have been losing an average of 6 employees per company per year.

Impact on Labor Productivity

The loss of labor productivity was measured by three proxy variables, which are; rate of absenteeism, total years of experience lost, and paid sick leaves. AIDS has resulted in increased rate of absenteeism (and hence a loss of labor time), and loss of skills and experiences. It is indicated that each PLWHAs respondent interviewed lost between 1 to 183 working days with an average of 43 days in the past six months prior to the survey attending their illness. About 26 percent of the sick employees in the surveyed health facilities were granted a paid sick leave in the survey period. The average duration of sick leave was 3.6 months with a range of 1-9 months.

Data on years of experience for teachers who died show that only 7 out of 27 dead teachers had less than 10 years of experience. The average years of experience were 15 with a minimum of 2 years and a maximum of 27 years. Recruited teachers to replace the deceased were found to have less work experience with an average of 3 years of experience. In the health sector, the mean years of service of deceased ranged from 7 to 18 years. The surveyed companies lost employees with between 2 years to 29 years of experience with an average of 6 years in 2001. In addition, the companies that provided data had an average of 6 employees on paid sick leave and companies lost a range of 60 to 1530 man-days with an average of 598 man-days per company in 2002.

Impact on Time Allocation

HIV/AIDS was found to have affected the time allocation of infected and affected households. About 8 percent of the individuals interviewed at the household level indicated that they had attended a HIV/AIDS patient in or outside the household in the past 14 days prior to the survey. The majority spent less than 5 hours and more than 20 hours. More than 43 percent of women respondents spent more than 20 hours in two weeks time prior to the survey caring for HIV/AIDS patients compared to men (36 percent). The majority of the respondents reported to have had spent at least 3 hours in visiting HIV/AIDS sick person in the past 14 days prior to the survey. Results from the household survey further show that about 13 percent of the respondents reported to have had attended a funeral of a person who died of HIV/AIDS related problems 14 days prior to the survey. The time spent for such activity ranged between 1 hour to 280 hours per individual.

It was also found that health care providers take longer time with patients suffering from HIV/AIDS compared to the time they take to attend to patients suffering from other diseases. On average each attending clinician saw 32 patients per day with an average time of less than 13 minutes per patient. An average of 18 more minutes were spent for patients with HIV/AIDS related illnesses.

Impact on Financial Resources

From the financial point of view, the obvious impacts of HIV/AIDS are the increased expenditure that arises from medical treatment of opportunist infections affecting people living with HIV/AIDS. The costs are borne by PLWHAs themselves, household members, extended family members and friends, employers, private sector, donor community and the government. The range of medical support needed include support for testing, drugs to cure AIDS related opportunistic infections, drugs to cure sexually transmitted infections related to HIV/AIDS, outpatient care, and inpatient care. HIV/AIDS indicated to be an expensive illness, and on average, it costs the individual more than other health problems that were reported by the respondents to be affecting people at the household level. Although HIV/AIDS cases did not report the highest expenditures, on average the respondents incurred more, a mean of TZS about 79,000 and median of TZS 28,000. Findings from workplaces reveal that 21 percent of the surveyed companies provided specific medical support to employees living with HIV/AIDS. On average, about TZS 11.76 millions per company were spent on such services in year 2002 with a minimum of TZS 80,250 and maximum of TZS 65 millions

Family support, terminal benefits, replacement costs, and expenditures on preventive programs are among other financial expenses incurred due to the epidemic. An average cost of TZS 158,000 per funeral was reported at household level with a range of TZS 2,000 to TZS 2 millions. Individual households members' contribution to this cost ranged from TZS 100 to TZS 300,000 with a mean contribution of about TZS 11,797. An average household

reported to have had spent more on a funeral than what their members contributed for the funeral implying that households received assistance from relatives, friends, neighbours and other sources to finance the funerals.

Data from the health sector show the funeral costs incurred by the employer to range from TZS 50,000 to TZS 1 million with an average of TZS 185,000 per person dying of HIV/AIDS related problems. District level data on the supply side of education sector revealed that transport and burial costs for teachers who died of AIDS related illness constituted a larger proportion of the total transport and burial costs (45-84 percent in 2002). In the workplaces surveyed, the majority (86 percent) of the surveyed companies provided funeral support for deceased. On average, TZS 1.8 millions was provided in year 2002 with a range of TZS 60,000 to TZS 4.6 millions.

It was further revealed that the companies surveyed had supported a total of 12 families of the deceased in year 2002 and they spent an average of TZS 7.22 millions with a range of TZS 100,000 to TZS 14 millions. It was further noted that the surveyed workplaces had spent very little on preventive programs to combat HIV/AIDS. In addition, only 10 percent of the surveyed companies had employees who retired prematurely due to HIV/AIDS related problems and this was associated with payment of premature retirement benefits. The total benefits paid ranged from TZS 1.3 millions to TZS 16.5 millions with an average of TZS 10.3 millions in year 2002.

Impact on Delivery of Social Services

AIDS is also affecting delivery of social services in both education and health sector. The impact on service delivery can be observed in at least three ways: the supply of experienced personnel is reduced by AIDS related illness and death; there is decreased productivity due to illness and absenteeism; and depletion of resources due to increased HIV/AIDS related expenses such as those on medical treatment, transport and burial of workers who die and training costs. Teachers dying of AIDS related illnesses constitute a significant proportion of the total number of teachers dying. The education system is also experiencing the problem of increased teacher absenteeism due to HIV/AIDS related illnesses. In addition, increased financial expenses for HIV/AIDS related problems is evident. These affect negatively the process of education delivery and the quality of education delivered.

The health sector is found to be facing a double jeopardy as HIV/AIDS has overburdened the health sector not only to the health sector workforce in terms of illness costs, loss of time in terms of excuse duties, cost for the disposal of the dead but also the added requirements on the health care staff when caring for the sick both in terms of time, knowledge, skills, and resources. Further, the resources for supplies needed for HIV testing, drugs to cure opportunistic infection, and ARVs is found to be burdensome.

About 73 percent of health sector personnel had difficulties in managing HIV/AIDS patients due to lack of skills, and thus need HIV/AIDS training to better manage their patients. The commonest type of training required was counseling skills followed by management and care of HIV/AIDS disease including use of ARVs. Costs for the courses were available for 4 courses and they ranged from TZS 800,000 to TZS 9 millions implying huge costs for training such types of personnel.

VCT services were present in about 37 percent of the studied health care facilities. For those areas where such services were not available, assessment was done regarding the type of resources the facilities would require to set up such services. The initial cost of establishing such a facility ranged from TZS 1 million to TZS 21.3 million with an average of TZS 4.76 millions. The running costs for such a unit ranged from TZS 100,000 to TZS 415,000 with an average of TZS 233,000 for manpower costs per month and from TZS 50,000 to TZS 1.1 millions with an average of TZS 350,000 per month for other inputs including supplies.

It is further noted that, apart from other costs such as consultation and treatment of opportunistic infections, if only one CD_4 count test is done per recommended number of PLWHAs requiring ARVs, the cost would be about TZS 16.5 billions. This is a huge burden to the health sector.

Impact on Agriculture and Food Security

In the agricultural sector, HIV/AIDS pandemic has negatively affected the performance of agricultural activities in the study area through chronic sickness of members of the households, HIV/AIDS related deaths and loss of working man-days. This has in turn affected their incomes negatively and since income is a pre-requisite for accessing food, the household food insecurity is also aggravated. Decreased agricultural productivity and aggravated food insecurity point to a deepening of poverty situation to both households affected by HIV/AIDS and high HIV/AIDS prevalence areas.

It is noted that within 30 days prior to the survey, duration of HIV/AIDS illness covered a total of 5399 man-days out of which 3848 man-days were total loss equivalent to 35 average farming households' loss of agricultural labor. In addition, within 14 days prior to the survey several household members spent time to attend and/or care for HIV/AIDS patients, attended funerals of AIDS deaths, and visited the HIV/AIDS sick persons. In terms of agricultural labor productivity this is respectively equivalent to 5 farming households losing total available labor force due to time spent to attend the HIV/AIDS patients, 8 farming households' loss of the total available labor force due to time spent to attend funerals of an AIDS death and 2 farming households' loss of the total available labor force for agriculture due to time spent to visit HIV/AIDS sick persons.

A comparison between HIV/AIDS Affected Households (HAAH) and HIV/AIDS Unaffected Households (HAUH), High Prevalence Areas (HPA) and Low Prevalence Areas (LPA) reveals that on average, the pandemic has impacted HAAH and HPA more than HAUH and LPA. The per capita income is comparatively low in HAAH (TZS 320) compared to TZS 864 in HAUH. In terms of time spent for productive activities, time spent in HAAH and HPA is far below that of HAUH and LPA. On average only 620 hours and 1304 hours are spent for productive occupation per day in HAAH and HPA respectively, which are far below 2011 hours and 1329 hours spent in the HAUH and LPA. The results for chronically ill members during the last 6 months, recent death and presence of orphans also indicate clearly that the HAAH and HPA are much more affected compared to the HAUH and LPA.

Impact on Demographic and Macroeconomic Variables

An analysis of the impact of the disease on demographic characteristics of the population reveals that annual cumulative AIDS deaths are increasing and the majority of the AIDS deaths is expected to fall on the 15-49 years age group, the most sexually active and in the prime of their productive years. The annual AIDS deaths are also increasing from about 99,000 deaths in 2000 to about 175,000 deaths in 2015. This translates to increased number of AIDS deaths per day, that is, from 252 deaths in 2000 to 480 deaths in 2015. The implication of this is that the population growth will be 18 percent below what it would be in the absence of HIV/AIDS while the active labor force is likely to be 9 percent lower than what it would be in the absence of HIV/AIDS, with female labor force affected more severely compared to their male counterparts.

Based on conjectures made about the morbidity, mortality and expenditures related to HIV/AIDS, the study finds that by 2015, 22 percent of the health budget would be spent on HIV/AIDS related patients if the current situation prevails and about 50 percent of hospital beds will be occupied by HIV/AIDS patients in year 2015. The results show further that the economy would be 8.3 percent smaller in 2015 because of the epidemic and per capital GDP would be about 4 percent lower in 2015 due to the HIV pandemic.

The Plight of Orphans and Elderly

The findings from education sector reveal that the number of orphans was increasing over the four-year period covered. The study projects that the number of orphans will be 2.7 millions by 2015 and out of these 1.45 millions will be HIV/AIDS orphans. Consistent with the trend, the number of orphans dropping out of school was on average increasing over the same period. Findings further suggest that the dropout rate within the orphans group is much higher than the dropout rate for other students. Girl orphans were found to be more likely to drop out of school than boy orphans.

The findings further reveals that, 34 percent of the orphan students interviewed were being taken care of by grandparents and 51 percent of those orphans mentioned that their grandparents were also taking care of other orphans. About 71 percent of these grandparents were taking care of between 1 and 3 other orphans while the remaining 29 percent were taking care of up to 7 other orphans. Economic capability of most grandparents does not permit them to meet all the basic needs of the orphans due to insufficient resources at their disposal. As a result, some orphans (15 percent) were forced to engage into income generating activities during school or after school hours.

Stigmatization and Discrimination

Increasingly, people living with HIV/AIDS and AIDS orphans have been discriminated and stigmatized in the household and workplaces/schools, and in the community. Due to stigma associated with the disease and lack of knowledge, the pandemic was found to have direct impact on social relations of the PLWHAs within family members, neighbors, close friends, relatives and co-workers. Elements of discrimination, neglect and problems in marital relations were also observed.

The level of stigma and discrimination against AIDS orphans was found to be low at the schools surveyed. Some of the acts of stigma mentioned include laughing at, and/or making fun of orphans, other students did not want to mix with orphans and being isolated by teachers. However, acts of discrimination were more common in the households. About 26 percent of the orphans said they were treated differently at home. Not being treated equally to other children in the household by adults was the most mentioned form of discrimination followed by being given more work.

Institutional Support for Orphans and PLWHAs

Data provided from PLWHAs and schools suggest an existence of some form of support for PLWHAs and orphans. Some organizations/NGO's were providing support to PLWHAs and orphans especially in form of free treatment of opportunistic infections, counseling and transportations cost. Other types of support include school fees, school supplies, food, and casual contributions. Support for ARV therapy was found to be minimal and the activities of these organizations/NGO's were found to be stronger in the urban areas. While acknowledging some form of support from different institutions, respondents did nonetheless mention that this was rather limited, benefiting only very few PLWHAs and orphans. Institutions listed to have been providing support to orphans and PLWHAs include Caritas (Tanzania), Municipal Council (Mbeya Urban), Churches, SHIDEPHA+, CCBRT, DCT, COMOCAH, Dogodogo Center, Care International, PASADA, WAMATA, World Vision, and some teachers.

Policies and Guidelines on HIV//AIDS

Despite that the national HIV/AIDS policy is in place, few sectoral and workplaces policies have been formulated. Up to 30 percent of the health facilities visited had guidelines for HIV prevention in their workplaces. Most of the information given in the guidelines was however directed to prevention of nosocommial infection within the health care facility setting and not, prevention of acquisition of infection by the workforce through other means, for example, sexual transition. It was further noted that no specific policy was found in place for education sector. In addition, only 2 surveyed companies had HIV/AIDS policy at their workplaces and 4 were in the process of formulating their workplace HIV/AIDS policy. Tanzania Breweries Limited (TBL) was the only company that was found to have already implemented coherent and elaborate HIV/AIDS policy.

Coping Mechanisms

Several copping mechanisms were employed from micro to macro levels to halt the spread of the virus and to mitigate the impacts of the pandemic. These include borrowing, sell of assets, taking children out of school, formation of social arrangements to support marginalized groups, setting budgets for HIV/AIDS campaigns, providing counselling and HIV testing services, support direct costs such as medical, ARV, family support among others. Nearly all employed coping strategies at household level are observed to be effective but some were found to be erosive, that is, weakening household's ability to cope with future shocks. This is clearly observed in two of the discussed coping strategies, that is, borrowing and selling of assets. The implication of increased borrowing and selling of assets in the long run is the increased poverty since the available assets are eroded and more resources are crowded out favoring debt repayment in case the household income does not improve. In addition, taking children out of school disrupts the process of human capital investment and this will result to a mass of illiterate future labor force.

Recommendations

The following are some of the recommendations put forward for the government and other stakeholders. The government and other stakeholders are urged to find out practical and sustainable means for making the ARV therapy available and affordable for a wider community. Further, scaling up the establishment of the Voluntary Counseling Centers and establishment of some form of social insurance mechanism in support for the orphans and other groups that are victims of the pandemic is instrumental. Ministry of education and culture is also urged to come up with some practical approaches that will not only mitigate the loss of teachers but also ensure that orphans get an opportunity to continue with their education unabated. In addition, integration of sexual/reproductive health education (including HIV/AIDS and STDs issues) in the school curriculum from the very basic level is imperative.

On its own, Ministry of Health lacks the resources to cope with the growing demands of the prevention of HIV transmission and care for PLWHAs. There is, therefore, a clear consensus that effective HIV/AIDS interventions require the collaboration of a range of stakeholders, including government agencies, Non-governmental Organizations, Civil Society Organizations, businesses, and international donors. The civil society and the local community, in addition to providing voluntary counseling where possible, are also urged to maintain and sustain the social support systems for the victims of HIV/AIDS infections.

Undertaking more sensitization programs in different sectors on the importance of testing and making public the sero status of individuals is imperative because under-reporting of AIDS cases could undermine recognition of the gravity of the problem in the economy.

1.0 INTRODUCTION

1.1 Background and Rationale of the Study

HIV/AIDS has moved beyond its initial status as a health sector problem to a wider scale as a development issue, having social, cultural, political and economic implications. The AIDS epidemic claimed more than 3 million lives in 2002, and an estimated 5 million people acquired the human immunodeficiency virus (HIV) in 2002 bringing to 42 million the number of people globally living with the virus (UNAIDS, 2002a). Of the 42 million people living with the HIV/AIDS (PLWHA), 29.4 million (70 percent) are residing in Sub-Saharan Africa. Besides the cost in terms of loss of life, HIV/AIDS is having profound effects on Africa's economic development. This proportion is set to grow even further as the ability to cope with the pandemic is limited. Further, the infection rates continue to rise where a combination of endemic poverty, fragile health infrastructure, and limited investments in preventive programs fuel the spread of the deadly virus.

According to Bonnel (2000), a significant decline in Africa's per capita income during the period 1990 to 1997 was attributed to the HIV/AIDS pandemic. Thus, HIV/AIDS epidemic is a broader development problem rather than just a health problem. It is estimated that developing countries with a prevalence rate of 20 percent will experience a Gross Domestic Product (GDP) rate of growth that is 2.6 percent less annually than would otherwise be the case (Bonnel, 2000). Thus, the pandemic pose a serious threat to the positive economic gains achieved through the ongoing poverty reduction initiatives in different Sub-Saharan countries.

HIV/AIDS has the potential of creating a severe economic impact on the Tanzanian economy. In the absence of an effective vaccine and treatment of opportunistic infections (although there has been some development in Antiretroviral (ARVs) therapy that prolong life of infected people), the disease is still 100 percent fatal once one is infected. The disease affects more the most reproductive and productive group that comprise the working force, and increasingly children who are the future work force. In a country where labour is the main factor of production, depending on the level of epidemic and structure of the economy, the economic effects of the disease are potentially great.

Almost two decades after the first 3 AIDS patients were confirmed in Tanzania, the threat of the pandemic is now more glaring than ever before as the prevalence and incidence rate among some groups of the population increase. The overall prevalence of HIV infection among blood donors during 2001 was estimated to be 11 percent (URT, 2002a). The same report further shows that by November 2001, 2.2 million people had been infected with HIV in Tanzania. The pandemic continues to spread with some districts having an infection rate of more than 30 percent (URT, 2002a). In various African countries, Tanzania included, the

reversal of earlier gains in life expectancy and morbidity and mortality rates among vulnerable groups such as infants, children and women is attributed to the spread of HIV/AIDS. Okonmah, (2002) reports that in Tanzania, there is a loss of 8 years. In Zimbabwe, Burundi, Malawi, Kenya and Uganda the loss ranges from 3 to 5 years while in the Central African Republic there is a loss of 6 years. The decline in life expectancy coupled with slow growth in average per capita income are known to have more effect on poor people especially those who are already the most deprived and the least able to cope with multiple impacts of the HIV/AIDS pandemic.

While, the impact on people (demography and epidemiology) has been well documented, it has been much more difficult to observe the pandemic's effects on Tanzanian economy as a whole or asses how it might affect future development. Most studies conducted in Tanzania (Over et al, 1996; Mujinja, 1999; Rugalema, 1999) have focused on a micro-level (household) while the macro studies that exist have only used secondary data and assumptions for econometric modeling of the macroeconomic impact of the disease (Cuddington, 1993; Over, 1992). These studies have been useful but limited in enabling a full understanding of the economic impact of the pandemic. Primary data from households and individual sectors have not been used as building blocks towards estimating the macro impact.

It is against this background that this study intends to take a wider perspective of characterizing and tracing the social and economic impacts of HIV/AIDS at the micro, meso, and eventually macro level in order to:

- Propose ways through which the presented economic and social impacts of HIV/AIDS pandemic could be averted;
- Propose improvements in preventive and curative interventions; and
- Propose improvements in coping mechanisms and/or strategies at the national sectoral and local levels.

1.2 Research Problem

Studies on multisectoral impact of HIV/AIDS in Tanzania are scanty. Anecdotal evidence suggests that all sectors of the economy have been affected. Fragmented and to some extent unsystematic baseline economic impact assessment of AIDS has been carried out by some ministries such as health and education, prisons, and some workplaces. The emphasis in these previous studies has been on the epidemiology of the disease, estimating prevalence and incidences. The economic aspects that have been looked at in these studies, if any, have narrowly been confined in estimating treatment expenditures (Boerma and Bennet, 1997).

In more recent studies conducted in some firms and other workplaces, the indicators of impact such as increased treatment and funeral expenditures, and increased deaths of workers have been used. However, most of the studies are not published nor formerly processed. Moreover, the assessments that have been done have remained the property of the company, not for public domain (Mujinja, 2002). The information is probably used for rescheduling and revising benefit schemes, group life and disability premiums and medical aid schemes. Baseline assessment studies have been carried out by parastatal organizations such as Tanzania Electricity Supply Company (TANESCO), National Insurance Corporation (NIC), and Parastatal Pension Fund (PPF), and private employers like Tanzania Breweries Limited, and Broke Bond Limited. Nevertheless, this information has not been put together for a systematic impact assessment and it has remained fragmented in respective business sectors (Mujinja, 2002).

There is limited evidence concerning the socio-economic consequences the pandemic will have on social sectors such as education and health. There are no studies that have comprehensively investigated the socioeconomic impact of HIV/AIDS on the health sector. The available information is more on the number of HIV/AIDS cases attended in health facilities (NACP Reports) and not how they generally impact on health services. HIV/AIDS has transformed the sector for the worse. Care for AIDS suffers has overwhelmed health services while capabilities have been decimated through AIDS related mortality among health workers. Similarly, in the education sector many teachers are being infected with HIV daily. Furthermore, children from households that have been affected and infected with HIV/AIDS are forced to drop out of school, or attend sporadically, due to greater responsibilities at home, lack of funds or being orphaned.

The epidemic is increasingly spreading in the rural areas. Estimates show that by year 2015 there will be more people in rural areas infected with HIV/AIDS than in urban areas (URT, 2000a). This is alarming, particularly given the fact that agricultural sector remains the backbone of the economy. A great deal of research has been done on the impact of HIV/AIDS on households in developing countries, with emphasis on particular regions in East Africa (Over et al., 1996; Ainsworth and Semali, 1998; Lundberg et al., 2000). However, these studies tend to be specific to particular locations, communities, and faith orientations resulting in findings that are not readily generalisable to the country as a whole or even to other regions.

This study is unique in the sense that it fills some of the gaps identified above by characterizing and tracing social and economic impacts of HIV/AIDS at the micro, meso, and eventually macro level. Data collected from people living with HIV/AIDS, households, individual sectors, and secondary sources have been used as building blocks towards estimating the macro impact of the pandemic. The sectors marked as priority sectors in the Tanzania Poverty Eradication Strategy Paper (PRSP) were chosen for this study. These sectors include agriculture, health and education (URT, 2000b).

1.3 The Study Objectives

The overall objective of the study is to provide better empirically primary based information on socio-economic impact of HIV/AIDS on the Tanzanian social and economic development. Specific objectives are:

(i) Individual Level:

- To estimate the direct costs (monetary) related to HIV/AIDS for people living with HIV/AIDS.
- To estimate indirect costs (non-monetary) related to HIV/AIDS for people living with HIV/AIDS.
- To assess the effects of social discrimination and stigma on worker's morale and productivity.

(ii) Household Level:

- To examine and quantify the economic and social costs to the households which are affected by HIV/AIDS.
- To establish a link between poverty and HIV/AIDS at household level.
- To investigate and determine the coping mechanisms commonly used to mitigate the pandemic, and their related costs at household and community levels.

(iii) Sectors Level:

- To estimate the direct costs related to HIV/AIDS at selected sectors and workplaces.
- To estimate the indirect costs related to HIV/AIDS at selected sectors and workplaces.
- To estimate the effects of incremental cost due to HIV/AIDS on the demand and ability to provide social services, for instance, health and education services.
- To assess the effects of social discrimination and stigma on students' school attendance and performance.

(iv) Macro Level:

- To assess the effect of HIV/AIDS on demographic trends.
- To estimate the impact on labor supply
- To estimate the impact of HIV/AIDS pandemic on per capital GDP
- To estimate the impact of HIV/AIDS pandemic on GDP growth

This report is organized into five major parts. The introduction is provided in section one, which is followed by a discussion on economic consequences of the HIV/AIDS pandemic on different sectors and industries, some social impacts of the pandemic, the linkage between HIV/AIDS and poverty, and initiatives to prevent the spread of HIV/AIDS in Tanzania on section two. Section three presents the approach and methodology adopted by this study whereas section four presents and discusses the research findings. Section five makes some conclusions and policy recommendations.

2.0 THE ECONOMIC AND SOCIAL IMPACTS OF HIV/AIDS

2.1 HIV/AIDS Situation in Tanzania[1]

AIDS has been in Tanzania for about 30 years now. In 1983 when the first three HIV/AIDS cases were identified in Kagera region, the disease was termed as a rare disease. However, the disease has evolved to become a common household problem, which affects most Tanzanian families. A total of 14,112 AIDS cases were reported to the NACP from 20 regions during the year 2001. This resulted into a cumulative total of 144,498 cases since 1983 when the first cases were reported in the country. Estimating that only 1 in 5 AIDS cases is reported, a total of 71,000 cases are estimated to have occurred in year 2001 alone and a cumulative total of 722,490 AIDS cases since the beginning of the epidemic in the country. Using the prevalence among blood donors, it is estimated that a total of 2,229,770 individuals (918,113 males and 1,311,657 females) aged 15 years and above were living with HIV in Tanzania during the year 2001. When these estimates are compared to those of the year 2000, there is a 3 percent increase in the number of people living with HIV infection among individual aged 15 years and above.

Within Tanzania, HIV infection is unevenly distributed across, age groups, gender, geographical areas, and socio-economic classes. The blood donor data show that females have a significantly higher prevalence as compared to males. In 2001, prevalence among females was 13.7 percent and that among males was 10.4 percent. Most cases fall within the age group 20-49 years with the highest number of reported cases in the age group 25-34 and 30-39 for females and males respectively. The main mode of transmission remains heterosexual, accounting for 78 percent of all cases, mother to child transmission ranking the second at 5 percent. The percentage of the population infected by HIV (based on blood donor statistics) ranges from less than 4 percent in some districts (for instance, Mpwapwa, Nachingwea, and Mufindi) to more than 30 percent in others (for example, Babati, Kinondoni, and Muleba).

The development of the epidemic has impacted the economy not only through pressure on AIDS cases care and management resources, but also through debilitation and depletion of economically active population. Some of the social and economic consequences at micro, sectoral/meso and macro levels are discussed in the next sections.

[1] Data presented in this section are cited from NACP Report Number 16 (URT, 2002).

2.2 The Micro and Sectoral/Meso Impacts of the Pandemic

2.2.1 Household, Agriculture and Food Security

In the 1980s, the AIDS pandemic was largely concentrated in urban areas, townships and border posts and was largely associated with activities of truck drivers and prostitutes. In the 1990s the disease had spread to rural areas due to the urban-rural migration. These developments have had an adverse impact on agricultural production. Estimates show that by the year 2015 there will be more people in rural areas infected with HIV/AIDS than in urban areas (URT, 2000a). This is an alarming situation particularly because agriculture is an important sector to the economy of the country, accounting for about 85 percent of the rural employment.

HIV/AIDS has a severe impact on household economic performance through declining productivity, which is an outcome of reduced man-hours and capital resources allocated for production. Following this pandemic, more time and financial resources are spent to care for the sick and searching for medical services. The impact on household occurs as soon as a member of the household starts suffering from HIV/AIDS related illnesses until after death. Households have to cope with the disease and its aftermath. A conceptual framework on the economic impact of adult morbidity and mortality due to HIV/AIDS presents an overview of the economic impacts likely to be experienced by agriculture dependent households that encounter HIV/AIDS as follows (Gillespie et al., 2001; Gillespie and Haddad, 2002).

(i) Loss of Labor

Family members and people living with HIV/AIDS (PLWHA) are drawn away from production and other income-generating activities to care for sick relatives, orphans or themselves.

(ii) Loss of Capital

Households are forced to divert their incomes, tangible assets and savings for medical care, transportation, funeral expenses, and other immediate expenses.

(iii) Food Insecurity Increases

Food security is affected both in terms of quantity and in terms of quality as a consequence of a drastic decline in productivity of the household unit and as the result of sales of food and cash crops to get cash to carter for medical and other expenses.

(iv) Change of the Farming System

Households may switch to less labor-intensive crops and farming systems. However, there are trade offs. For example, the cultivation of tubers is less labor intensive than other staple crops but the tubers happen also to be less nutritious.

(v) Loss of Income

Loss of income is from less labor-time from the sick person and other people in the household who would spend time to take care of the sick.

(vi) Decrease in Remittances

Remittances (informal insurance) from the person with HIV/AIDS and the household at large to other people and households are decreased.

(vii) Loss of Opportunities

Children are withdrawn from school due to lack of resources but also because extra labor is urgently needed. Usually daughters may miss school in order to work as a substitute and/or take care of the sick person.

(vii) Increased Household Expenditures

Medical and funeral costs increase significantly in a household with an individual suffering from HIV/AIDS.

Few of these potential household impacts and impinging economic and social costs have been quantified in Tanzania (Over et al., 1996; Tibaijuka, 1997; Rugalema, 1999; Mujinja, 1999; Lundberg et al., 2000). A study conducted in Kagera region (Over et al., 1996) found that with the illness and death of economically active household members from AIDS-related causes, the total income per capita and total consumption per capita decreased dramatically. It has also been found that the poor households, children and women in Kagera region of Tanzania are more affected by the impact of HIV/AIDS than relatively richer ones (Over et al., 1996; Lundberg et al., 2000).

A study by Rugalema (1999) reveals that AIDS affliction leads to accelerated consumption of household cash, mainly in the process of seeking treatment and in attempts to restore health. In addition, AIDS illness in the household leads to disposal of other productive assets. A wide variety of assets, except land are disposed of to generate cash for use in treatment.

A study by UNAIDS, (2000b) cited in Isanken et al., (2002) reveals that a woman with a sick husband spent 60 percent less time on agricultural activities than she would normally do. Another study conducted in Kagabiro village in Kagera Tanzania found that on average, 29 percent of household labor was spent on AIDS related matters, including care for sick patients, and funeral activities. If two individuals were devoted to nursing as occurred in 66 percent of the cases, the total loss was 43 percent on average (Tibaijuka, 1997). This illustrates the strong inter-relationship between subsistence agriculture and the labor resources of the household. A smaller financial base of the household with a sick individual forces the household to reduce consumption and hence the quantity and quality of food

(Michiels, 2001). Food consumption has been found to drop by 41 percent in families hit by AIDS related diseases (Isaksen et al., 2002). Another study conducted in Kagera region shows that, among the poor, AIDS deaths led to general consumption drop of 32 percent and food consumption drop of 15 percent (Lundberg, et al., 2000).

Medical and funeral costs results to a significant increase in household expenditure. Tibaijuka, (1997) reports that in Kagera region virtually all households' cash income was used to pay for medical bills due to AIDS. Households had to sell assets or borrow funds to cope with the increased expenditure. The study further reports that households with an AIDS death spent on average 50 percent more on funerals than medical care.

HIV/AIDS is reportedly to have a significant impact on land tenure. The impact of the pandemic on land management had resulted in a depressed quality of life and unsustainable livelihoods in affected rural households according to the findings of a study by Mphale (2002) carried out in Lesotho. Coping strategies adopted by rural communities are becoming increasingly inadequate in the face of the prevalence of HIV/AIDS and acute food shortages. The findings show that, people living with HIV/AIDS were increasingly employing sharecroppers, as they were often too sick to work their fields. This arrangement avoid the risk of their land being revoked and at least assured them of continued access to agricultural land and food, as the land reform policies have revoked land left fallow for two years.

2.2.2 The Health Sector

Anecdotal evidences show that the rate of HIV infection among employees of education and health is at least as high as that of the adult population as a whole (Cohen, 1999). The already over-stretched health sector, among other sectors, has suffered multiple effects due to HIV/AIDS: increased number of patients due to AIDS opportunistic infections, increased demand and sometimes reallocation of resources from other equally important health problems, decreased number of health workers, and at time, hesitation to work in HIV/AIDS patient areas have been observed. In some highly prevalent areas, more than 50 percent of the medical wards in hospitals have been occupied by AIDS related patients (Mujinja, 1999). Despite the fact that the majority of the patients are attended at district and regional level hospitals, many patients are still being attended at lower level facilities. This increases the burden on local and central government budgets.

While the exact costs of treating someone with HIV/AIDS has not been updated, an earlier study in Tanzania by World Bank shows that in 1993 the average cost incurred per adult AIDS patient over the duration of the patient's illness was approximately 50,000 Tanzanian Shillings (TZS) while for the children the annual figure was TZS 34,000 (World Bank, 1993). Another more recent study indicated that the cost of treating an adult in Tanzania with AIDS is $295, while the cost of treating a child with AIDS is $190 (Mrope, 1997, cited in Forsythe,

2002). This is overwhelming in a country that spends less than 10 percent of the total development budget on health care.

Significant private and public resources have been spent on prevention of HIV/AIDS and treatment of HIV/AIDS related complications, in Tanzania. In 1996, it was estimated that private sector, government and donor community spent about TZS 95 billion in interventions against HIV infection (World Bank, 1996, cited in Tibandebage et al., 1997). The government allocated 7.2 billions for HIV/AIDS activities for the fiscal year 2002/2003 (URT, 2003a). However with increasing incidence and prevalence, and with the advent of Highly Active Antiretroviral Therapy (HAART), the cost of the disease to the nation has significantly increased. In absence of cure, and increase in new cases, more resources would be required to safeguard and improve (to those already affected) human capabilities. The burden on the government expenditure on the health services is implicit bearing in mind that the majority of Tanzanians live in the rural areas and they depend on government facilities for health services.

The cost in terms of time is also substantial. A study in Zimbabwe indicated that HIV/AIDS patients required considerably more hospital care than non-HIV/AIDS patients. In five of the seven hospitals visited, the average cost of an inpatient stay for an HIV/AIDS patient was found to be twice as much higher than that of a non-HIV/AIDS patient (Hansen, 1999 cited in Isaksen et al., 2002).

Early studies showed no positive link between HIV infection among health staff and exposure to patients. However, healthcare workers constantly work with fear of contracting HIV from patient contact, and many of them attend fatally ill patients on daily basis. In addition, the overloading and under-funding of the health system and rising number of patients with HIV/AIDS opportunistic infections raises the stress levels for health care workers. The psychological stress under such working conditions, combined with the increased absenteeism of HIV-infected workers, are likely to cause a drop in the production and the quality of work in the sector.

2.2.3 Education Sector

An effective education system is an important factor in ensuring sustainable human development in any society. Its effectiveness can be assessed both in terms of the quality and quantity of education services provided and outputs. Factors on both the supply and demand sides can work to enhance or reduce the effectiveness of the education system. HIV/AIDS epidemic continues to erode the human resources on both the demand and supply sides. The impact on both sides undermines the very foundation of the education system.

2.2.3.1 HIV/AIDS Effects on the Demand Side

On the demand side the impact is twofold – on the number of students in school (in terms of falling enrolments) and the ability to learn of the affected students who are able to stay in school. Because of its main form of transmission in African countries (heterosexual contact), it has been observed that the population to be affected most is men and women in the reproductive age group. This has a bearing on the numbers of school-age population.

Kelly (1999) points out that HIV/AIDS is destroying education by undermining the demand for educational services. Factors contributing to this include:

- A decrease in the number of women in child-bearing age.
- Reduced fertility due to AIDS among women of child-bearing age (for example, due to increased use of condoms).
- More child deaths due to mother-to-child transmission (prenatal transmission).
- Increased dropout from school because of staying home to care for the sick or substitute for adults (thus ending up with children who either are never enrolled or dropout of school).

While acknowledging that lack of hard data on infection rates for the school age population makes it difficult to determine exactly how AIDS has accelerated the decline in enrolment (due to both declined fertility and inability to get enrolled), Badcock,-Walters and Whiteside (1999) point out that limited evidence suggest that the effect of AIDS on enrolment is significant. For example, data provided by the Ministry of Education in Swaziland show that in 1999, the number of 6-years old was 6 percent lower than it would have been in the absence of AIDS. Projections show that by 2016 there will be 30 percent fewer 6-years old and 17 percent fewer 18-years old (Gachuhi, 1999). The number of orphans was expected to rise from 35,000 in 1999 to 90,000 in 2005 and 120,000 in 2016. A 1992 World Bank study in Tanzania suggested that HIV/AIDS may reduce the number of primary school children by 22 percent and secondary school children by 14 percent as a result of increased infant and child mortality as well as lower attendance (World Bank, 1992 cited in Gachuhi, 1999)[2].

A study conducted in Zambia shows that in both urban and rural areas the population of orphans not enrolled in school was higher than that of children who were not orphans (32 percent compared to 25 percent in urban areas and 65 percent compared to 48 percent in rural areas) (Malaney, 2000).

[2] The demand side analysis in this study focuses on the effect of the epidemic on dropout and absenteeism rates for children from HIV/AIDS affected families. The literature review thus does not cover other factors noted above as they do not form part of the investigation in this study.

Evidence shows that households with orphans are less likely to have enough money to send children to school compared to households without orphans. Lack of adequate resources to meet their school expenses is one of the main reasons why orphans dropout of school. Studies done in different countries show significant numbers of orphans dropping out of school after their parents die. This has been attributed to inability of households to meet children's school expenses (Isaksen et al., 2002). The same authors refer to this as the income effect of AIDS on infected families. A study in Kagera region, which was the first region in Tanzania to be hard-hit and to suffer the adverse effects of the epidemic shows that most of the orphans did not have most basic necessities (Tibaijuka, 1997). This study showed that most of the orphans were taken care of by their grandmothers.

On absenteeism, studies done in different countries also show that orphans, especially girls, have a higher rate of absenteeism than children who are not orphans. An in-depth study on 20 students in a Ugandan district severely affected by AIDS revealed that, almost all the students (19) were absent from school for periods ranging from five weeks to one and a half terms during the year preceding the study. The two most mentioned reasons for absenteeism were lack of school fees, and helping with care of AIDS patients at home (Muller and Abba, cited in Gachuhi, 1999).

Studies assessing gendered impacts of HIV/AIDS show that girl orphans are more likely to dropout or be absent from school than boy orphans. Discussing the plight of orphans, Hamoud and Birdsoll (2002) note the resulting undermining of family structures and increase in the opportunity cost of children's time. They attribute the latter to children, especially girls being forced by circumstances to take on household responsibilities once handled by their parents. A report by UNAIDS (1999b) cited in Isaksen et al., (2002) points out that girls are the worst affected as they are more likely to drop out of school to support the household compared to boys. Qualitative data obtained from focus group discussions in a study done in Namibia also show that girls were more likely to dropout or be absent from school than boys (Malaney, 2000).

2.2.3.2 HIV/AIDS Effects on the Supply Side

As already pointed out, education, which is the main instrument for developing future human resources is no exception in suffering from the impact of HIV/AIDS as the epidemic affects most the working age population, in this respect teachers, education planners, managers, and administrators. The sector is affected in terms of their death from AIDS, decreased productivity due to ill health and absenteeism and increased HIV/AIDS related costs.

Kelly (1999) and Malaney (2000) point out two factors, which make teachers more vulnerable to HIV infections relative to some other groups in the general population: (i) Greater mobility: They are often posted to teach in places far away from their home areas, often leaving their families behind because of accommodation problems; (ii) Generally, they have higher disposable income than the general population in their places of work.

The AIDS epidemic continues to decrease the education system's ability to supply education. A report by World Bank et al., (2002) identifies one of the impacts of HIV/AIDS on the supply side of education as diminished quality of education. It attributes this impact to fewer teachers teaching, those working being less motivated and often absent due to family trauma and decrease in quality of planning and support because of the impact on education planners and administrators.

Evidence from Zambia shows mortality rate among teachers to have been 39 per 1,000, which was 70 percent higher than the general population aged between 15 to 49 years (Isaksen et al., 2002). In Zambia it has also been shown that teacher deaths caused by AIDS are equivalent to about half the total number of new teachers trained annually (World Bank et al., 2002). Further evidence from the Zambian Ministry of Education Report shows that 680 teachers (2.2 percent) died in 1996. The number was expected to increase to about 2000 a year. This translates into approximately 5 - 6 teachers dying per day (Gachuhi, 1999). Reports from one Province in Kenya showed that 20 to 30 teachers were dying each month from AIDS. The 1998 AIDS assessment study for Malawi by the World Bank projected that about 40 percent of the cohort in the education, health and military sectors will have died from AIDS by the year 2005. This is in addition to other causes of decrease in the number of teachers. Cohen (1999) cites a study done in Cote D'Ivoire, which concluded that eight teachers – five at primary level and three at secondary level were dying from AIDS every week. In 2000 AIDS was reported to be the cause of 85 percent of the 300 teacher deaths that occurred in Central African Republic (World Bank et al., 2002).

One of the adverse effects of HIV/AIDS is increased financial expenses, which the sector has to bear. Kelley (1999) lists the following specific cost-related effects on the supply side: Medical costs for the sick; Transport and burial costs; and Replacement and training costs as skilled and experienced teachers die.

Long periods of illness that characterize AIDS imply long periods of decreased productivity. Hamoud and Birdsoll (2002) note that during periods of illness, teachers cannot be as productive as they would otherwise be. This is because they are either often absent or if at work they are weak and sickly to fully cope with the demands of teaching. Isaksen et al., (2002) also point to the deterioration in physical and psychological abilities of infected workers as having a negative effect on productivity. They also pointed further that productivity of teachers who are not sick might also decrease because they might have to work longer to cover for sick teachers hence, they would be overworked. Kelley (1999) also discusses the morbidity effects on productivity These include absenteeism due to illness, reduced work capacity even if at work, and further teacher absenteeism due to illness of other family members and funerals.

2.2.4 Industry/Enterprises

By definition, enterprises include service and goods producing units from one-man business to large manufacturing or service enterprises. The pandemic has been found to have severe impact on the individuals' productivity and thus firm's profits in affected countries. The pandemic is associated with the following effects:

(i) Reduced Labor Supply

The HIV/AIDS pandemic has an impact on labor supply, through increased mortality and morbidity. This is compounded by loss of skills in key sectors of the labor market. In South Africa, for example, around 60 percent of the mining workforce is aged between 30 and 44 years. In 15 years this is predicted to fall to 10 percent (Dixon et al., 2002).

(ii) Reduced Labor Productivity

Absenteeism due to HIV/AIDS leads to a direct loss in productivity. People become absent due to their own illness, or illness in the family. One review reported that the annual costs associated with sickness and reduced productivity as a result of HIV/AIDS ranged from US$17 per employee in a Kenyan car-manufacturing firm to US$300 in the Ugandan Railway Corporation (Dixon et al., 2002). Government incomes also decline, as tax revenues fall, and governments are pressured to increase their spending, to deal with the rising prevalence of AIDS, thereby creating the potential for fiscal imbalances.

(iii) Increased Expenditure

Medical cost, terminal benefits, funeral and family support costs increase significantly in a firms with individuals suffering from HIV/AIDS (Mujinja, 2002).

(iv) High Labor Turnover

A high turnover in the workforce means more resources used on training and education of new staff. Looking at 8 African countries with HIV prevalence rates higher than 10 percent of the adult population, an International Labor Organization (ILO) study estimates the labor force in the year 2020 to be 10-22 percent smaller in those countries[3] (ILO, 1995a). The loss of workers, often skilled and experienced together with increased entry of young unskilled personnel into the labor market is likely to lower both the quality and quantity of workforce. Replacement of skilled labor is a slow and expensive process, and labor cannot be shifted simply from one sector to another (agriculture to health, for example) in response to shortages in skills.

[3] The countries are: Botswana, Kenya, Malawi, Mozambique, Namibia, South Africa, Uganda and Zimbabwe.

(v) Impact on Product Demand

High HIV prevalence and increased morbidity have effects on demand. Most goods are sensitive to consumer income levels. When capital is used for care and medicines, the proportion left for consumption of other goods shrinks. The result will be an increase in demand in some markets and decrease in the other.

2.2.5 Other Sectors

Transport, mining and construction, and financial sectors are also seriously impacted by the pandemic. Truck drivers spend long time away from their families and are relatively affluent. They are thereby very susceptible to catching HIV and to spreading the virus. All available surveillance data indicate that infection rates are high and continue to rise along the main transportation corridors.

The mining and construction sectors are particularly vulnerable to impact of HIV/AIDS because they are characterized by the requirement for workers to stay away from their homes for a long period of time. No study has been conducted in Tanzania to assess the prevalence of HIV/AIDS in mining areas but data from other countries show that the prevalence is alarming. For instance, gold mining giant AngloGold Company, which has branches in South Africa, Argentina, Australia, Brazil, Mali and Namibia, estimated that between 25-30 percent of its South African workforce was HIV positive (InteliHealth, 2002). Gold Fields, a gold mining company based in South Africa reports that although they have been barred from screening employees for HIV/AIDS since 1998, it is estimated that more than 25 percent of its 50,000 strong workforce is HIV positive. It is projected that the AIDS pandemic will cost the company up to US$10 per ounce of gold it mines in added production costs if no interventions are put in place (BBC News, 2002).

Employees in the financial sector are generally drawn from a small group of educated and professional people. The cost of employee infection could be huge due to high healthcare benefits, scarcity in supply of personnel, and time-consuming training and replacement. In a study of Barclays Bank in Zambia, the cost of staff deaths was approximately US$44,000 for 28 diseased staff in 1991; US$157,440 for 38 diseased in 1992, and the projections were worse for the subsequent years (Isaksen et al., 2002).

2.3 Macroeconomic Impacts

Estimating the combined impact of various interdependent effects on the performance of an economy is a complex task. To simplify the measurement of "economic performance," economists have tended to focus on average income, GDP, and GDP per capita. Macroeconomic impact studies have used regression analysis to estimate the impact of the prevalence of HIV on the rate of growth of GDP per capita, while controlling for other factors that might also affect growth. The consensus from these studies is that the net effect

on the growth of GDP per capita will be negative and substantial. The more recent studies show greater effects, and the most recent indicate that the pandemic has reduced average national growth rates by 2-4 percent a year across Africa.

Another class of mathematical models commonly known as the Computable General Equilibrium (CGE) models allows the differential effects of the pandemic across sectors be estimated. Studies that used these models predict greater economic effects of the pandemic than regression analysis, and they also find a significant variation across industrial sectors. Kambou et al., (1992) assessed the impact on Cameroon's economy of changes in the skill composition of the labor force resulting from the HIV/AIDS epidemic. They concluded that unavailability of skilled labor would reduce growth rates by about 50 percent and investment by 75 percent, that imports of food and other basic products would increase, and that exports of manufactured and other products would decline. Table 2.1 gives a summary of some macro impacts of the pandemic in Africa.

A recent study by Bell et al., (2003) using an Overlapping Generations (OLG) model to trace the impact of HIV/AIDS on South African economy for three generations gives more cynical results. They conclude that, in absence of AIDS, there is a modest growth with universal and complete education attained within three generations. However, if nothing is done to combat the epidemic, a complete economic collapse will occur within three generations.

Table 2.1: Summary of Studies of the Macroeconomic Impact of HIV/AIDS in Africa

Study	Countries (period of economic data)	Period of most recently used HIV/AIDS data	Results (comparisons with non-HIV/AIDS scenario)
Dixon et al (2001)	41 countries (1960-98)	Late '90s	Growth rates reduced by 2-4 percent; large variation across countries, in line with prevalence of HIV.
World Bank (2001a)	Swaziland	Early '90s	Average rate of growth of GDP in 1991-2015 will be 1.5 percent lower a year.
World Bank (2001b)	Namibia	Early '90s	Average rate of growth of GDP in 1991-2015 will be 1.1 percent lower a year.
World Bank (2000a)	Lesotho	Late '80s	Average rate of growth of GDP in 1986-2015 will be 0.8 percent lower a year.
Bonnel (2000)	About 50 counties (1990-97)	Mid '90s	Rate of growth of GDP per capita reduced by 0.7 percent a year in the late 1990s.
Quattek et al (2000)*	South Africa	Mid '90s	Average rate of GDP growth over next 15 years will be 0.3-0.4 percent lower a year.

Study	Countries (period of economic data)	Period of most recently used HIV/AIDS data	Results (comparisons with non-HIV/AIDS scenario)
BIDPA** (2000)*	Botswana	Late '90s	Average rate of growth of GDP in 2000-2010 reduced by 1.5 percent a year.
Bloom et al (1995)*	51 countries (1980-92)	Early '90s	Insignificant effect on income growth.
Cuddington and Hancock (1994)	Malawi	Early '90s	Average rate of growth of GDP in 1985-2010 reduced by up to 0.3 percent.
Cuddington, (1993)	Tanzania	Early '90s	Per capita GDP in 1985-2010 up to 10 percent smaller.
Over (1992)	30 Sub-Saharan countries	Early '90s	Rate of growth of GDP per capital in 1990-2025 reduced by 0.15 percent (0.6 percent in 10 worst affected countries).

* Cited in Dixon et al., (2002). ** Botswana Institute of Development and Policy Analysis

Different studies cited in Table 2.1 give different magnitudes of the economic impacts. However, all studies show a decline in GDP per capita and GDP growth. The pandemic is also associated with reduced exports and increased imports. Lower domestic productivity reduces exports, while imports of expensive healthcare goods may increase. The decline in export earnings will be severe if strategic sectors of the economy are affected, such as mining in South Africa. Consequently, the balance of payments (between export earnings and import expenditure) will be affected which can disrupt the government budget processes. This can seriously impair the debt repayment capacity and encourage borrowing from both internal and external sources.

2.4 Social Impacts

High infection rate and growing number of illnesses and death among citizens characterize the current status of HIV/AIDS epidemic. This has a corresponding social impact on the social welfare of the family and the society as a whole.

2.4.1 AIDS and Social Networks

In many Sub-Saharan families and many other parts of the world, individuals have taken much of their identity and their expectations of support from their immediate family and, ultimately from their much more extended kin group, sometimes called lineage. In the early days of the HIV/AIDS epidemic, it was expected that these social units would cope with the burden of orphaning. However, this has turned out to be only partially the case, as numbers of orphans has exceeded the custodians' ability to cope. As a result of the pandemic the elderly are left without the support of their adult children and at the same time they have to support the grandchildren. Thus, HIV/AIDS disintegrate and destabilize the traditional support

systems as younger people die. This becomes a cause of impoverishment for the elderly and the family they are supporting.

The pandemic has also destabilized other social functions in different societies. For instance, in several parts of Africa, funeral practices of long periods of mourning and lavish gatherings of relatives has become difficult to maintain and/or sustain. In Kagera Region, labor constraints have caused a shortening of the mourning practices (Tibaijuka, 1997).

2.4.2 AIDS and Orphans

Children in Sub-Saharan Africa are probably the most vulnerable group and suffer hard from the HIV/AIDS epidemic. Children may grow up in circumstances less than optimal for their development as limited resources may restrict the family's ability to provide sufficient care. Possible consequences are deterioration of the children situation in terms of education and nutrition.

It is projected that by the year 2010 there will be 4.2 million AIDS orphans in Tanzania (UNAIDS, 2001). Children who are affected by HIV/AIDS often find it difficult to attend school for various reasons. These include the inability of the family to pay school fees or the child has to stay home to care for an ill parent or help with household chores, agricultural and other income earning activities. Girls are the first to suffer as they are the most likely to be taken out of school to support the household. It is reported that children are increasingly seen as part of the labor force and expected to assist the parents from the age of 8-9 years.

According to the NORAD study (2002) in Tanzania, the vast majority of orphans depended on themselves or on their grandparents, though there are many other caregivers, including close relatives and foster families. However, there are orphans (45 percent) living without a parent or a guardian - the situation that suggest high incidence of abandonment or surviving parent inability to take care for his or her children. As a result, orphans are denied supply of immediate and future needs, such as housing, food and education. Consequently, they are forced to seek help in the streets, begging for money which make them become vulnerable to abuse. The girls turn into prostitution to survive, and most likely become infected just like their parents thus perpetuating the vicious cycle. In Zambia, 23 percent of the children under age 15 are missing one or both parents. As a result, over 90,000 children are living in the streets of Lusaka as compared to 35,000 in 1991 (Okonmah, 2002).

2.4.3 Discrimination and Stigmatisation

Increasingly, people living with HIV/AIDS and AIDS orphans have been discriminated and stigmatized in the household, workplaces, schools, and in the community. Furthermore, due to stigma associated with the disease and lack of knowledge, the pandemic was found to have direct impact on social relations of the PLWHA within family members, close friends,

relatives and co-workers. The loss of colleagues at workplaces, increased workloads, potential discrimination, and general uncertainty about HIV/AIDS and the fear of infection may undermine morale. There have been instances of workplaces disruption where workers refuse to work with a colleague known or believed to be HIV positive (USAID, 2001 cited in Isaksen et al., 2002).

2.5 HIV/AIDS and Poverty

The effect of general poverty paired with high rate of HIV infection is dramatic as the epidemic strikes an already very vulnerable segment of the population. The epidemic will tend to worsen poverty and increase inequality because the low-income households are more adversely affected by an AIDS death than are other households. Reduction of the impact of HIV/AIDS disease in Tanzania is identified by the Poverty Reduction Strategy (PRSP) as one of the strategies to reduce the level of poverty (URT, 2000b). Households that are affected by HIV/AIDS are more likely to experience a catastrophic fall of their income, while those that are not affected could, at the same time, have a raise in their income. This situation would have a major implication on poverty alleviation and the welfare of the population.

Poverty is associated with weak endowments of human and financial resources, such as low levels of education associated with low levels of literacy and marketable skills, inadequate housing, generally poor health status, absence of assets, insufficient command over commodities (low income), low social status and dignity. Consequently, the poor face double jeopardy, as they are already vulnerable and HIV/AIDS adds to the deprivation. The household is caught in a bind of needing more resources and at the time the production capacity of the household is reduced. While richer households may be able to meet the increased expenditure on medical costs and reduced labor income, poorer households may apply other strategies that may exacerbate the situation, for instance, women may engage in unsafe sex work.

There is evidence that HIV/AIDS has pushed some non-poor households to absolute poverty, especially when the breadwinner dies and the laws and regulations do not exist or operate in favor of the survivors (Barnett et al., 2001). A study conducted in Gwanda community in Uganda reveals that HIV/AIDS has diminished the families' food consumption, nutrition, and well-being. In the mid 1980s Gwanda was a relatively wealthy community but today, largely due to HIV/AIDS, 45 percent of the people living in that community are poor.

Poverty and HIV/AIDS are therefore interdependent with double causation meaning while poverty is an important factor in spreading the deadly virus, HIV/AIDS also causes and/or intensifies the spread of poverty.

2.6 Initiatives to Prevent the Spread of HIV/AIDS

During the last sixteen years, Tanzania has undertaken many different approaches in attempting to slow the spread of HIV infection and minimize its impact on individuals, families and the society in general. Since 1983, when the first 3 AIDS cases in Tanzania were reported, the HIV epidemic has progressed differently in various population groups while national response has developed itself into phases of program activities. In 1985 a National AIDS Control Program (NACP) was created in the Ministry of Health (MoH) with the support of the Global Program on AIDS of World Health Organization (WHO). NAPC formulated the Short Term Plan (1985-86), and three 5 year Medium Term Plans (MTP); MTP-1 (1987-1991), MTP-11 (1992-1996) and MTP-111 (1998-2002). The National AIDS Committee and the National Advisory Board on AIDS were formed in 1989 and 1999 respectively to support/complement the NAPC efforts.

Initially HIV/AIDS was perceived purely as health problem and campaign to deal with it involved the health sector only through NAPC. The national response consisted on developing strategies to prevent, control and mitigate the impact of HIV/AIDS epidemic, through health education and community participation. However, HIV/AIDS has moved from being a health sector problem to a wider development problem having profound impact on People Living With HIV/AIDS (PLWHAs), households, and different sectors of the economy.

Recognizing that, the government of Tanzania declared HIV/AIDS a National crisis and is now one of the top priority development agenda in the government, along with poverty alleviation initiatives. PRSP incorporates the issue of HIV/AIDS as one of its priority areas under the crosscutting issues. The Tanzania HIV policy deems HIV/AIDS a national disaster (URT, 2001). It is a national crisis offering a compelling reason for a multi-sectoral approach. Multi-sectoralism means effectively inviting non-health government officials to join HIV/AIDS program committees and/or giving different ministries responsibility for providing HIV/AIDS services to their employees. Multi-sectoralism can be more effective when it encourages other organizations to adapt their core practices to support government HIV/AIDS prevention and care programs.

On its own, ministry of health lack the resources to cope with the growing demands of the prevention of HIV transmission and care for PLWHA. Individual and community vulnerability to HIV/AIDS is partly a function of their economic, political, legal and social resources. There is, therefore, a clear consensus that effective HIV/AIDS interventions require the collaboration of a range of stakeholders, including government agencies, NGOs, civil society organization and businesses. Harnessing other sectors would not only increase the resources available to respond to HIV/AIDS, but would also encourage new and more broad-ranging approaches.

The Tanzania Commission for AIDS (TACAIDS) has been established under the Prime Ministers Office to provide leadership and coordination of multi-sectoral responses. It has formulated the National Multi-Sectoral Strategic Framework (NMSF) on HIV/AIDS (2003-2007) which is now in place. NMSF translates the National Policy of HIV/AIDS by providing strategic guidance to the planning of program, projects and interventions by various stakeholders in the fight against HIV/AIDS. It spells out the basic approaches and principles, which guide the National response, and identifies goals, objectives and strategies for the period 2003-2007. The NMSF will guide all future program and interventions by different stakeholders. It also contains a Monitoring and Evaluation system to measure progress towards the goals as well as institutional coordination and financial frameworks of the National response.

2.7 The Knowledge Gap

This section has reviewed some available studies on socioeconomic impacts of HIV/AIDS. Most of the studies reviewed are from several Sub-Saharan African countries. Few studies have been conducted in Tanzania to assess the socioeconomic impact of HIV/AIDS. Nevertheless, Tanzania has been hit just like other countries and it is likely to experience the same impacts. This study fills the knowledge gap by quantifying some of social and economic costs associated with the pandemic in Tanzania. The impacts at individual level, that is people living with HIV/AIDS, households and some sectors (health, education, and workplaces) and estimates at macro level are also presented.

3.0 APPROACH AND METHODOLOGY

Understanding the social economic impacts of HIV/AIDS in Tanzania requires a wide range and comprehensive study in terms of the area covered, number of sectors included as well as the number of people interviewed. On the basis of this pre-requisite a comprehensive approach and a wider area coverage was important in undertaking the present inquiry. However, due to time and particularly financial constraints only 5 out of 21 mainland regions were studied.

3.1 The Study Area, Scope, Target Groups and Duration of the Study

3.1.1 The Study Area

A total of 6 districts of the 5 mainland regions were studied. These districts are Kinondoni in Dar es Salaam region, Mbeya Rural and Mbeya Urban in Mbeya region and Simanjiro in Manyara region. Other districts include Dodoma Urban in Dodoma region and Kahama in Shinyanga region. The 5 sampled regions were deliberately/purposively selected to capture the HIV/AIDS high, and low prevalence areas[4] and rural-urban settings[5] (Table 3.1). Variation in HIV/AIDS prevalence between the sampled regions is important because it will be used to validate the assertion that indeed HIV/AIDS have social and economic impacts in the country. This is particularly true when the impacts are extensive in high prevalence regions in relation to low prevalence regions. Table 3.2 shows prevalence of HIV infection among blood donors in the surveyed districts.

Table 3.1: Prevalence of HIV Infections Among Blood Donors by Region[6]

Region	Prevalence of HIV (%)		
	1999	2000	2001
Arusha	22.0	13.8	17.8
Coast	8.9	12.5	10.4
Dar es Salaam	33.1	8.6	18.8
Dodoma	5.1	3.9	7.9
Iringa	14.7	14.6	18.7
Kagera	17.7	19.5	22.0
Kigoma	6.4	3.8	4.9
Kilimanjaro	4.8	6.7	5.9

[4] Dar es Salaam, Mbeya and Arusha are categorized as HIV/AIDS high prevalence areas whereas Shinyanga and Dodoma are low prevalence regions. Note also that no prevalence rates are available for the newly established Manyara region.

[5] Note that Kahama and Simanjiro districts represented rural and urban communities but they were also sampled purposely to capture information from mining communities.

[6] For some regions, the regional average is low. However, some districts within the same region have high prevalence rates, for instance, Dodoma region (regional average is 7.9 percent but Dodoma municipality (urban) has a prevalence rate of 13.2 percent).

Region	Prevalence of HIV (%)		
	1999	2000	2001
Lindi	3.4	4.2	3.8
Mara	9.2	9.4	9.0
Mbeya	15.2	17.0	16.4
Morogoro	11.3	16.6	17.2
Mtwara	7.8	8.2	7.5
Mwanza	7.0	7.6	8.0
Rukwa	-	11.8	10.7
Ruvuma	9.8	10.2	11.2
Shinyanga	8.2	9.4	8.4
Singida	8.1	8.0	11.8
Tabora	7.1	7.2	7.6
Tanga	8.3	8.8	8.6

Source: URT, (2002a).

Table 3.2: Prevalence of HIV Infections Among Blood Donors in the Surveyed Districts

District	Prevalence of HIV (%)		
	1999	2000	2001
Kinondoni	12.4	5.5	33.3
Dodoma Urban	4.8	5.6	13.2
Mbeya	16.3	18.3	13.3
Kahama	10.2	9.6	8.6

Source: URT, (2002a).
Note: Mbeya combines data from Mbeya Rural and Mbeya Urban Districts.
No figures are available for Simanjiro District.

The following is the profiles of the surveyed districts:

(i) Mbeya Rural District

Mbeya Rural is one of the eight districts of Mbeya region. It occupies 2,432 square kilometers (sq. km). Geographically, it surrounds Mbeya Urban district. The district has a total of 3 divisions namely, Utengule, Isangati and Tembela. Utengule Division has 6 wards and a total of 40 villages. Isangati division has 5 wards and 41 villages while Tembela division (which is the largest in terms of land area) has 6 wards and a total of 45 villages.

Major economic activities in the district include agriculture of both food and cash crops, and livestock keeping. Main food crops grown are bananas, maize, sweet potatoes, sugarcane, while the main cash crop is coffee. The livestock sector in the district is dominated mainly by zero grazing practices. The average number of animals per household ranges from 1 to 5.

They include cows, goats, donkeys and poultry for domestic, transport and business purposes. In addition, some residents use the animals, that is, donkeys and cows for cultivation.

(ii) Mbeya Urban District

Mbeya Urban district is one of the eight districts constituting Mbeya region, which is located in the South Western corner of the Southern Highlands of Tanzania. Surrounded by Mbeya Rural district, Mbeya Urban is the smallest district in size, occupying an area of 185 sq. km. This accounts for only 1.0 percent of the total Mbeya region area. The District has a total of 20 wards.

Mbeya urban, as the name denotes, is primarily urban. In terms of economic activities, the District accounts for the largest share of the Region's small-scale industrial activities (28 percent). Maize mills constitute the bulky of the small-scale industrial activities, followed by automobile repair shops and metal fabrication shops respectively. The District also accounts for the largest share of the medium and large-scale industries (64 percent).

(iii) Simanjiro District

Simanjiro is one of the districts in the newly formed region of Manyara. Until very recently, the district belonged to Arusha region whose headquarters (Arusha Municipality), although about 200 kilometers away, remains the main connecting point to the district. Simanjiro district has an area of 20,591 sq. km. with a total population of less than 200,000 people. This gives an average population density of less than 10 people per sq. km. Simanjiro district has, for government administrative purposes, 6 divisions, 12 wards and 43 registered villages.

The main economic activities of the district include agriculture, livestock keeping, mining and tourism, which are mostly influenced by the type of wildlife in the district. Agriculture is however the main economic activity followed by livestock keeping and mining. There are over 60 large and medium scale farmers carrying out commercial farming, mainly of seed beans. Big plantations of beans and maize are also found in the district. Livestock keeping is mostly influenced by the district's landscape where a variety of cattle are kept. The number of cattle has however been declining yearly due to drought effects and diseases. Small-scale miners dominate mining activities. It is only after the new Mining policy of 1997 that commercial mining has been introduced in the district. The main gemstones mined in the district include tanzanite, ruby, garnets and tourmaline (URT, 1997). Others are graphite and sapphire. The mining activities contribute over 40 percent of Simanjiro district revenue annually.

(iv) Dodoma Urban District

Dodoma Urban district is one of the four districts of Dodoma region. It occupies 2,572 sq. km. that represents 6.3 percent of the regional share. The district has a total of 3 divisions, 30 wards and 38 villages. It is important to note that Dodoma region falls under the least

developed regions in the country. Analysis of the average annual contribution to the national GDP by region (1980-1994) categorized Dodoma as one of the five poorest regions in the country contributing only 3.1 percent to the total average annual contribution (URT, 1996). Poverty is widespread, and there is pronounced limitations of basic services provision.

The district depends mostly in agriculture, animal husbandry and small-scale formal and informal trading activities. Agriculture is characterized by low productivity resulting from low and erratic rainfall. Main food crops grown are sorghum, bulrush, millet and maize, while major cash crops are maize, groundnuts, sunflower, and to a lesser extent castor seed, sesame and pulses. In the late 1970's grapes emerged as an important cash crop, although its contribution was short lived. The authorities are in the process of revamping the grape industry through the privatization exercise. Livestock keeping (poultry and piggery) is another major contributor to the district economy.

(v) Kahama District

Kahama is one of the seven districts of Shinyanga Region. It covers an area of 19,943 sq. km. and occupies 39.3 percent of the regional share. The district has a total of 9 division, 48 wards and 329 villages. Analysis of the average annual contribution to the national GDP by region (1980-1994) ranks Shinyanga region the 5th contributing 5.8 percent of the total average annual contribution (URT, 1996b).

The economy of the town and district is based on agriculture, livestock rearing, mining, forestry, transportation and trading. The district has gentle and undulating sloping terrain that is characterized by the occurrence of low-lying plains that get flooded during the rainy season and thereby rendering them to be suitable for rice cultivation. Both food and cash crops are grown in the district. The crops grown include maize, cassava, sweet potatoes, sorghum, groundnuts, beans, rice, cotton and tobacco. In addition, the district has large forest reserves that are a source of high quality timber and bee keeping.

Formal mining places in the district include Mwime gold mines, Kakola gold mines, and Nyang'hwale diamond mines. The district has been recording high annual population growth rates. The main reason for the high population growth rates in Kahama is the high immigration rate from nearby districts, regions and countries. The immigration is explained by adequate and reliable rainfall that enables people to invest in agriculture and livestock and natural endowments especially gold and diamond that attracts people to look for employment and enter into mining business.

(vi) Kinondoni District

Kinondoni is one of the Municipals that make up Dar es Salaam City. The district is located in the East Coast of Tanzania and is the biggest Municipal with a total area of 531 sq. km. The district is made up of 4 divisions, 27 wards, 113 sub-wards (streets), 14 villages and 14 hamlets. It is bordered by Indian Ocean in the North East, Coast Region in the north and in the west and in the southwest. In the south Ilala Municipal borders the district.
According to 2002 Population and Housing Census, Kinondoni District has a total population of about 1,088,867 with an average household size of 4.2. Agriculture, being one of the economic activities in the district is mostly practiced in rural areas where about 134,060 tons of food and cash crops are produced annually. Livestock keeping is also common in the district where over 30,000 diary and indigenous cattle are kept. Generally, livestock contribute about 34 percent of the basic needs of the households in the district per year. Fishing is also practiced in the district, which has a coastal length covering 124 kilometers. There are also industrial and commercial activities in the district, which employ a significant number of people. Other activities found in the district fall under informal activities, which include petty trading, tailoring, and food vending, just to mention a few.

As presented below, in each district a few divisions were randomly selected out of which a number of wards, villages and hamlets (suburbs) were also selected.

3.1.2 The Scope and Target Groups

At macro level this study focuses on macro-economic variables and/or indicators such as the Gross Domestic Product (GDP), per capita GDP, and demographic trends such as labor force, population growth rates, death rates among others. At sectoral level the focus has been on 4 major sectors namely agriculture, industry (both service giving and productive industries), health and education, whereas at micro level the study covered the households and people living with HIV/AIDS. The choice of the 4 sectors stems from the fact that, these are among the national priority areas in terms of poverty reduction.

A good number of respondents in the agricultural sector are farming households. At the household level, households or any other well informed person were interviewed. In most cases more than one person was interviewed. Within the health sector respondents include administrators, nurses, medical officers, health care workers, laboratory technicians, counselors and PLWHAs. Respondents from education sector include students (pupils), teachers, Ward Education Officers and District Education Officers. In the workplaces, respondents ranged from executives chairpersons, general managers, and human resource managers. Other categories of respondents include Principals of higher learning institutions, manpower management officers, and medical staff in charge of the organization's heath facility (for the organizations which have a health facility).

3.1.3 Study Duration

This is a 12 months study out of which two months were allocated for the fieldwork. With exception of Dar-es-Salaam where the survey was conducted between 28th October to 28th November, the field survey in the remaining 4 regions was conducted concurrently from 22nd September to 22nd October 2002.

3.2 Definition of HIV/AIDS Case and Orphans

Identifying HIV/AIDS cases is not an easy task because of the stigma associated with the disease, which makes the majority of the population reluctant to go for HIV testing. This study employed three different methods to identify HIV/AIDS cases. These are:

(i) People living with HIV/AIDS: These are individuals who have undergone HIV testing and tested HIV positive. They were identified through household interviews, health facilities, NGOs dealing with PLWHAs, and Voluntary Testing and Counseling Centers (VCTs).

(ii) Verbal Autopsy: Respondents were asked if they know of HIV/AIDS cases in their household, community, or workplaces. Any case reported was treated as a HIV positive case even if the mentioned individual has not undergone the HIV test.

(iii) Assessment on the basis of opportunistic diseases associated with HIV/AIDS, for instance, Tuberculosis (TB), frequent fever, diarrhea etc.

The second and third approaches to judging HIV/AIDS cases are not devoid of bias as they may result to underestimation or overestimation of the HIV/AIDS cases. However, these two crude approaches save the purpose given that just a fraction of the population is willing to test for HIV.

In this study an orphan was defined as someone who was 16 years old or below and has lost his/her mother (maternal orphan), father (paternal orphan), or both (dual orphan). An AIDS orphan was an orphan who has lost both, or one of the parents due to AIDS.

3.3 Data and Data Collection Techniques

3.3.1 Type of Data and Data Sources

This study has mainly utilized primary data on HIV/AIDS collected in the 5 regions through interviews. This is a wide profile of data that include information from health and education sectors, households, people living with HIV/AIDS and industries/working places. Different types of data were sought from different surveyed areas as presented in Section 3.3.2.
The secondary information has also been utilized to supplement primary data. Most of the secondary data was collected from official statistical publications and past reports and publications related to HIV/AIDS.

3.3.2 Data Collection Instruments

During the fieldwork, 4 instruments were used to facilitate data collection. These are structured questionnaire, interview checklist, documentation (and/or literature) and physical observation.

The structured questionnaire was administered to 1184 households, 301 workers of health facilities, 330 workers and orphans in the education institutions, 60 PLWHAs and 33 workplaces/industries. The interview guide was mainly used sporadically to hold discussion with officials at different levels and those working closely with the health centers in the districts. Relevant and HIV/AIDS related documents/articles were mainly collected at the district level, libraries, and internet. Observations during the fieldwork were meant to probe on issues beyond those, which were covered in the structured questionnaire and interview guide.

(i) Information Sought from PLWHAs

Information related to the economic and social cost of the pandemic was sought from people living with HIV/AIDS. These include information on medical cost, impact on social relations, impact on labor time, and impact on social/leisure activities, and stigmatization and discrimination encounters.

(ii) Information Sought from Households

Information was collected on social, economic and demographic characteristics of household members (age, sex, marital status, education, religion, orphan-hood); economic activities (time allocation, labour participation, farming systems, food security, wealth and value of assets, earned income from all economic activities, remittances and receipts, dependence ratio), health care and health seeking behaviour, illness and related health monetary and non-monetary expenditures, deaths in households, and schooling.

(iii) Information Sought from Health Sector

In assessing the socio-economic impact of HIV/AIDS on the health sector, data from the health sector were collected at three levels. From the health care facility administration, from clinicians attending to HIV/AIDS patients and from other health care facility supporting staff who included nurses, laboratory staff and auxiliaries. The questionnaire covered the following main areas: Outpatient and inpatient consultations, expenditures, and the proportion of HIV/AIDS related illnesses, and health staff movement including health worker morbidity and mortality due to HIV/AIDS. Information on the work environment in relation to nasocomial transmission of HIV infection, workplace based interventions, voluntary testing and counseling services, and ability to manage HIV/AIDS disease conditions were also sought.

(iv) Information Sought from Education Sector

Data and information sought from education sector were on, among other things, total number of teachers who died and those who died from HIV/AIDS related illnesses in the four most recent years, that is, 1999, 2000, 2001 and 2002, absenteeism, sick leave, medical expenses, transport and burial costs and stigma and discrimination. On the demand side data were collected at school level using two different questionnaires. One questionnaire was for head teachers/teachers in charge of student welfare. The number of students whose parents died (orphans), comparable data between orphans and other students on dropout and absenteeism rates, reasons for dropout and absenteeism, and the extent to which there is stigma and discrimination against children whose parents have died of AIDS related illnesses in schools were among the data and information sought in the questionnaire. The other questionnaire was for orphans who were asked among other things, questions related to absenteeism, workload at home, availability of resources to meet basic school needs, caregivers, and extent of stigma and discrimination against them both in schools and households.

(v) Information Sought from Workplaces

Several types of data were sought from workplaces. This include data on background of the company which include duration of business, total number of employees in each organization, the categories of employees, that is, higher, middle and low cadres, and gender-wise, and main activities performed by the company. Data on the HIV/AIDS prevalence were also sought. These include data on deaths due to HIV pandemic in the past four years by employees' categories, information on deceased sex, salary scale, and years of experience, and the presence of sick employees due to HIV/AIDS or HIV/AIDS related problems.

In order to assess the social impact of the pandemic at workplaces, questions regarding stigmatization and any incidence of discrimination by employer and fellow employees were sought. Further, information on interventions at workplace was also sought. This included information on the HIV/AIDS policy and strategies employed by the company to handle employees once diagnosed HIV positive, services provided to the victims, screening procedures, HIV/AIDS intervention programs, any outreach intervention program, and the role of the business community to enhance the establishment and sustaining HIV/AIDS interventions at workplace.

The economic impact is assessed using monetary and time costs variables. Information on the total number of employees on sick leave, their salaries, medical costs for cases related to HIV/AIDS, man-days lost due to their sickness, and the costs of early retirement/premature retirement were sought. For the deceased, information on burial costs, family support, possibility and the cost of replacing the deceased, were sought. Expenditures on preventive measures/programs at the company and community levels were also sought.

3.3.3 Sampling Techniques

Overall, this study has employed three different sampling techniques, namely the random sampling, stratified-random sampling and purposive sampling. These techniques were employed from the highest level (region) to the lowest level (household and individuals living with HIV/AIDS). Table 3.3 presents the sampling levels, the sampling techniques adopted, and reasons for choosing and using such methods.

Stratified random sampling was utilized in areas with, for instance, established strata. For example, Mbeya Rural has been profiled in to High Prevalence Areas (HPAs) and Low Prevalence Areas (LPAs). Stratified random sampling was therefore inevitable to ensure that both the two major categories are represented in the sample. The purposive sampling was also important in cases where the targeted group, that is, households or individuals living with HIV/AIDS were to be sought.

Table 3.3: Sampling Methods Used at Different Levels

Sn	Sampling Level	Sampling Method	Remarks
1	Regions	Purposive	To capture both categories namely, HIV/AIDS High Prevalence Areas (HPAs), and Low Prevalence Areas (LPAs).
2	Districts	Purposive	To capture different categories namely, HIV/AIDS HPAs, LPAs, urban, and rural areas.
3	Divisions	Random, Stratified-Random and Purposive	To capture a good representation and ensure both categories namely, HIV/AIDS HPAs and LPAs, are captured.
4	Wards	Random, Stratified-Random and Purposive	To capture a good representation and ensure both categories namely, HIV/AIDS HPAs and LPAs, are captured.
5	Villages	Random, and Purposive	To capture a good representation and ensure both categories namely, HIV/AIDS HPAs and LPAs, are captured.
6	Hamlets/Streets	Random	To capture good representation and minimize biased estimates.
7	Households	Random and Purposive	To capture good representation and minimize biased estimates, but also to capture households with people living with HIV/AIDS.
8	Health Facilities	Random and Purposive	To capture good representation and minimize biased estimates, but also to capture health facilities with HIV/AIDS screening facilities.
9	Primary Schools	Random	To capture good representation and minimize biased estimates.
10	Secondary Schools	Random	To capture good representation and minimize biased estimates.

Sn	Sampling Level	Sampling Method	Remarks
11	Industries/workplaces	Random and Purposive	To capture good representation and minimize biased estimates, but also ensure that industries and/or workplaces with HIV/AIDS workers or programs are captured.
12	Individuals	Purposive	To capture individuals living with HIV/AIDS.

3.3.4 The Sample

Boyd et al., (1981) pointed out that, for a sample to be representative of the total population, it must represent at least 5 percent of the total population in question. However, due to financial constraints, samples used in this study were arbitrarily determined and they do not necessary represent 5 percent of the total population in the study areas. Thus, the figures are meant to provide a case study of a particular surveyed area and not necessary the situation for the whole district or region. However, due to homogeneity of some areas, the cases may represent a wide range of other areas with the same characteristics as the studied areas. The study team envisaged to sample:

- At least 200 households from each district;
- At least 5 schools (2 secondary schools if any, and 1 college if any) in each district and administer one questionnaire to the District Education Officer;
- At least 5 orphans from each school (if any);
- At least 10 health facilities (dispensaries, health centers, hospitals) in each district. Private-public mix was to be observed and all hospitals and health centers in the study areas were to be sampled because they would most likely be attending HIV/AIDS patients compared to dispensaries;
- At least 10 people living with HIV/AIDS in each district; and
- At least 5 workplaces in each district. Only small, medium and large-scale enterprises were to be sampled in this study because the likelihood of detecting effects due to HIV infection at micro enterprises was deemed small.

In total, the research team sampled 60 individuals living with HIV/AIDS, 1184 households, 61 health care facilities, 43 schools, and 33 workplaces. Table 3.4 shows the total number of questionnaires administered at each level.

Table 3.4: The Total Number of Administered Questionnaires

Sn	Type of Instrument	Total Number of Questionnaire
	Mbeya Urban District	
1.	Household	200

Sn	Type of Instrument	Total Number of Questionnaire
2.	Health Facility Administration Health care Workers Nurses and supporting staff	63 11 11 41
3.	PLWHAs	10
4.	Education Information on Students Information on Teachers Orphans Education Officers	52 7 7 35 3
5.	Workplaces	5
	Mbeya Rural District	
1.	Household	198
2.	Health Facility Administration Health care Workers Nurses and supporting staff	46 14 2 30
3.	PLWHAs	12
4.	Education Information on Students Information on Teachers Orphans Education Officers	66 7 10 47 2
5.	Workplaces	5
	Kahama District	
1.	Household	198
2.	Health Facility Administration Health care Workers Nurses and supporting staff	54 11 11 32
3.	PLWHAs	4
4.	Education Information on Students Information on Teachers Orphans Education Officers	22 5 5 10 2
5.	Workplaces	0
	Dodoma Urban District	
1.	Household	199
2.	Health Facility Administration Health care Workers Nurses and supporting staff	34 10 14 10
3.	PLWHAs	14

Sn	Type of Instrument	Total Number of Questionnaire
4.	Education Information on Students Information on Teachers Orphans Education Officers	46 8 8 27 3
5.	Workplaces	4
	Simanjiro District	
1.	Household	197
2.	Health Facility Administration Health care Workers Nurses and supporting staff	29 6 6 17
3.	PLWHAs	7
4.	Education Information on Students Information on Teachers Orphans Education Officers	50 6 6 35 3
5.	Workplaces	10
	Kinondoni District	
1.	Household	192
2.	Health Facility Administration Health care Workers Nurses and supporting staff	75 11 13 51
3.	PLWHAs	13
4.	Education Information on Students Information on Teachers Orphans	94 11 11 72
5.	Workplaces	9
	Total Sampled Districts	
1.	Household	1184
2.	Health Facility Administration Health care Workers Nurses and supporting staff	301 63 57 181
3.	PLWHAs	60
4.	Education Information on Students Information on Teachers Orphans Education Officers	330 44 47 226 13
5.	Workplaces	33

3.3.5 Data Management and Analysis

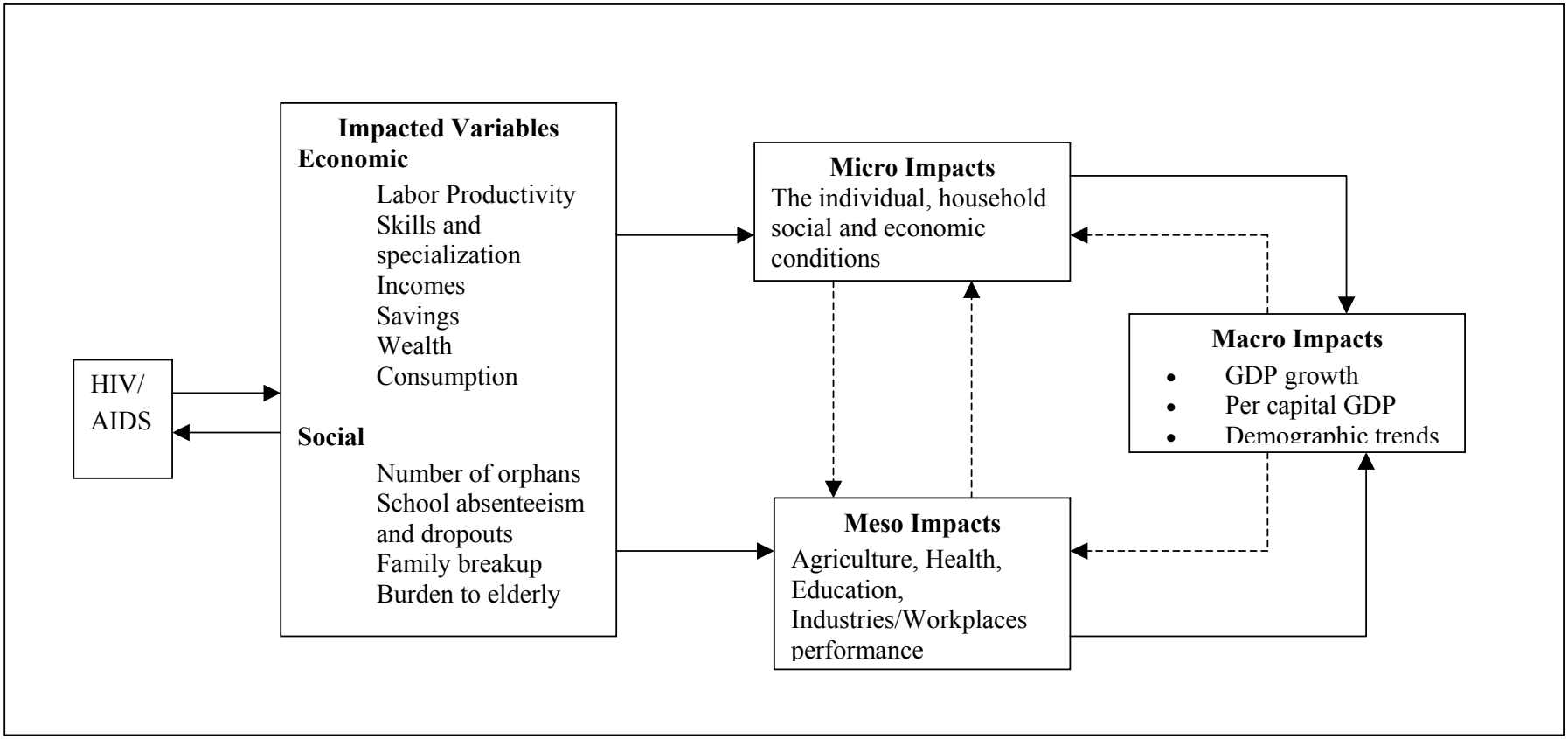
Data entry was done using Statistical Package for Social Scientists (SPSS) software, version 11 (Meulman and Heiser, 2001). Data were cleaned using different techniques such as control for totals, a technique used to make sure that the given entries in a column add to the given total. Control questions were also useful in checking the accuracy of different responses given. Further, SPSS and STATA software were used in generating tables and frequencies used in the discussion of the results. Whenever appropriate, Chi-square tests were conducted to compare the relationship between different variables of interest whenever deemed necessary.

3.4 The Analytical Framework

HIV/AIDS has substantial economic and social impacts on the affected individuals, households and communities. Economic impact can be defined as an outcome that causes the diversion of resources to other uses that would not have been necessary in the absence of HIV/AIDS, and decreased production due to the disease. The social impact may be defined as any sudden shock or slow-acting and cumulative series of events that disrupts existing systems of social support (UNAIDS, 2000a). The social and economic impacts of HIV/AIDS are transmitted through intermediary economic and social variables, which affect households and sectoral economic and social conditions. The aggregate households and sectoral economic and social impacts of HIV/AIDS is ultimately reflected in the national economic performance as well as the overall development of the country.

Thus, this study has identified various intermediary economic and social variables through which the HIV/AIDS pandemic impacts on household and sectoral economic performance as demonstrated in Figure 1.1 For example, HIV/AIDS has a severe impact on household economic performance through declining productivity, which is an outcome of reduced man-hours and capital resources allocated for production. Following HIV/AIDS pandemic, more time and financial resources are spent to take care of the sick and seeking for medical services. Further, discrimination and stigmatization affects workers' morale to work and school attendance for school age children. This study has therefore identified important variables, which are impacted by HIV/AIDS and estimate overall effect at household level as well as sectoral level. The findings at household and sectoral levels together with macro data on economic indicators are used to estimate the macro economic and demographic impacts using AIDS Impact Model and assumptions described in section 3.5.

Figure 1.1: The Analytical Framework



3.5 Estimating Demographic and Macro Economic Impacts Using AIDS Impact Model (AIM): Assumptions and Sources of Data

This sub-section describes in detail the models used in the analysis of the impact of HIV/AIDS on Tanzania's economy. It also provides the data used and their sources, and outlines the assumptions made.

The main model used is the *Spectrum*. This is a windows based program, developed by The Futures Group International with funding from the USAID[7]. This model analyzes existing information to determine the future consequences of current state, programs and policies on future population and economy. It has several modules of which two are relevant for our projections. These are DemProj (Demographic Projections) model used for the demographic projections on the basis of current population, fertility, mortality, and migration, and AIM (AIDS Impact Model) which is used for projecting the consequences of the AIDS epidemic on the economy and other sectoral variables.

3.5.1 Data Requirements

3.5.1.1 DemProj Model

The following assumptions and data are used for Demographic Projections Module for Tanzania. For good estimations, the projections should start a year or two before the start of the epidemic. Thus, our projections are simulated from 1980. We updated the 1980 data using latest several data sources available such as National Bureau of Statistics and Macro International Inc., 2000 (Tanzania Reproductive and Child Health Survey [TRCHS], United Nations World Population Prospects (UN, 2002), World Bank, (2002), Tanzania Population Census, (2003) etc. The projections are done for 15 years, that is, from 2000 to 2015.

(i) Base Year Population Estimates

Table 3.5: Base Year Population Estimates by Age and Sex (1980) (Thousands)

Age Group (Years)	Male	Female	Total
0-4	1788	1775	3563
5-9	1471	1518	2989
10-14	1193	1221	2414
15-19	979	994	1973
20-24	783	800	1583
25-29	619	640	1259

[7] The Spectrum models have been used by different Sub-Saharan African countries to project AIDS impacts. Example of the countries which have adopted the model include Namibia, Lesotho, and Swaziland, just to mention a few.

Age Group (Years)	Male	Female	Total
30-34	568	585	1153
35-39	463	477	940
40-44	373	389	762
45-49	297	315	612
50-54	232	255	487
55-59	178	201	379
60-64	130	154	284
65-69	89	111	200
70-74	55	73	128
75+	30	42	72
Total	9248	9550	18798

Source: UN, (2002).

(ii) Total Fertility Rate (TFR)

The TFR for women aged 15-49 is 5.6 (TCRHS, 2000). This is defined as the number of children a woman would have from age 15-19 if she were to bear children at the prevailing age specific rates or the average number of children a woman would have if she experienced a given set of age-specific fertility rates through her lifetime.

(iii) The Age Distribution of Fertility/Age Specific Fertility Rates (ASFR)

These are defined as the number of live births during a specified period divided by the number of woman-years lived in that age group during the specified period.

Table 3.6: Age Distribution of Fertility

Age Groups (Years)	Percent Distribution in 1999
15-19	12.41
20-24	24.10
25-29	21.58
30-34	19.15
35-39	12.41
40-44	7.01
45-49	3.33
Total	**100.00**

Source: TRCHS, (2000).

(iv) Sex Ratio at Birth

This is defined as number of male births per every 100 female births. The number used in the projections is 96 (URT, 2003b).

(v) Life Expectancy at Birth

This measures the average number of years that a newborn child would expect to live at current levels of mortality. The figures used in this study are: Male, 46.8, Females 49.1 (UNDP, 1999).

(vi) Percent of Women 15-19 Never Married

This is estimated at 72.8 percent (TCRHS, 2000).

(vii) Percent of Women in Monogamous Union

This is estimated at 71 percent (TDHS, 1997).

(viii) Infant Mortality Rate (IMR)

This is defined as the infant deaths per 1,000 live births. The study adopted figures provided in the Coale-Demey-North Life Table. This figure approximates mortality rates for different regions in the world. The model approximate IMR to be 107. Note that different sources report different IMR figures. For instance, IMR is reported to be 108, 94, and 104 by TRCHS, (2000), UNDP, (1999) and World Bank, (2003) respectively.

(ix) Crude Death Rate (CDR)

This is defined as the number of deaths per 1,000 people. The Coale-Demey-North Life Table approximates CDR to be 17 years that is close to the figure reported by World Bank 2003 (18 years).

(x) Net International Migration

It is assumed to be zero because of lack of reasonable migration data.

3.5.1.2 AIDS Impact Model

The following assumptions and HIV parameters are used in the AIDS Impact Model.

A: Epidemiology

(i) Adult HIV Prevalence Rate (%)

We used the Antenatal Clinic attended (ANC) 2001 figures produced by NACP. The prevalence among pregnant mothers was reported to be 9.6 in 2001. On one hand, ANC figures may be overestimated because they represent sexually active women. Thus, younger women who have higher fertility may be over-represented. Also, women tend to have higher HIV prevalence than men (ratio 1.3 to 1). On the other hand, ANC data may be

underestimated because HIV positive women have lower fertility than those without infections, and thus are less likely to be pregnant and attend ANC. There is evidence that these two sets of factors balance each other out.

(ii) Start Year of HIV Epidemic

The first three HIV cases were identified in Tanzania in 1983.

(iii) Percent Infants With AIDS Dying in the First Year

This is assumed to be 67 (UN, (2002)—Default for Sub-Saharan Africa).

(iv) Life Expectancy after AIDS Onset (years)

This is assumed to be 1 year (AIM Manual, 1999). This is defined as the average number of years a person will live after developing AIDS. In the developing world, this period ranges from 6 to 18 months. The default in AIM is 1 year (default for Sub-Saharan Africa). Changes in this parameter generally have little effect on the overall projections.

(v) Reduction in Fertility Among HIV Positive Women (%)

The default value in AIM is that fertility among 15-19 years old women is 50 percent higher among HIV positive women than HIV negative women and that fertility among women 20-49 is 20 percent lower among HIV positive women than HIV negative women.

(vi) Prenatal Transmission (%)

This is assumed to be 32 percent, that is, 32 percent of newborns from HIV positive women would be infected by HIV (UN, (2002)—Default for Sub-Saharan Africa).

(vii) HIV Incubation Period

This is defined as the cumulative percent of people infected by HIV, developing AIDS by number of years since infection (without ARV). We have assumed the slower pattern of cumulative percent developing AIDS by the number of years since infection for females, males, and children based on UNAIDS estimates.

Table 3.7: HIV Incubation Period

Years	Cumulative Percent	
	Adults	Children
1	0.0	25.0
2	0.0	34.0
3	1.0	39.0
4	4.0	43.0
5	7.0	47.0

Years	Cumulative Percent	
	Adults	Children
6	11.0	49.0
7	17.0	51.0
8	24.0	53.0
9	32.0	55.0
10	41.0	57.0
11	50.0	58.0
12	58.0	59.0
13	65.0	60.0
14	71.0	62.0
15	76.0	63.0
16	82.0	64.0
17	85.0	65.0
18	87.0	66.0
19	87.0	67.0
20	87.0	68.0

Source: UN, (2002)

B: AIDS Impacts

B1: Heath Sector

(i) Expenditure Per AIDS Patient (TZS)[8]

This is estimated to be TZS 223,000 per year (ESRF, 2003). The assumption is that only 30 percent of HIV positive individuals would need ARVs. Assuming the cost of ARVs per person per month to be TZS 40,000, a total of TZS 480,000 would be spent per individual per year. In addition, information from the households surveyed revealed that an average of TZS 79,000 are being used per year to treat opportunistic infections. Using the reported total number of HIV positive individuals in year 2001 (2.2 millions) (URT, 2002a), we calculated the expenditure per HIV positive individual to be TZS 223,000 per year. We assumed an increase of 5 percent over the projection period.

(ii) Percent AIDS Hospitalized

This is the percentage of people with AIDS who are hospitalized at a particular time period. It is assumed that in one year, 66 percent of individuals with AIDS will be hospitalized (ESRF, 2003).

[8] The exchange rate at the time of survey was $1=TZS 1000.

(iii) Ministry of Health Budget

The Ministry of Health budget is TZS 215 billions (UTR, 2003c). The Ministry of Health budget increased by about 12 percent from 2001/02 to 2002/03 budget years. Due to increased involvement of donors in the health sector, and the priority it commands in the PRSP, we assume the same increase for the projection years.

(iv) Number of hospital beds

The number of hospital beds used in the projections is 29,616 (URT, 1999). This number is assumed an increase of 10 percent over the projection period. This is based on the fact that private health service provision is expanding. The total beds reported in the health statistical abstract (URT, 1997b) is 25,834. This number increased to 29,616 in 1999 (URT, 1999), a 15 percent increase.

(v) Bed Capacity Factor

This is defined as average capacity utilization of hospital beds. A capacity factor of 100 percent means that every available bed is always occupied. We assumed a factor of 80, that is, on average each bed is occupied 80 percent of the time during a year (consultation with some officials at Muhimbili Medical Center).

(vi) Bed Days Per AIDS Patient (days)

This is the average number of days that an AIDS patient stays in a hospital from diagnosis until death. This may include days spent during several different hospital stays. This figure has been estimated for different countries to range from 15 to 80 days (AIM, 1999). In this study this figure is assumed to be 40 days (Consultation with officials at Muhimbili Medical Center). A study by National Institute for Medical Research (NIMR) estimated the total number of bed days per year to range from 12 days to 60 days with a mean stay of 25 (NIMR, 2001).

B2: Macro Economy

The size of the gross domestic product, with and without AIDS, was projected in the Excel Version of AIM. GDP is calculated with a Cobb-Douglas production function that expresses the size of GDP as a function of the size of the labor force, the amount of capital stock, and the rate of technical progress.

$$GDP_t = Const.(1 + RTP)^t \bullet Capital_t^{\ a} \bullet LF_t^{\ b} \text{.....(1)}$$

Where:

GDP	=	Gross Domestic Product
Const	=	A constant multiplier
RTP	=	Annual rate of technical progress
Capital	=	The value of the capital stock
LF	=	The size of the labor force
a	=	Elasticity of output to capital
b	=	Elasticity of output to labor

The Constant multiplier is calculated from the GDP equation to provide the correct GDP value in the base year.

$$Const = GDP_1 /(Capital_1^{\ a} \bullet LF_1^{\ b}) \text{.....(2)}$$

The size of the capital stock is calculated as the amount of capital in the previous year plus gross domestic investment (GDI) minus depreciation.

$$Capital_t = Capital_{t-1} + GDI_t - depreciaiton_t \text{ .....(3)}$$

Depreciation is the value of the capital stock divided by the average lifetime of capital:

$$Depreciaiton_t = Capital_{t-1} / Averagelifetimeofcapital \text{.....(4)}$$

Gross domestic investment is calculated as the GDP multiplied by the percent of GDP that is invested each year minus the amount of savings that is diverted from investment to expenditures for AIDS care:

$$GDI_t = (GDP_{t-1} \bullet \%GDI) - AIDS_t \bullet ExpenditurePerAIDS \bullet PercentFromSavings \text{.....(5)}$$

Where:

%GDI	=	The percent of GDP that is gross domestic investment
AIDS	=	The number of new AIDS cases
ExpedniturePerAIDS	=	The health care expenditure per AIDS patient
PercentFromSaving	=	The percentage of AIDS per AIDS patient

Gross domestic product per capita is calculated as the GDP divided by the size of the population:

$$GDPPerCapita = GDP_t / Population_t \text{.....(6)}$$

The inputs required for this simple model are as follows:

(i) Size of the Labor Force (Millions)

This is defined as the total population above 10 years old that is in the labor force. The projections were made from the following figures: 11.26 in 1992 (URT, 1993); 17.8 (URT, 2002b).

(ii) Nominal GDP (TZS Billions)

This is estimated at 1695 in 1999; 1781 in 2000; 317 in 2001; 2029 in 2002 (URT, 2002c).

(iii) Capital Stock (Capital Formation) (TZS Billions)

This is estimated at 999 in 1999; 1,281in 2000; 1,406 in 2001; 1,808 in 2002 (URT, 2002c)

(iv) Average Capital Lifetime (Years)

This is assumed to be 50 years. This is the average useful lifetime of capital such as infrastructure, buildings, machinery etc. This figure may be estimated as 50 years unless better information is available (Stover, 1999).

(v) Gross Domestic Investment as a Percentage of GDP (Percent)

This is estimated at 13.5 in 1998; 15.9 in 1999; 17.1 in 2000 (World Bank, 2002).

(vi) AIDS Care Expenditure (TZS Billions)

This is estimated at 11.405 in 2001 and 21.945 in 2002 (URT, 2003c).

(vii) GDP per capital [Gross National Income per Capital] (TZS)

This is estimated at 159,528 in 1998; 193,648 in 1999; 224,112 in 2000 (World Bank, 2002).

(viii) Rate of Technical Progress

This is assumed to be 1.1 (AIM Manual, 1999). The annual rate of growth of GDP that is not due to increase in the size of the labor force or capital stock. These additional increases are assumed to be due to improvements in the quality of the labor force (better education, better management systems) and the quality of capital stock (better technology).

(ix) Elasticity of Output to Labor

This is assumed to be 0.3. This is the percent increase in GDP that results from a 1 percent increase in the size of the labor force. This figure ranges from about 0.3 to 0.7. If the economy has surplus of labor, then generally the elasticity will be less than 0.5, indicating

that larger increase in GDP are to be expected from growth in the capital stock than in the labor force (AIM Manual, 1999).

(x) Elasticity of Output to Capital

This is assumed to be 0.7. This is the percent increase in GDP that results from a 1 percent increase in the size of the capital. This figure ranges from about 0.3 to 0.7. If the economy has surplus of capital, then generally the elasticity will be less than 0.5, indicating that larger increase in GDP are to be expected from growth in the labor force than in the capital stock (AIM Manual, 1999).

3.6 Limitations of the Study

The following are some of the limitations of this study

A: Sampling

The selection of study districts was intended to represent various HIV prevalence strata in the country. Due to diversity and lack of data in the prevalence estimates per district, it was not possible to obtain a representative sample of most HIV prevalence strata in the country.

B: Accessibility of Some Areas

Some selected areas were inaccessible due to security reasons as experienced in Kahama District.

C: Knowledgeable Respondents

In some selected households, there were no "knowledgeable" persons to talk to even after repeated visits/callbacks.

D: Conflicting Timetable

There was a conflicting timetable between study participants and data collection team. This happens during open markets, and sometimes the research team coincided with Tanzania Revenue Authority (TRA) revenue collectors. This made the data collection team being mistaken for revenue collectors and hence decreasing the expected cooperation. This was evident in Kakola in Kahama District where some of the shop-owners could not say the annual turnovers and expenditure for fear of taxation.

E: Reluctance to Participate in the Survey

Some workplaces could not grant permission to interview anyone in the premise despite repeated appeals and requests for permission to do so. This was evident for example at the Barrick owned Kahama Mining Corporation Limited where permission was to be obtained from the Headquarters in Dar es Salaam and even there it was never given.

F: Identifying HIV/AIDS Cases

Most People Living With HIV/AIDS were interviewed without necessarily proving using laboratory records that they were actually HIV positive. There may have been some form of misclassification as a result of this approach.

The use of self reported physical symptoms, description and duration of illness as proxies for making a diagnosis of particular illnesses and identifying individuals living or who died of HIV/AIDS may have also resulted in some form of misclassification of particular disease conditions with an effect of either over or underestimating prevalence and cost figures at household and sectoral levels.

Lack of documentation of AIDS diagnosis in hospital/health care facility record books is another problem encountered. This was reported to be either as a result of difficulties in arriving at a proper diagnosis due to lack of laboratory back-up or as a result of stigma associated with such diagnosis especially for nominal recording in the register books. This phenomenon resulted into a gross underestimation of the total number of AIDS cases and HIV/AIDS related illnesses recorded routinely in record books from almost all levels of health care facilities.

Proper records for the workforce especially in some of the sectors surveyed were not readily available. This has resulted in underestimation of the impact of HIV/AIDS on the workplaces' budget.

G: Recalling Problems

Some of the data analyzed in this reports are comprised of respondents' views to questions about the past. Respondents for instance were asked about the time taken to visits the sick, attend funerals, past contributions to funeral societies etc. Clearly, this is a very difficult task for respondents to do and in a questionnaire based approach, there is little opportunity for good triangulation.

4.0 STUDY RESULTS AND DISCUSSION

Tanzania has declared HIV/AIDS a national disaster that hinder Tanzanian development and it is among the Government's top challenges together with poverty alleviation (URT, 2001). In order to inform responses and strategies aimed at containing the pandemic, data on the social and economic impacts are desired. This chapter provides and discusses primary data on the social and economic impacts of the pandemic for individuals living with HIV/AIDS, households, education and health sectors, and some selected workplaces. In addition, the chapter presents findings on the impacts on demographic variables such as life expectancy, death rates, labor force, and macro economic variables such as GDP growth and GDP per capital.

4.1 The Impact of HIV/AIDS on People Living with HIV/AIDS

Breaking the silence has been advocated as one way to combat the spread of the virus. Through awareness campaigns, individuals living with HIV/AIDS have been encouraged to reveal their sero status in order to receive necessary support in counseling and care to cope with their status. The created awareness has resulted to increased number of PLWHAs who have revealed their sero status and who acquired membership to different NGO's dealing with HIV/ADS related problems. The study team was able to interview 60 individuals living with HIV/AIDS residing in the sampled districts. The impact of their sero status on their social and economic situation is presented in this section.

4.1.1 Characteristics of the Surveyed Sample

Out of 60 PLWHAs interviewed, 73 percent and 27 percent were females and males respectively. The high number of female interviewees was attributed to the following reasons:

(i) In household interviews, men who were suspected to be HIV positive (from physical symptoms and description and duration of their illnesses) refused to admit being HIV/AIDS positive and therefore could not be interviewed.

(ii) Most patients who accepted to be interviewed in health facilities were women.

(iii) Most of the members of NGOs dealing with HIV/AIDS related issues are women and this is because the affected men are reluctant to join these organizations.

(iv) Women undergo HIV/AIDS screening during pregnancy under Prevention of Mother to Child Transmission (PMCT) program.

(v) The literature indicated that in sub-Saharan Africa, slightly more females than males are infected because of biological, economic, and social factors.

The PLWHAs interviewed fall within age group 21-49 years with the highest number in the age group 30-39 (Table 4.1). This shows that AIDS is continually affecting the most productive/reproductive age group. The pattern can also suggest that most PLWHAs acquired infection during early to mid twenties. This is because HIV has a long incubation period of about 5 to 10 years. Persons who are infected with the virus may have many years of productive normal life, although they can infect others during this period (Rugalema, 1999).

Table 4.1: Distribution of PLWHAs Interviewed by Age and Sex

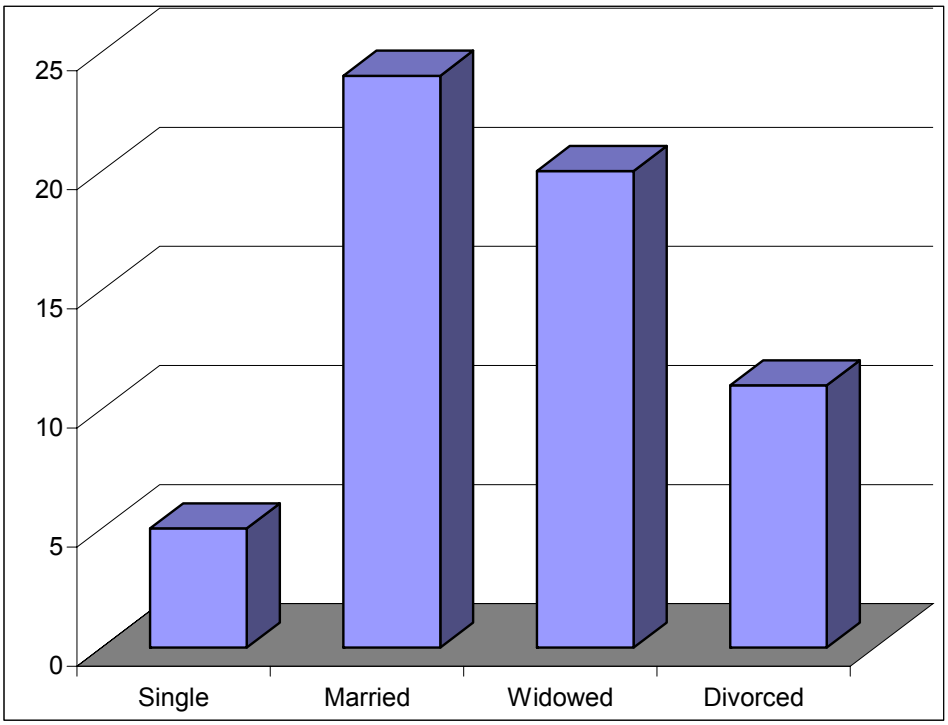
Age Group	Male	%	Female	%	Total	%
10 – 20	0	0	1	2.3	1	1.7
21 – 29	1	6.3	9	20.5	10	16.7
30 – 39	6	37.5	18	40.9	24	40.0
40 – 49	6	37.5	12	27.3	18	30.0
50 – 65	3	18.8	4	9.1	7	11.7
Total	**16**	**100.0**	**44**	**100.0**	**60**	**100.0**

Marital status and education levels of PLWHAs were also analyzed. Figure 4.1 presents PLWHAs interviewed according to their marital status. The figure shows that married respondents constituted 40 percent, widowed 33 percent, divorced/separated 18 percent and single 5 percent. Of the married people 79 percent and 21 percent were married monogamously and polygamous respectively. The findings on high prevalence of HIV/AIDS among married people relates to the finding reported in URT (2002a) whereby 44.2 percent of reported AIDS cases were from married people followed by cases from single individuals (24.2 percent). The high prevalence rate of HIV among married couple can imply presence of extra marital affairs in the society and/or involvement of unprotected sexual interaction before marriage[9]. Furthermore presence of polygamous marriage, nature of occupation of the married couples[10] and the culture of inheriting widows (levirate system) within family members exacerbate the situation.

[9] The possibility of getting infection from blood transfusion is ruled out because the chances are very small, that is, 1 percent (URT, 2002).

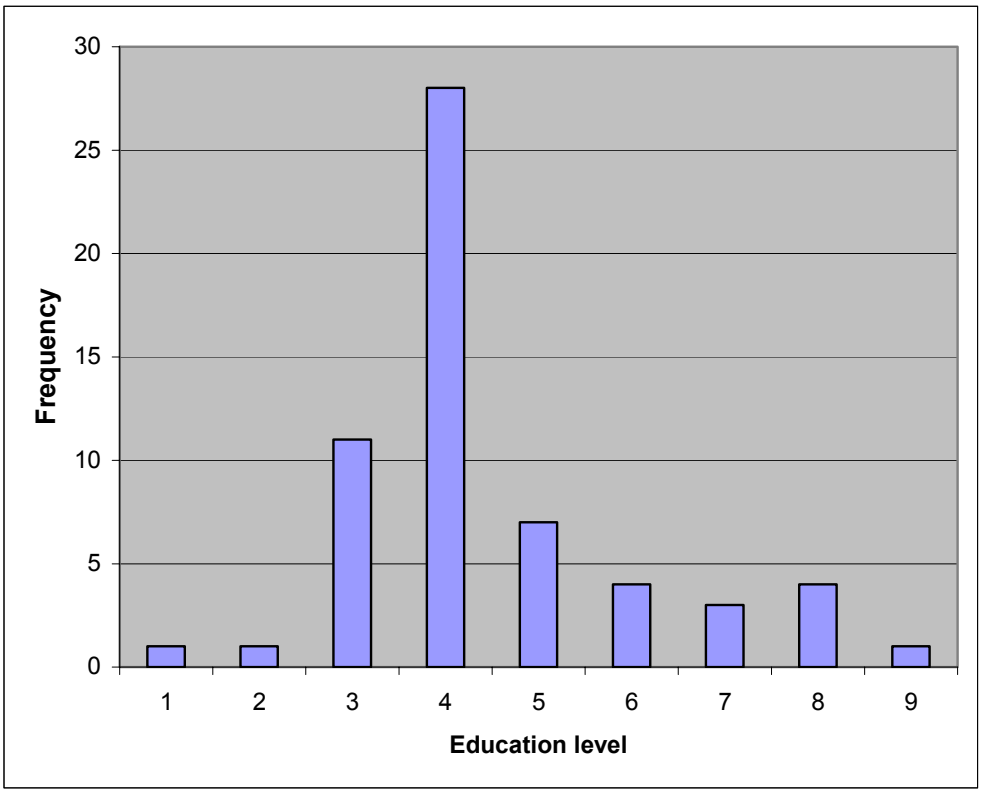
[10] Some occupations involve family separation for a long period of time, for instance, drivers, large estates farmers, miners etc.

Figure 4.1: Marital Status of the Respondents



Regarding education level of the PLWHAs interviewed, the information reveals that about 47 percent of respondents had completed primary education, whereas 18.3 percent had not completed primary education. In addition, 11.7 percent had no formal education whereas 6.7 percent had completed primary education plus extra courses. Other categories include, adult education (1.5 percent), still going to school (1.7 percent), Koranic education (1.7 percent), secondary education (5 percent), and higher learning (6.7 percent) [Figure 4.2]. The high number of PLWHAs with primary education can be attributed to the fact that majority of the Tanzanian population have primary school education. Results from other studies reveal that, HIV/AIDS has cut across all levels of education and skills. A study by World Bank group in Swaziland shows that AIDS deaths are increasing among the highly skilled labor force but the increase on the unskilled labor was much higher (World Bank, 2001a).

Figure 4.2: Education Level of PLWHAs Surveyed



Key to the Figure: 1 = Koranic , 2 = Still going to School, 3 = Not Completed primary school, 4 = Completed primary school, 5 = No formal education , 6 = Completed primary school plus extra courses, 7 = Completed secondary school, 8 = Higher institution of learning, 9 = Adult education

4.1.2 Medical Cost

Increased medical cost is the most visible and direct cost of the epidemic. It is costly because the opportunistic infections associated with it (Tuberculosis [TB], pneumonia, skin infections etc) are expensive to treat. As a result the resources of PLWHAs and their families that usually finance health care get eroded over time.

4.1.2.1 HIV Testing

The 60 PLWHAs interviewed were aware of their sero status and had gone for HIV/AIDS test. The main reasons for undergoing the HIV test were frequent/unexplained illness (43 percent) and suffering from HIV/AIDS related diseases (19 percent). Other reasons for testing include spouse tested and found HIV positive (13 percent), spouse died of HIV related illness (13 percent) and voluntary testing/just decided to test (12 percent)[11]. Other reasons for

[11] This shows increased awareness on Voluntary Counseling and Testing (VCT) services to the population. According to URT (2001), the VCT services aims at reassuring and encouraging the 85-90 percent of the population who are HIV negative to take definite steps not to be infected and those who are positive to receive necessary support in counseling and care to cope with their status.

undertaking HIV test mentioned include: Death of extramarital spouse friend due to HIV related illness; Unexplained deaths of newborn children; Children/child tested and found HIV positive; and awareness programs/campaigns, for instance, from radios, newspapers and televisions.

The cost for testing for HIV ranged from TZS 1,000 to 12,000 with an average of TZS 3,000. About 49 percent of PLWHAs used between TZS 1000 to 5,000 for testing. It is also indicated that 44 percent of the PLWHAs interviewed were tested for free. This indicates availability of free VCT services in districts surveyed.

4.1.2.2 Cost of Anti-Retroviral Therapy

HIV infection is not an immediate death sentence. Depending upon individual constitutions, rates and types of ambient infection, living conditions, diet and other factors, an infected person may have several productive years before developing full-blown AIDS. In this period an infected person will begin to experience periods of illness that increase in frequency, duration and severity until death. Many opportunistic infections and diseases associated with AIDS can be treated (or prevented) at relative low cost, thus prolonging life.

In recent years, antiretroviral therapies, which help to slow down the progression of the infection, have been developed. The antiretroviral drugs are available but they are expensive for a common person to afford. The study reveals that only 4 out of the 60 respondents interviewed are using antiretroviral drugs. They indicated that the price of antiretroviral drugs ranged from TZS 40,000 to TZS 60,000 per dose per month. This indicates that the awareness on these drugs is low and where the drugs are known they are not easily affordable to the majority of PLWHAs.

It was further noted that the 2 out of 4 respondents using antiretroviral drugs covered the cost of the drugs themselves. The cost for the third respondent was covered by health facility under Prevention of Mother to Child Transmission Program[12] while the cost for the final respondent was been covered by her spouse.

4.1.2.3 Other Costs

Other costs that are incurred by the PLWHAs include consultation fee, transport cost to and from the health facilities, investigation/drug and hospitalization costs.

[12] It should be noted that this is a temporary service to HIV pregnant mothers. These women are given antiretroviral drugs free of charge some months before delivery and after delivery so as to prevent mother to child transmission of HIV.

(i) Transportation Cost

About 48 percent of the respondents paid for transportation to the health facility. The cost ranged from TZS 300 to TZS 15,000 with an average cost of TZS 2700[13]. The study further reveals that for one visit to the health facility 29 percent of PLWHAs interviewed paid between TZS 200-5000 and 19 percent paid above TZS 5000. The remaining PLWHAs interviewed did not incur any transportation cost to the place of treatment. This is because for some PLWHAs the facilities were within walking distance from their homes and secondly some PLWHAs attended the VCT centers that provide transport incentives, for instance, Walio Katika Mapambano na UKIMWI (People in the Fight Against AIDS) [WAMATA].

(ii) Consultation Fee

The majority of PLWHAs (70 percent) attends the health facilities that provide them with free consultation charges. The remaining PLWHAs paid TZS 600-5000 with an average of TZS 2400 as consultation fee to the health facility visited.

(iii) Investigation/Drug Cost

The study revealed that 64 percent of PLWHAs received free investigation services and drugs for the opportunistic infections from the clinics they attended, for instance, WAMATA (DSM), and Diocese of Central Tanganyika (DCT)—AIDS Control Program (ACP) in Dodoma. For the rest of respondents, the cost ranged from TZS 5000-38,000 with an average of TZS 4000. Furthermore, 17 percent of PLWHAs paid between TZS 500-5000, 7 percent paid TZS 5001-20000, and 12 percent paid above TZS 20000 per visit for the drugs and investigation services.

It is also important to note that the costs incurred by PLWHAs per visit on consultation, investigation and drugs depends also on the type of service the PLWHAs demanded/required on that particular day. It was revealed that when PLWHAs paid for the services the burden/cost is covered from their savings, spouses, and/ or close family members. Only one respondent interviewed admitted his/her medical cost to be covered by his/her employer.

4.1.3 Rate of Hospitalisation of PLWHAs

Information on the rate of hospitalization of PLWHAs 6 months prior to the survey was sought. Thirty three percent (20) of PLWHAs interviewed indicated to have been hospitalized in the last six months with an average cost per hospital bed of TZS 600 per day. Of the 20

[13] Note that the maximum figure is high because some PLWHAs were referred to further away health facilities for consultation/treatment and others were too sick to use the public transport and thus hired a car to the health facility.

PLWHAs that have been hospitalized in the last six months, 10 have been hospitalized between 1-2 times, 8 between 3-4 times and for the remaining 2 PLWHAs 6 and 7 times respectively.

Information regarding availability of resources, for instance, investigation facilities, qualified staff, drugs etc at the place they go for treatment was sought from the respondents. Fifty eight percent indicated that the resources were adequately available whereas 30 percent mentioned that they were insufficient. The remaining 12 percent indicated that the resources were not available. Information on resources available at home was also sought. About 62 percent of PLWHAs interviewed indicated that resources are insufficiently available, 28 percent indicated that resources were not available at all and only 10 percent indicated resources to be adequately available. The low availability of resources to majority of PLWHAs interviewed is translated to the low usage of ARV as it has been indicated earlier.

4.1.4 Cost on Labour Time

HIV/AIDS affects economic activity performance pattern of PLWHAs. The survey reveals that 74 percent of PLWHAs interviewed confirmed to feel sick/unwell. They indicated that poor health, reduction of labor time due to frequent illness, and withdrawal of support from business partners have affected their involvement in income earning activities. The survey further shows that 67 percent of PLWHAs were forced to reduce time previously allocated to production activities because either they had to go for treatment/medication or because they were too sick to work. It is indicated that respondents interviewed lost between 1 to 183 working days with an average of 43 days in the past six months before the survey attending their illness. It is also indicated that 19 lost between 1-10 days, 6 between 11-20 days, 3 between 21-30 days, 5 between 60-90 days and 7 between 120-183 days in the past 6 months prior to the survey respectively.

Other reasons mentioned that affect PLWHAs involvement in income earning activities include loss of capital to financing ill health, inability to travel on business trips due to fear of falling sick, and discrimination in the workplace (colleagues/workmates do not want to mix with HIV infected workers on the fear of being infected). Here below are some of the transcripts from the PLWHAs interviewed:

"I am a gemstone broker and this business involves a lot of movement but these days I can not run here and there, as most of the time I am in bed." (Male, 31 years, Married, Simanjiro District).

"My co-workers do not want to mix with me because they think I might infect them." (Female, 50 years, Widowed, Mbeya Urban District).

"I can no longer work, my life is dependent on neighbors' assistance." (Female, 30 years, Single, Kahama District).

"I am a business man and my work involves traveling. These days I fear to travel far away as I might fall sick away from home." (Male, 28 years, Married, Dodoma Urban District).

In addition, PLWHAs were sometimes forced to change their main occupation due to their ill health. Out of the interviewed PLWHAs, 40 percent were employed prior to their ill health. Further information reveals that at the time of survey only 10 PLWHAs were still formally employed whereby 2 are in executive positions, 3 in middle cadre positions and 5 in lower cadre positions.

The study further revealed that of the remaining PLWHAs who were not in the formal sector, 21 were engaged in small scale business including mining activities, 12 small-scale farming, 11 housewife, 1 was in school, 1 was a volunteer in HIV/AIDS NGO, and the remaining 4 were not engaged in any viable economic activity.

The pandemic was also found to have an impact on PLWHAs extra economic activities, that is, economic activities other than their main occupation. It is indicated that only 13 percent (8) of PLWHAs interviewed were able to spend more time on other economic activities other than their main occupation. It is further indicated that they spent between 1-56 hours during the last 14 days prior to the survey working on extra economic activities. The remaining 87 percent (52) PLWHAs were unable to engage in any other extra economic activities some due to their ill health and others due to unavailability of such activities.

4.1.5 Social Cost of HIV/AIDS

4.1.5.1 Impact on Social Relations

HIV/AIDS has an impact on social relations within family members, close friends, relatives and co-workers. This is mainly attributed to strong stigma associated with the disease. HIV is firmly linked to unaccepted sexual behavior that is "promiscuous" behavior. This attitude puts PLWHAs into unnecessary hostile and embarrassing situation and sometimes they face discrimination and neglect. In this study 48 percent (29) out of 60 PLWHAs interviewed acknowledged that, they feel embarrassed after knowing their sero-status. The following are some of the concerns as presented by the PLWHAs during the interviews:

"I have not told anybody including my family members, I feel so ashamed." (Male, 44 years, Married, Mbeya Rural District).

"I did not ever expect to contract the disease, so I am very confused." (Female, 25 years, Married, Mbeya Urban District)

"I feel hopeless and separated." (Male, 58 years, Widowed, Kinondoni District)

Furthermore 47 percent (28) of the PLWHAs interviewed acknowledged that knowing their sero status had affected their marital relationship and relations with their close family members and co-workers. One interviewee reported that her husband left her for another woman and another one revealed that her sero status had brought misunderstanding with close relatives after she was advised by health workers to stop breastfeeding her baby. In addition, the PLWHAs interviewed mentioned that some people who were close to them before were scared to contract HIV by being close to them. This shows the strong stigma associated with the disease and lack of knowledge on how HIV is being transmitted by part of the population. Other transcripts as presented by the PLWHAs interviewed include:

"My wife does not want to have anymore sexual relationship with me." (Male, 49 years, Married, Dodoma Urban District).

"My Husband was not ready to go for the test and therefore he just disappeared." (Female, 30 years, Separated, Mbeya Rural District).

"My relatives said they can not waste anymore money on me as I am going to die anyway." (Male, 40 years, Married, Simanjiro District).

"I have been discriminated by my neighbors, when fetching water they do not want to be close to me. They do not even want to touch my bucket." (Female, 50 years, Divorced, Kinondoni District).
"They laugh, insult and discriminate me. They call me a dead person who went against norms." (Female, 43 years, Married, Simanjiro District).

"After knowing my Sero Status, my husband treated me differently, he ran away and got married to another woman and some of my friends fear even to eat or sharing anything with me." (Female, 39 years, Divorced, Mbeya Urban District).

Thus, some PLWHAs continue to practice unprotected sex by running away from their current partner to another one. This shows that PLWHAs are still denying their sero status. A study conducted in Kenya revealed that PLWHAs were found to continue having unprotected sex and continue having children (Kusimba et al., 1996). In one case a woman gave birth to four children after being diagnosed as HIV positive. Denial and family/peer pressure also result to HIV lactating mothers to continue breast-feeding their children on the belief that they could no infect their infants with HIV.

It was further revealed that HIV/AIDS has an impact on time spent attending social activities inside and outside the PLWHAs households. About 62 percent of PLWHAs interviewed were unable to attend any social activity within or outside their household 14 days prior the survey. The main reasons mentioned for not attending the social activities include: ill health, do not feel like mixing with people, and feeling down/depressed. In some cases in social functions the PLWHAs are being segregated or looked down by the community. The ones who have managed to attend spent only around 1-4 hours during the past two weeks prior the survey.

4.1.5.2 Care from Others

Despite the stigmatization and discrimination encountered from some family members, the study observed that HIV/AIDS is seen more as a family rather than an individual issue. PLWHAs need care, support and love from people around them especially their family members. PLWHAs interviewed revealed that their family members play an important role of taking care of them when they fall sick. About 13 individuals living with HIV/AIDS were been taken care of by their mothers, 13 by their daughters, 12 by their spouses, 10 by their sons, 3 by their fathers and the remaining 4 were taken care by friends and other volunteers.

The family members provides the following support, among others: Nurse the patient according to his/her prevailing condition; Provide comfort to the patient; Make sure that the patient takes his/her medicine according to doctors' instruction; Make sure that the individuals living with HIV/AID keep appointments and observe medical advice appropriate for his/her medical condition; and Provide emotional support and spiritual care to PLWHAs.

Non Governmental Organizations and religious groups were also found to provide care and support to PLWHAs. The organizations mentioned to have been providing support to PLWHAs interviewed are: Diocese of Central Tanganyika (DCT), Pastoral Activities and Services for People with AIDS (PASADA), WAMATA, Comprehensive Community Based Rehabilitation in Tanzania (CCBRT), World Vision Tanzania, and Community Mobilization Comprehensive Approach for HIV/AIDS (COMOCAH). The PLWHAs indicated to have received among others the following support: counseling (4), treatment of opportunistic infections (12); transport cost to and from the centers (1), food stuffs (4), and school fees for their children (1).

However despite the good intentions of providing support to PLWHAs these organizations were found to face the following constraints: Inadequate amount of funds to implement the desired programs; Inability to plan their programs properly due to over dependency on donor assistance; Inadequate working facilities including transport and office space; and Inadequate number of trained personnel to implement the designed programs.

4.1.6 Conclusions

The impact of HIV/AIDS on individuals living with HIV/AIDS is devastating. However, regardless of who is ill in the household, the impact was found to affect other members of the household. The opportunistic infections resulted from HIV infection erode the financial base of not only the PLWHAs but also other individuals and organizations interested in taking care of their welfare. Further, PLWHAs have to live with the stigma and exclusion associated with their medical condition. Feelings of discrimination and finger pointing towards those who are infected or ill are ubiquitous. The stigma and debilitation associated with the pandemic have been found to make PLWHAs to be absent from their job, change jobs or sometimes quit the job, and deny their sero status. All these combined results to an unproductive and sometimes morally deficient worker. The long-term negative consequences on the individual's welfare and the economic development at large could be overwhelming.

4.2 Economic Impact of HIV/AIDS on Households

4.2.1 Introduction

This section reports the impact of HIV/AIDS on households' welfare among the studied population. Mujinja et al, (1992) in their conceptual framework to determine the economic impact of adult mortality due to HIV/AIDS and related diseases gave a fairly representative overview of the economic impacts likely to be experienced by households that encounter HIV/AIDS. These impacts were grouped according to different routes of how they manifest themselves, viz:

- Loss of income, from less labor-time from the sick person and other people in the household who would spend time to take care of the sick;
- Decrease in remittances (informal insurance) from the person with HIV/AIDS and the household at large to other people and households;
- Increase in household expenditures for medical expenses;
- Decrease in household savings;
- Decrease in household's wealth, due to reduced remittances, sale of property, etc.;
- Decrease in household consumption, and increase in malnutrition that reduces productivity in the long run;
- Decrease in household investment;

- Decrease in school enrolment and attendance of some members of the household, usually daughters may miss school in order to work as a substitute and/or take care of the sick person;

- Death resulting in permanent loss of an income, funeral and mourning costs, and the removal of children from school in order to save on educational expenses and increase household labor capacity, with the effect of a severe loss of future earning potential; and

- Dissolving households and absorbed into other households, for instance, children fostered etc (Mujinja et al, 1992).

After looking at the household characteristics, this section analyses most of the above-mentioned impacts on households using information collected from surveyed households.

4.2.2 Individual and Household Characteristics

4.2.2.1 Household Composition

Table 4.2 shows the distribution of households, population interviewed and average household size in each district. A total of 1184 households, with a total population of 7135 and an average household size of 6 people, were interviewed.

Table 4.2: Households Interviewed by District

District	Number of households	Number of household members	Average household size
Dodoma Urban	199	1029	5.2
Kahama	198	1305	6.6
Kinondoni	192	1349	7.0
Mbeya Rural	198	977	4.9
Mbeya Urban	200	1219	6.1
Simanjiro	197	1256	6.4
Total	**1184**	**7135**	**6.0**

The household size ranged from 1 to 30 people. About 48.96 percent (3499) and 51.04 percent (3642) of all the people in all households were males and females respectively, as shown in Table 4.3. Further, Table 4.3 shows that with exception of Simanjiro district, more females were interviewed compared to male.

Table 4.3: Distribution of Household Residents by District

District	Sex of household member		Total
	Male	Female	
Dodoma Urban	483 (46.9)	546 (53.1)	1029 (100.00)
Kahama	639 (49.0)	666 (51.0)	1305 (100.00)
Kinondoni	636 (47.2)	713 (52.8)	1349 (100.00)
Mbeya Rural	488 (49.9)	489 (50.1)	977 (100.00)
Mbeya Urban	607 (49.8)	612 (50.2)	1219 (100.00)
Simanjiro	640 (51.0)	616 (49.0)	1256 (100.00)
Total	**3493 (49.0)**	**3642 (51.0)**	**7135 (100.00)**

Note: For this and subsequent Tables, number in parenthesis represent percentages.

4.2.2.2 Marital Status

About 21.8 percent (1558) and 4.29 percent (306) of the respondents reported to be married in monogamous and polygamous relationships respectively, as shown on Table 4.4. There was also a significant number of widow/widowers (3.27 percent) among all household members. Polygamous marriage arrangements were mainly found in rural areas where 8.4 percent (82), 6.5 percent (82) and 4.1 percent (53) of all the household residents in Mbeya Rural, Kahama and Simanjiro districts were in a polygamous relationship.

Table 4.4: Marital Status by Sex

Marital status	Sex of Household Member		Total
	Male	Female	
Married (monogamous)	775 (22.2)	783 (21.5)	1558 (21.8)
Married (polygamous)	140 (4.0)	166 (4.6)	306 (4.3)
Partner (cohabiting)	50 (1.4)	57 (1.6)	69 (1.0)
Divorced	12 (0.3)	57 (1.6)	69 (1.0)
Separated	36 (1.0)	94 (2.6)	130 (1.8)
Widow/widower	43 (1.2)	190 (5.2)	233 (3.3)
Never married[14]	2220 (63.6)	2038 (56.0)	4258 (59.7)
Missing	217 (6.2)	265 (7.3)	482 (6.8)
Total	**3493**	**3642**	**7135 (100.0)**

[14] These include children.

4.2.2.3 Age Distribution

The majority of the household members fall in the age group 21-50 years old (Table 4.6). About 14.7 percent (1052), 15.1 percent (1077), 13.9 percent, (990), 13.05 percent (990), 34.5 percent (2465), 3.5 percent (247) and 5.2 percent (373) of the household residents were aged up to 5 years, between 6 and 10 years, between 11 and 15 years, between 16 and 20 years, between 21 and 50 years, between 51 and 60 years, and above 60 years respectively (Table 4.5)

4.2.2.4 Relationship to the Head of Household

Table 4.6 shows the relationship of a household member to the head of the household. About 16.7 percent and 13.4 percent of the household members were heads and spouses of heads respectively. Further, about 78.5 percent and 21.5 percent of the heads of households were men and women respectively. Most households had a mixture of composition. About 44.9 percent (3205), 10.7 percent (766) of the people residing in interviewed households were children and grandchildren of the heads of the households respectively. The composition of the households reflected a typical African extended family household.

Table 4.5: Age Distribution by District

Age	District						Total
	Dodoma	Kahama	Kinondoni	Mbeya Rural	Mbeya Urban	Simanjiro	
<=5	86 (8.4)	247 (18.9)	151 (11.2)	179 (18.3)	153 (12.5)	236 (18.8)	1052 (14.7)
6-10	150 (14.7)	220 (16.9)	156 (11.6)	171 (17.5)	182 (14.9)	198 (15.8)	1077 (15.1)
11-15	152 (14.8)	179 (13.7)	158 (11.7)	114 (11.7)	220 (18.0)	167 (13.3)	990 (13.9)
16-20	177 (17.2)	124 (9.5)	205 (15.3)	98 (10.0)	158 (13.0)	168 (13.3)	931 (13.0)
21-50	377 (35.6)	431 (33.0)	524 (38.8)	357 (36.5)	354 (29.0)	422 (33.6)	2465 (34.5)
51-50	51 (5.0)	34 (2.6)	63 (4.7)	15 (1.5)	61 (5.0)	23 (1.8)	247 (3.46)
60+	36 (3.5)	70 (5.4)	91 (6.7)	43 (4.4)	91 (7.5)	42 (3.3)	373 (5.2)
Total	**1029 14.42**	**1305 (18.3)**	**1349 (18.9)**	**977 (13.69)**	**1219 (17.08)**	**1256 (17.60)**	**7135 (100.0)**

Table 4.6: Relationship to the Head by Sex

Relationship to head of the household	SEX		Total
	Male	Female	
Head	922 (78.5)	252 (21.5)	1174 (16.7)
Spouse	41 (4.3)	915 (95.7)	956 (13.4)
Son/daughter	1652 (51.5)	1553 (48.5)	3205 (44.9)
Grandchild	386 (50.4)	380 (49.6)	766 (10.7)
Parent	12 (17.4)	57 (82.6)	69 (1.0)
Sister/Brother	120 (52.9)	107 (47.1)	227 (3.2)
Niece/nephew	153 (52.6)	138 (47.1)	291 (4.1)
Son/daughter in law	20 (27.0)	54 (73.0)	74 (1.0)
Father/mother in law	3 (15.8)	54 (28.0)	19 (0.3)
Related to spouse	60 (59.4)	41 (40.6)	101 (1.4)
Servant (through verbal agreement)	19 (36.5)	33 (63.5)	52 (0.7)
Servant (through written agreement)	10 (37.0)	17 (63.0)	27 (0.4)
Tenant/Boarder	1 (100.0)	0 (0.0)	1 (0.01)
Other relationship	72 (56.7)	55 (43.3)	127 (1.8)
Total	3493 (49.0)	3642 (51.4)	7135 (100.0)

4.2.2.5 Orphans in Households

The number of orphans of different ages has been increasing in many districts in Tanzania since the HIV/AIDS pandemic began. An orphan in this study was defined as someone who was 16 years or below and had lost one or both parents. Table 4.7 shows that a total of 293 households reported to have had orphans. About 610 orphans were recorded from these households. Out of all orphans recorded 50.8 percent (310) and 49.2 percent (300) were females and males respectively. Most orphans were found in Dodoma Urban (202) and Mbeya Urban (192) households. It is surprising that Mbeya Rural district, one of recorded high prevalence district, had the least number of both orphans and households that reported orphans.

Table 4.7: Distribution of Orphans by District

District	Sex of Orphan			Households with orphans
	Male	Female	Total	
Dodoma urban	91 (45.0)	111 (55.0)	202 (33.1)	98
Kahama	36 (63.1)	21 (36.9)	57 (9.3)	29
Kinondoni	38 (45.7)	45 (54.3)	83 (13.6)	42
Mbeya rural	4 (30.7)	9 (69.3)	13 (2.1)	9
Mbeya urban	101 (52.6)	92 (47.4)	192 (31.5)	85
Simanjiro	30 (48.3)	32 (51.7)	62 (10.2)	30

Total	**300 (49.1)**	**310 (50.9)**	**610 (100.0)**	**293**

4.2.3 Impacts of HIV/AIDS

4.2.3.1 Health Seeking Behavior and Cost of Care

(i) Illness in the Household: Type and Duration of Illness

One of the most obvious impacts of HIV/AIDS is the duration and the number of illness the individual experiences before death. Studies have shown that an AIDS patient is likely to suffer more and frequent episodes of opportunistic infections than a non-AIDS patient, other things being equal. In this study, respondents were asked to report if in the past 4 weeks prior to the interview any member of the household suffered from illness. About 944 respondents reported to have had a sick member during that period (Table 4.8). Furthermore, respondents were asked to mention the disease that a household member or the respondent had suffered.

Table 4.8: Type of Illness in the Last 4 Weeks by District

District	Reported Illness							Total
	Malaria	Diarrhea	Respiratory related disease	Cardio vascular related disease	HIV/ AIDS	Injury	Other	
Dodoma	24 (22.4)	16 (15.0)	21 (19.6)	4 (3.7)	34 (31.8)	2 (1.9)	6 (5.6)	107 (11.3)
Kahama	52 (26.7)	15 (7.7)	29 (14.9)	3 (1.5)	5 (2.6)	3 (1.5)	88 (45.1)	195 (20.7)
Kinondoni	46 (18.9)	121 (49.8)	28 (11.5)	6 (2.5)	5 (2.1)	5 (2.1)	32 (13.2)	243 (25.7)
Mbeya Rural	13 (18.1)	9 (12.5)	12 (16.7)	2 (2.8)	12 (16.7)	3 (4.2)	21 (29.2)	72 (7.6)
Mbeya Urban	45 (32.1)	15 (10.7)	30 (21.4)	7 (5.0)	5 (3.6)	6 (4.3)	32 (22.9)	140 (14.8)
Simanjiro	84 (44.9)	10 (5.3)	39 (20.9)	1 (0.5)	6 (3.2)	8 (4.3)	39 (20.9)	187 (19.8)
Total	**264 (26.0)**	**186 (19.7)**	**159 (16.8)**	**23 (2.4)**	**67 7.1**	**27 (2.9)**	**218 (23.1)**	**944 (100.0)**

About 7.1 percent (67 respondents), who reported to have had a sick household member in the last 4 weeks prior to the interview, revealed that the sick member in question suffered from HIV/AIDS or related opportunistic infections. Most of the HIV/AIDS sick people were reported in Dodoma (31.8 percent) and Mbeya Rural (16.7 percent). Majority reported their sick member to have suffered from malaria (26 percent) followed by diarrhoea (19.7 percent) and respiratory related problems (16.8 percent).

Number of days that an individual is likely to suffer from an illness depends on the individual's characteristics, characteristics of the disease and its severity, health system, environment and other related factors. Respondents were asked to mention the number of days that the sick household member had suffered prior the interview (Table 4.9). About 59 percent (558) reported their members to have suffered for about 7 days, in the last 4 weeks prior to the interview. About 10 percent (96) reported that the members had suffered from the disease for about 2 weeks, and 30.8 percent reported a member suffering for more than two weeks.

Table 4.9: Duration of Illness by Type of Illness

Duration (days)	Type of illness							Total
	Malaria	Diarrhoea	Respiratory related disease	Cardio vascular related disease	HIV/ AIDS	Injury	Other	
≤ 8	196	160	72	5	4	8	113	558
8-14	31	11	16	3	2	6	27	96
15-21	13	3	8	1	2	3	5	35
22-28	3	0	9	3	4	1	4	24
29-56	19	9	27	5	8	2	23	93
57-112	2	3	8	1	14	2	14	44
>112	0	0	19	5	33	5	32	94
Total	**264**	**186**	**159**	**23**	**67**	**27**	**218**	**944**

(ii) Seeking Health Care

Health seeking behaviour is determined by factors related to individual and disease characteristics, socio-cultural factors, availability of health services and the geographical positioning, among other factors. Respondents were asked if the household member who had any illness in the last 4 weeks had sought treatment or consulted anyone for treatment.

Table 4.10: Household Members Reported to Had Sought Care by Illness

Type of Illness	Sought treatment		Total
	Yes	No	
Malaria	226 (85.6)	38 (14.4)	264 (28,0)
Diarrhoea	65 (34.9)	121 (65.1)	186 (19.7)
Respiratory related	140 (88.1)	19 (11.9)	159 (16.8)
Cardiovascular related	19 (82.6)	4 (17.4)	23 (2.4)
HIV/AIDS	62 (92.5)	5 (7.5)	67 (7.1)
Injury	22 (81.5)	5 (18.5)	27 (2.9)

Other	160 (73.4)	58 (26.6)	218 (23.1)
Total	**694 (73.5)**	**250 (26.5)**	**944**

Table 4.10 shows that more than 73 percent (694) reported their members to have sought care for the reported illness. Majority of those who were reported to have had sought care were those who were reported to suffer from HIV/AIDS (92.5 percent) and respiratory related illness (88 percent). Only about 35 percent of the respondents reported that members who were reported to suffer from diarrhoea also sought care for the illness.

Choice of places to seek care would depend, among other things, on the availability of alternative health providers. Respondents were asked if the sick household members had consulted anyone for treatment. Some of the respondents reported that their members had consulted more than one place/person. About 78.1 percent of the respondents, who reported to have had a sick member, in the past four weeks prior to the interview, were able to identify where health care was sought. About 36.1 percent reported that care was sought from a hospital. Since many people in the rural areas lived close to dispensaries, about 32.3 percent reported that their household members consulted in a dispensary. About 2.7 percent reported that their members' problems were managed at home. Majority, 85.1 percent, of the respondents who reported their members to have had HIV/AIDS related complications, reported that their members consulted a hospital, a health centre, a dispensary or a clinic. In general, people with different health problems consulted different sources of care. Self-treatment and home management were reported by 19.9 percent of the respondent.

Individuals are known to shop around for health care from different providers. Respondents were asked where their household members made the first consultation for care and who owned the facility. As shown in Table 4.11, about 73.1 percent (690) of the respondents who reported an illness of a household member were able to mention the type of facility where the first consultation was made. About 44.8 percent (309) and 41.0 percent (283) of the respondents reported that the sick person consulted a government and a private health facility first respectively.

Table 4.11: Ownership of the First Facility Consulted for the Illness by Type of Illness

Type of illness	Ownership of facility consulted						Total (Percent)
	Government	Mission	Private	Employer	Other	Home	
Malaria	87	30	102	1	1	4	225 (32.6)
Diarrhoea	30	2	28	0	0	3	63 (9.1)
Resp. Related	67	16	48	3	0	3	137 (19.9)
Cardio Related	11	1	6	0	0	0	18 (2.6)
HIV/AIDS	33	7	21	0	1	1	63 (9.1)

Injury	12	1	9	0	0	1	23 (3.3)
Other	69	14	69	1	0	8	161 (23.3)
Total (percent)	**309 (44.8)**	**71 (10.3)**	**283 (41.0)**	**5 (0.7)**	**2 (0.3)**	**20 (2.90)**	690 (100.0)

4.2.3.2 Impact on Household Income: Cost of Treatment

Frequent illness episodes due to HIV/AIDS increases the frequency of seeking medical care and subsequently the cost (direct and indirect) of care. However, the total expenditure on care, among other things, depends on the place where care was sought, the nature and availability of paid care, type and level of providers and the type and nature of the disease. Respondents were asked to report on the amount of money spent on medical care for the illness or injury one had reported in the past 12 months. The costs mentioned included expenditures on consultation, drugs and other medical supplies excluding transport costs. About 608 of respondents were able to report the medical expenditures. However, health care in rural public health centres and dispensary in Tanzania is still delivered free at the point of uses. It is possible that a few households could not spend any money (direct) to obtain care if care was obtained from such health facilities. Table 4.12 shows the reported medical expenditures on the illness during the last 12 months prior to the interview as reported by the respondents.

Table 4.12: Distribution of Medical Expenditures Per Person in the Last 12 Months by Type of Illness (TZS)

Type of illness	Mean (TZS)	Median (TZS)	Range (TZS)	N
Malaria	4,823	2,750	200-50,000	202
Diarrhoea	8,868	4,000	500-50,000	55
Respiratory related	39,137	4,000	100-600,000	121
Cardio vascular related	11,637	8,000	500-40,000	18
HIV/AIDS	79,206	28,000	2,500-521,000	56
Injury	23,944	6,000	500-1,000,000	19
Other	19,673	9,000	400-196,000	137

The reported medical expenditures on the illness per person per year, in Table 4.12, ranged from TZS 100 to TZS 1,000,000 depending on the illness and the source of care or place where care was sought. HIV/AIDS indicates to be an expensive illness. On average, it costs the individual more than other health problems that were reported by the respondents. Although HIV/AIDS cases did not report the highest expenditures, on average the respondents incurred more, a mean of TZS 79,206 and median of TZS 28,000 which are more than 200 percent of the respiratory related health problems, for instance.

4.2.3.3 Source of Funds to Meet Health Care Costs

The sources of financing health care in different households are reported to vary depending on the financial ability of the household, the liquidity of the assets that the household has at its disposal and availability of different assistance, to mention just some. About 104 of the respondents who reported any expenditure reported that they were assisted by someone else outside the household to pay for the treatment costs. The amount received as help ranged from TZS 200 to TZS 60,000 per person per year. Out of 104 respondents who reported to have had received any assistance from outside the household, 9 (8.6 percent) reported that the money received was a loan and was to be repaid (treated as a credit). Table 4.13 shows remittances that were received by type of the reported illness in the last 12 months prior to the interview.

Table 4.13: Remittances Received from Outside the Household for the Illness Reported in the Last 12 Months

Type of illness	Mean (TZS)	Median (TZS)	Range (TZS)
Malaria	6,966	5,600	900 - 15,000
Diarrhoea	5,500	5,500	1,000 - 10,000
Resp. related	17,389	15,000	2,000 - 55,000
Cardio. Related	7,000	7,000	6,000 - 7,000
HIV/AIDS	29,500	27,500	3,000 - 60,000
Injury	23,000	23,000	6,000 - 40,000
Other	13,525	6,000	200 - 40,000

Depending on nature and degree of fatality of the disease, people who suffer a long-term illness are likely to spend more on medical care compared to those who suffer an acute illness, and they are more likely to ask for assistance from relatives and friends. Respondents who reported a household member or themselves to have had suffered from HIV/AIDS in the last one year prior to the interview reported to have had received an average of TZS 29,500 with a median of TZS 27,500 as remittances from relatives and friends. On average, a HIV/AIDS case reported to have had received more than 400 percent of what a malaria and a diarrhoea case had received as a help, respectively. These results imply that HIV/AIDS has relatively significant impact on household income compared to other communicable diseases.

4.2.3.4 Impact of HIV/AIDS on Time Allocation and Labor Force Participation

(i) Time Spent to Take Care of HIV/AIDS Patients

People affected by HIV/AIDS are more prone to frequent opportunistic infections. The severity, frequency and the number of infections that one succumbs to are likely to debilitate the affected person and may require help from time to time by household members and people from other households. In a labor-scarce household, children aged 10 years or so have been found to attend patients (Over et al, 1996) by, for instance, giving them medicine and washing patients' clothes. In this study, respondents who were aged 10 years and above were

asked if, in the last 14 days before the interview, they had used any time to take care of a HIV/AIDS patient. About 409 (7.9 percent) individuals reported that they had attended a HIV/AIDS patient in or outside the household in the past 14 days prior the interview. Of those who had attended a HIV/AIDS patient, 58.7 percent (240) and 41.3 percent (169) were females and males respectively, and their difference was statistically significant (p=0.02).

Depending on the intensity of the pandemic, different districts would be affected differently. Table 4.14 shows respondents who reported to have had attended on AIDS patient in the last 14 days prior to the interview by district. It shows that 18.5 percent (153) of Dodoma urban respondents reported to have had taken time to attend an AIDS patient, followed by those from Kinondoni (11.3 percent). Table 4.14 further shows that in each district at least there were some individuals who reported to have had spent sometime to attend an AIDS patient implying that the epidemic has spread and the disease is known in all districts in Tanzania.

Table 4.14: Percentage Household Members Taken Time to Care for HIV/AIDS Patient in the Last 14 Days

District	Yes	No	Don't remember	Don't know	Total
Dodoma Urban	153 (18.5)	663 (79.2)	5 (0.6)	16 (1.9)	837 (16.3)
Kahama	23 (2.7)	799 (95.2)	1 (0.1)	16 (1.9)	839 (16.4)
Kinondoni	120 (11.3)	877 (82.9)	0 (0.0)	61 (5.8)	1058 (20.5)
Mbeya Rural	23 (3.4)	644 (96.0)	0 (0.0)	4 (0.6)	671 (13.0)
Mbeya Urban	44 (4.9)	745 (84.2)	28 (3.2)	68 (7.7)	885 (17.2)
Simanjiro	46 (5.4)	801 (93.6)	2 (0.2)	7 (0.8)	856 (16.6)
Total	**409 (7.9)**	**4529 (88.0)**	**36 (0.7)**	**172 (3.3)**	**5146 (100.0)**

All those who reported to have had spent some time to attend an AIDS patient inside or outside the household, reported the time they spent on the activity in the last 14 days prior to the interview. Table 4.15 indicates the estimated time spent on caring for the patients.

Table 4.15: Time Spent on Attending a HIV/AIDS Patient in the Last 14 Days (hours)

Time Taken: Hours	Sex		Total
	Male	Female	
≤ 5	83 (49.1)	87 (36.3)	170 (41.6)
6 – 10	10 (5.9)	29 (12.1)	39 (9.5)
11 – 15	8 (4.7)	14 (5.8)	22 (5.4)
15 – 20	7 (4.1)	5 (2.1)	12 (2.9)
20+	61 (36.1)	105 (43.8)	166 (40.6)
Total	**169 (41.3)**	**240 (58.7)**	**409 (100.0)**

As mentioned earlier, women were more likely to have had attended the HIV/AIDS patient and the difference was statistically significant. In addition, women were more likely to have had spent more time taking care of HIV/AIDS patients compared to men (p=0.005) [Table 4.15]. More than 43 percent (105) women spent more than 20 hours in two weeks time, to care for HIV/AIDS patients, compared to men (36 percent).

(ii) Time Taken to Attend Own HIV/AIDS Related Illness

Despite the fact that HIV/AIDS stigmatizes, there are individuals who have come in public and declared their own sero status. In this study, individuals who were older than 10 years of age were asked to report if they had not attended their normal activities in the last 14 days prior the interview because they were nursing their own HIV/AIDS related opportunistic infection.

Only 87 (1.7 percent) of the respondents who were older than 10 years, from all interviewed sample districts reported that they had failed to attend their normal duties in the last 14 days due to HIV/AIDS related opportunistic infections. Out of 87 who reported that they failed to work due to HIV/AIDS related illness, 24, 23, 13, 17 and 10 were from Kinondoni, Dodoma, Simanjiro, Mbeya (Rural and Urban) and Kahama, respectively[15].

(iii) Too Sick to Work Members of the Household

Respondents were asked to report if there was anyone in the household who was ill but able to perform his/her normal duties. Respondents were further asked to report if, in their household, there was a household member who was too sick to work, and what was she/he suffering from, at the time of the interview. Table 4.16 shows that, a total of 130 respondents (households) reported to have had at least one member of their household who was too sick to work. Out of all households that reported to have had someone who was too sick to work, a total of 41 reported that they had a member suffering from HIV/AIDS who was too sick to work. Table 4.16 also shows that a total of 214 households reported to have had a household member who had an illness, at the time of the interview, but not too sick to perform his/her normal duties. About 20 of those who reported a member to have had HIV/AIDS, reported that the sick member was not too sick to perform her/his duties, at the time of the interview.

Table 4.16: Household Reporting Sick Household Members by Type of Illness

Type of illness	Too sick to work	Sick but still performing duties	Total
Malaria	12	22	34
Diarrhoea	5	10	15
Respiratory related	32	38	70

[15] We did not directly ask for the sero status, but only if someone had failed to work due to HIV/AIDS opportunistic infection.

Cardiovascular related	4	10	14
HIV/AIDS	41	20	61
Injury	11	3	14
Other	25	92	117
Total	**130**	**195**	**325**

More than half of people who were reported to have had HIV/AIDS related illnesses were likely to be too sick to work. There is evidence that on average, individuals who suffer from HIV/AIDS are likely to suffer more episodes in a given period compared to people who suffer from other non-chronic diseases. These results also implies that HIV/AIDS is likely to negatively affect labour supply more compared to other illness, and consequently, to have a greater impact on household's welfare.

Respondents were further asked for how long the sick household members were not able to work because of the illness. Respondents were asked to mention number of days that the individual household member had not been able to work due to the illness reported. Table 4.17 shows that, 558 respondents were able to estimate the number of days that their household members had suffered.

Table 4.17: Workdays Lost by Type of Illness

No of days	Type of illness							Total
	Malaria	Diarrhoea	Resp. related	Cardio vascular related	HIV/ AIDS	Injury	Other	
Up to 7	111	27	43	8	5	8	74	276 (49.0)
8 –14	28	7	11	2	3	3	21	75 (13.3)
15-21	10	2	10	0	2	8	5	37 (6.6)
22-28	4	1	3	4	4	1	3	20 (3.6)
29-56	15	6	22	2	13	1	19	78 (13.8)
57-112	1	2	7	0	12	1	5	28 (5.0)
>112	0	2	12	3	19	3	10	49 (8.7)
Total	169 (30.0)	47 (8.3)	108 (19.2)	19 (3.4)	58 (10.3)	25 (4.4)	137 (24.3)	563 (100.0)

Table 4.17 indicates that about 49.5 percent (276), 13.4 percent (75), 5.7 percent (32) and 3.6 percent (20) of the respondents reported that their members had not worked for up to 7 days, between 8 and 14 days, between 15 and 21 days and between 22 and 28 days respectively. The extent of debilitation from a disease differs according, among other things, to the nature and severity of the disease and the individual characteristics in responding to the disease. About 28 percent of respondents reported that their members had not been able to work for about or more than 29 days and 8.7 percent (49) of those respondents reported that their members had not worked for more than 112 days (more than 4 months).

(iv) Time Spent to Attend Funeral

In African societies spending time/days mourning for the dead is part and parcel of the culture and traditions. Respondents were also asked if they had spent anytime, in the last 14 days prior the interview to attend a funeral of a HIV/AIDS death. More than 13 percent of the respondents from each interviewed district respectively reported to have had spent sometime to attend a funeral of a HIV/AIDS related death during the specified period.

Table 4.18 shows the number of hours that respondents reported to have had spent attending a funeral in the past 14 days prior to the survey. The time included the number of days that they spent sleeping at the place where mourning was taking place. The time spent ranged from 1 hour to 280 hours (approximately 12 days). Both men and women reported to had had attended the funeral. However, there was no significant difference between the time taken by women and men who reported to have had attended a funeral of an AIDS death ($p>0.1$). More than 50 percent of both males and females respectively spent up to 10 hours attending a funeral (Table 4.18)

Table 4.18: Time Taken to Attend a Funeral of an AIDS Death in Last 14 Days

Time spent (Hours)	Sex		Total
	Male	Female	
≤ 5	171 (42.6)	191 (41.0)	362 (41.7)
6 – 10	123 (30.7)	156 (33.5)	279 (32.2)
11 – 15	27 (6.7)	38 (8.2)	65 (7.5)
15 – 20	14 (3.5)	17 (3.6)	31 (3.6)
20+	66 (16.5)	64 (13.7)	130 (15.0)
Total	**401 (46.2)**	**466 (53.8)**	**867 (100.0)**

(v) Time Taken to Visit HIV/AIDS Patients

Spending time to visit sick relatives and friends in other households and/or in health facilities is tradition of African societies. Respondents were asked if they had spent any time in the last 14 days to visit someone outside the households who was suffering from HIV/AIDS related problems. About 7.9 percent (325) of all adults aged (16 years and above) reported to have had spent sometime to visit someone outside the household who had a HIV/AIDS related illness.[16] Comparison between males and females shows that, females were more likely to have had spent sometime visiting an ill person compared to males and the difference was statistically significant ($p=0.027$). Time spent to visit a HIV/AIDS patient in the last 14 days, ranged from 1 hour to 260 hours. The mean hours spent on visiting HIV/AIDS sick people

[16] Respondents were not asked how they knew that the persons they visited were HIV/AIDS patient. However, we went by the respondents' perception of the type of illness the visited persons were suffering from.

were 13.9 hours (median 3 hours) and a standard deviation of 34.8 hours. Few respondents had spent a significant time in visiting a sick person. These were individuals who had travelled to far places to visit a sick relative.

Table 4.19 shows respondents, who were aged 16 years and above, who reported to have had visited a HIV/AIDS patient in the last 14 days before the interview. Majority of them, reported to have had spent at least three hours visiting a sick-HIV/AIDS person. About 36.9 percent of the adult household members who reported to have had visited a HIV/AIDS sick person, reported to have used up to 2 hours in the last 14 days whereas 19.4 percent spent more than 8 hours. Women were more likely to have had spent more time to visiting sick HIV/AIDS persons than men. However, the difference was not statistically different (p>= 01).

Table 4.19: Reported Time Spent to Visit a HIV/AIDS Sick Person in the Last 14 Days by Sex (hours)

Hours	Sex		Total
	Male	Female	
< 2	53 (39.0)	67 (35.5)	120 (36.9)
3	23 (16.9)	32 (16.9)	55 (16.9)
4	17 (12.5)	23 (12.2)	40 (12.3)
5	4 (2.9)	9 (4.8)	13 (4.0)
6	7 (5.2)	12 (6.4)	19 (5.9)
7	1 (0.7)	1 (0.5)	2 (0.6)
8	5 (3.7)	8 (4.2)	13 (4.0)
More than 8	26 (19.1)	37 (19.6)	63 (19.4)
Total	**136 (41.9)**	**189 (58.1)**	**325 (100.0)**

4.2.3.5 Impact of HIV/AIDS Deaths

(i) Deaths in Households

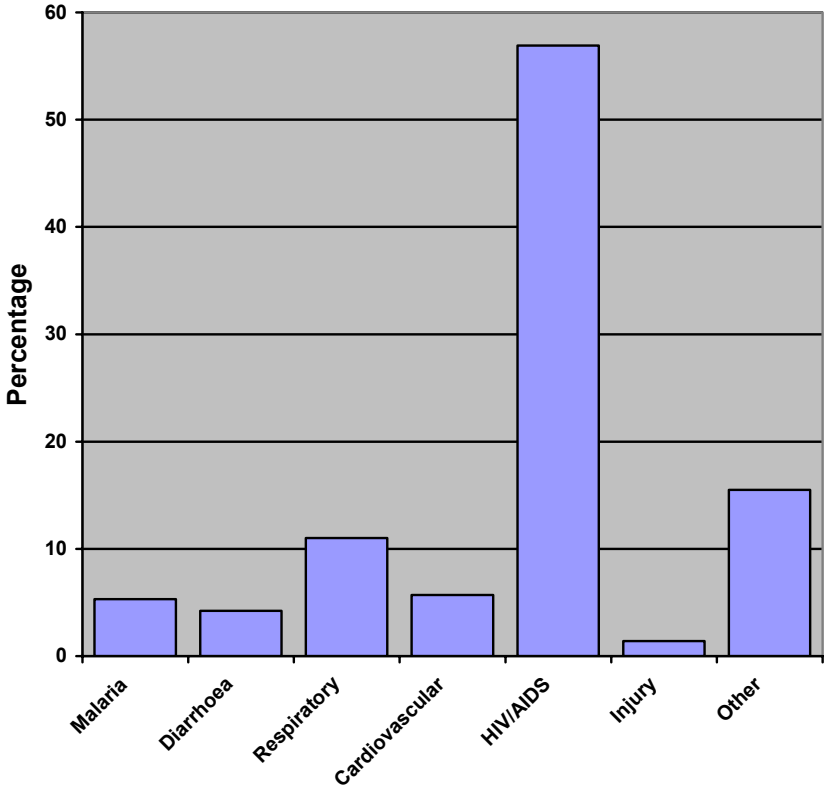
Increased adult deaths have been found to be one of the serious impacts of HIV/AIDS in societies. Adult respondents were asked to report if there was a household member who died during the last 12 months prior to the interview. A total of 337 (28.3 percent) of the households interviewed from the six districts, reported to have had experienced a death of a household member. Furthermore, respondents were asked to report characteristics of the people who were reported to have died. About 47.4 percent and 52.6 percent of those who were reported to have died from interviewed households in the last 12 months were males and females respectively. The impact of HIV/AIDS is depicted in the reported ages of the members who died. The mean age was about 33 years with a median of 35 years of age. On average members died at a lower age compared to the average Tanzanian life expectancy.

Most of them died at their most productive and reproductive ages. About 9.1 percent, 3.5 percent, 64.9 percent and 22.4 percent were under five, between 5 and 15 years, between 16 and 50 years and over 50 years respectively. This is an indication that there are more adults dying, especially those of productive and reproductive age groups.

(ii) Reported Causes of Death

Respondents were asked to mention the probable cause of deaths of their household members. Figure 4.3 shows that about 56.9 percent mentioned HIV/AIDS as the main cause of death of their members. The second, third and fourth causes of death were reported to be respiratory related problems (11 percent), cardiovascular related problems (5.7 percent) and malaria (5.3 percent), respectively.

Figure 4.3: Reported Cause of Death of a Household Member Died in the Last 12 Months



(iii) Cost of Funerals of Household Member

The amount spent by families, friends and relatives on funerals and burying the dead, in some districts of Tanzania, has been reported to be higher than the amount spent on treating the sick member before death (Over et al., 1996). In this study, respondents were asked to estimate the costs of funerals of household members in the last 12 months. Table 4.20 shows the estimated costs of funerals of a household member died in the last 12 months prior to the

interview by district. The costs ranged from TZS 2,000 to TZS 2,000,000 per death. On average, a funeral cost about TZS 158,000 with a median of TZS 120,000. This amount is on average higher than the amount spent on illnesses reported in this study.

Table 4.20: Estimated Costs of Funeral of Household Member by District

District	Estimated Costs		
	Mean (TZS)	Median (TZS)	Range (TZS)
Dodoma	20,0818	195,000	11,000 - 1,000,000
Kahama	31,421	15,000	5,000 - 100,000
Kinondoni	166,792	130,000	50,000 - 500,000
Mbeya Rural	45,394	14,000	2,000 - 400,000
Mbeya Urban	116,186	40,000	7,000 - 2,000,000
Simanjiro	256,216	120,000	15,000 - 1,500,000
All	**157,823**	**120,000**	**2,000 - 2,000,000**

(iv) Contribution from Household Members to Meet Funeral Costs

When a member of the household dies, where they are able, members contribute to the funeral costs, in cash and/or in kind. Respondents were asked if any of the household members had contributed money to the funeral of the dead household member. As shown in Table 4.21 the reported contribution ranged from TZS 100 to TZS 300,000. The mean contribution was about TZS 11,797 with a median of TZS 2,000. An average household reported to have had spent more than what their members contributed for the funeral implying that households received assistance from relatives, friends, and neighbours to finance the funerals.

Table 4.21: Reported Household Members' Financial Contribution to the Cost of Funeral of a Household Member Who Died

District	Estimates of contributions (TZS)		
	Mean (TZS)	Median (TZS)	Range (TZS)
Dodoma	32,830	15,000	200 – 180,000
Kahama	2,100	500	100 – 100,000
Kinondoni	8,717	2,000	100 – 120,000
Mbeya Rural	4,061	1,350	100 – 100,000
Mbeya Urban	3,953	1,000	100 – 200,000
Simanjiro	9,928	2,000	100 – 300,000
All	**11,797**	**2,000**	**100 – 300,000**

(v) Orphan-hood and School Fees/Uniforms

Orphans have been found to reduce school attendance and sometimes drop out of school because of not being able to afford school fees and uniforms. Respondents (as a household) were asked to report if there was a child in the household who could not attend school because she/he could not afford to pay for uniforms and school fees.
A total of 99 (8.4 percent) out of 1184 households reported to have had a child who was not attending school because they could not afford school uniforms and/or fees. A total of 44, 21, 17, 17, 6 and 3 children were from Dodoma Urban, Mbeya Rural, Kahama, Simanjiro, Kinondoni, and Mbeya Urban respectively. Respondents were also asked to mention the parental status (orphan hood) of the children who could not go to school due to lack of money to finance school uniforms and fees. A total of 74 (67.89 percent) of the children who could not afford school uniforms/fees were orphans of both or single died parents(s). However, 35 (32.11 percent) of the not attending school children due to being unable to afford school fees/uniforms had both parents alive. These results imply that orphans are more likely to miss schooling compared to children who have their parents alive. It is definitely that orphan-hood was significantly contributing to not attending school due to not being able to afford school fees and or uniforms ($p<0.05$).

4.2.4 Discussion of the Major Findings

4.2.4.1 Time Allocation

It is estimated that in Tanzania more than 2 million people were living with the AIDS virus by the end of 2001 and more than one million have died from the disease (URT, 2002a), and life expectancy has been reduced to below 50 years. In this study individuals were reported to have died with an average of about 33 years of age. These are the most economic and social productive years. The household remains with less productive and inexperienced labour force, which is supposed to sustain production and consumption in the household. The fact that severity of the impact of an adult death has been found to be intense in poor households compared to relatively richer households (Lundberg et al, 2000), suggests that programs aimed at poverty reduction could provide more assistance to the poorest households to help them cope with the impact of adult death in areas which are hard-hit by AIDS pandemic.

Individuals have to take time out of other productive activities to caring, visiting and burying HIV/AIDS patients. In this study we find that family members spend a substantial time in implementing those social obligations. The fact that HIV/AIDS patients are likely to be continuously suffering for a longer period compared to most of communicable diseases, the impact of the disease on household production is profound.

4.2.4.2 Household Resources

To take care of the sick HIV/AIDS patients need, apart from time, other household financial and in-kind resources. Resources used have been found to come from different "social

insurance" sources (Lundberg et al, 2000). We find that household members made financial and other contributions, received remittances from other households and sold assets[17] to be able to care and burry the dead. Households received more from relatives and friends than their own contributions. The amount received differs from one household to another. In Kagera Tanzania, it was found that a donor household was more likely to make transfers to rich household, in the trust that the recipient will reciprocate in the future. Such results imply that resource-abundant households are more likely to benefit from remittances from other households, and poor households would find it difficult to cope with the impact of the disease.

4.2.4.3 Cost of Care and Funeral

One of the obvious impacts of HIV/AIDS on households is the increased expenditure that arises from medical treatment of HIV positive members with opportunistic infections and funeral costs. AIDS patients are likely to incur more costs in seeking care. The fact that overhead costs are likely to be similar irrespective of the diagnosis of the individual, possible costs of AIDS and non-AIDS care are found in the direct costs (such as drugs and laboratory costs). Such HIV/AIDS related costs are predicted to lower the average income of the poorest quarter of households in Botswana by 10 percent to 15 percent by 2010 (BIDPA, 2000, cited in Dixon et al., 2002).

In this study we find that reported costs of care were higher among HIV/AIDS patients compared to other reported illnesses. A study in Kagera found that the reported expenditure on HIV/AIDS patients were more than a household member's per capita income (Over et al., 1996). The differences in cost of care are also aggravated by the duration of the illness. While most communicable diseases would take shorter time to get cured, HIV/AIDS is not curable and has more frequent episodes that need immediate attention.

Funeral costs are found to be higher than the medical treatment costs, in this study. Funeral costs are seen to be more of a communal responsibility that has a reciprocation (Lundberg et al, 2000) than medical costs that are seen to be more of "private household costs" and hence a more responsibility of the household and the nuclear family. In Kagera for instance, funeral costs were more than two fold of the medical care costs before the household member died, and were mostly met by the household and remittances from members of the nuclear family (Over et al., 1996; Lundberg et al, 2000).

4.2.4.4 Orphans Burden

It is projected that by the year 2010 there will be 4.2 million orphans in Tanzania (UNAIDS, 2001). In this study we found adults dying in their prime ages leaving behind young orphans. Orphans (of less than 16 years of age) were found in about 25 percent of the households, and

[17] See section 4.7.

12 percent of the orphans could not afford school fees and or uniforms. If appropriate actions are not taken purposively, for instance, targeting at orphans then HIV/AIDS is building an "army" of poor and illiterate people whom would be the burden to the nation thus aggravating the poverty situation in which poor people are in now.

4.2.5 Conclusions

This section explores the direct and indirect socio-economic effects of the HIV/AIDS pandemic on household's welfare. It is quite evident that the pandemic has substantial effects on households' economic and "social" assets. The extent of effect would differ among households depending on the opportunities that each household is endowed. However, there is impact on households' labour supply, productivity, income, other wealth, and leisure.

The impact of HIV/AIDS as the main cause of premature deaths is reflected in ages of members who were reported to have died. A premature death has a dual effect on household welfare: Decrease in labor force ("death effect") and decline in productivity by leaving young and inexperienced labor force ("youth effect") and those who are too old to work ("productivity depletion effect").

Individuals reported to have taken a substantial amount of time from other productive activities to attend HIV/AIDS related illnesses and their consequences. Women are relatively spending more time than men. It is known that, in the rural areas, women are the most productive group in households. Taking time out of subsistence activities would have an effect on the welfare of the household, and could impact on food production and hence consumption.

Substantial financial resources were reported to have been deployed in the household to take care of HIV/AIDS patients compared to other reported illnesses. As pointed out, it has been found elsewhere that relatively poor households are likely to be more affected by the impact of HIV/AIDS. Poor households are more likely to loose a bigger proportion of their productive resources, have less probability of accessing productive resources including credit and even support from other households and hence less likely to meet costs of care and even funeral.

We found that funeral costs exceeds medical expenditures. It is evident that funeral costs are met, not only by the household that has lost a household member, but also other relative and friends' households. Death becomes a "public property", while illness is narrowed down to close households and in most cases a responsibility of the nuclear family (private property).

Increased premature deaths due to HIV/AIDS have accelerated the increase of orphans and dual orphans (who are likely to be most from HIV/AIDS) who are likely to miss school due to lack of uniforms and/or fees compared to maternal/paternal orphans. Orphans need assistance to go to school. Otherwise, unconsciously the nation would create a pool of ignorant, non-educated and unproductive pool of future youth.

4.3 The Impact of HIV/AIDS on Agriculture, Food Security and Poverty

HIV/AIDS pandemic entails chronic illness, which undermines the capacity of the sick, and their caretakers to undertake livelihoods, look after others, advocate their interests, learn, socialize and also carry out their daily routine agricultural activities.

The farming households in the study areas are basically in a continuous struggle fighting hunger, malnutrition, diseases and poverty. It is evident that, this struggle is curtailed by the alarming spread of HIV/AIDS among farming households. Hit by this pandemic, the poor lose their ability to perform their agricultural activities, to eat nutritious food and therefore protect themselves from diseases and hunger. As one of the coping mechanisms, the wealth accumulated by these households, both in terms of cash and mainly assets such as livestock, is also depleted to mitigate the effects of the pandemic. The overall effect to agricultural performance, food security and poverty is therefore disquieting.

The sections below present the findings on the extent at which the HIV/AIDS pandemic has impacted on agriculture, food insecurity and poverty in the study area. In other words, this section explores the relationship between HIV/AIDS on one hand and agricultural performance (including food security) and poverty on the other.

4.3.1 HIV/AIDS Impacts on Agricultural Performance

4.3.1.1 Agricultural Enterprises and Marketing

Crop agriculture is the major and reliable source of both subsistence requirements and income, and an important factor towards ensuring food security in almost all the sampled districts. Although not extensively, urban farming is practiced in Dar-es-Salaam, including livestock keeping. The dominant cash crops in the surveyed districts include cashew nut, coconut, cotton, tobacco, coffee and wheat. Others are pyrethrum, sesame, sunflower, and sugarcane. The food crops consist mainly of cassava, maize, plantain, rice and beans. Also in the food basket are millet, sorghum, groundnut, peas, fruits, potatoes and horticulture products.

About 36 percent of the farming households which grew crops during 2001/02 crop season marketed part of their farm products generating a total of TZS 51.2 million. Disposal of the farm products was mainly motivated by cash income earnings to meet household expenses, ranging from education, health and other social obligations.

Table 4.22: Means of Transportation of Farm Produce to Markets (2001/02)

Sn	Means of Transport	Number of Farmers	Percentage of Total
1	Foot (Head Loading)	157	30
2	Bicycles	65	12
3	Motor Vehicles	91	17
4	Animal Pulled Carts	43	8
5	Other Means	172	33
6	Total	528	100

Approximately 80 percent of the total marketed farm products in year 2001/02 were sold within the respective local village markets where traders from other places come for procurement. The neighboring villages, districts and regions also form an important market for farm products. Transport and/or infrastructure are reportedly among the major bottleneck in agricultural marketing and therefore food security objectives. Judging from the field responses, transport has affected women most than any other segment of the population. Women are mostly responsible for collecting and transporting farm products from the farms to homesteads and finally to the market outlets. The transportation methods are largely head loading with weights up to 40 kilogram per head. Out of the total number of farmers who sold farm produce during 2001/02 crop season, 30 percent transported their crops by foot and head loading, 17 percent used motor vehicles, 12 percent used bicycles while approximately 8 percent of the farmers used pulled carts (Table 4.22). Other means include collection of crops at farm-gate and/or at home. Note that occasionally, where a family owns a bicycle, men help transporting farm products. Trucks of different types sporadically also serve some farmers usually on cash basis.

The existing amount of uncultivated land suggests that there is potential for expanding livestock economic activities. Indeed, livestock plays a significant social and economic role in the surveyed areas including to some extent the urbanized Dar-es-Salaam region. The bulky of wealth of many people for example in Dodoma Urban, and Simanjiro Districts is kept in the form of assets and particularly livestock.

Cattle and donkeys particularly are the ubiquitous and important capital input in crop agriculture through animal traction. In addition to animal traction, livestock is a reliable source of income to many farming households. In 2001/02 a total of 847 (72 percent) out of 1184 farming households owned livestock and only 17 (about 1 percent) did not own livestock[18]. In 2001/02, 223 livestock were sold by 217 farming households, generating a total of TZS 15.9 million. As will be seen later, health services including cases of HIV/AIDS are reportedly among the driving factors towards livestock disposal. Also important to mention is the fact that, 510 animals were acquired during the same period (126 animals were bought by 114 farming households and 384 animals were either newly born or received as gifts).

[18] Note that 27 percent of the total sampled households (respondents) did not provide answers.

The most common type of livestock raised in the study areas include cattle (both improved and traditional ones), goat, sheep, pigs and donkeys. There are also birds of different types.

4.3.1.2 Agricultural Impacts of HIV/AIDS

HIV/AIDS pandemic have affected the performance of agricultural activities in the study area in different ways. The potential labor force in the sector has generally lost the ability to perform agricultural activities following loss of strength due to long illness and lack of nutritious food. As one of the coping mechanisms, the wealth and/or assets accumulated by most farming households, both in terms of cash as well as physical assets is depleted to mitigate the effects of the pandemic thus, curtailing significantly the amount of investments going into agricultural activities.

In this analysis, labor productivity is measured through indicators such as chronic sickness of members of the households and death and loss of working man-days. Specifically the analysis look into duration of illness by type of illness including HIV/AIDS within 30 days prior to the present field survey; work days lost by type of illness (including HIV/AIDS) within 30 days prior to the field survey; time spent on attending a HIV/AIDS patient within the last 14 days (in hours) prior to this survey; time taken to attend a funeral of an AIDS death within the last 14 days and time spent to visit a HIV/AIDS sick person within the last 14 days (in hours). Table 4.23 presents the findings on the loss of man-days due to HIV/AIDS.

The average household size of the surveyed households was found to be 6, out of which 4.2 are the labor units working for 8 hours each of the 6 days in a week. The labor units include the age group 10 and above as treated in the 2000/01 Integrated Labor Survey. Thus, based on this information labor supplied (available man-days for agricultural activities) in one month by the average farming household within the sampled districts is 109 man-days[19].

Table 4.23: HIV/AIDS Impact on Agriculture in Terms of Lost Working Time

Sn	Cause of Loss	No of Man-Days	Equivalent Number of Farming Households Loosing Agricultural Labor
1	Duration of HIV/AIDS illness within the last 30 days	5399	50
2	Work days lost due to HIV/AIDS within the last 30 days	3848	35
3	Time spent on attending a HIV/AIDS patient within the last 14 days	579	5
4	Time taken to attend a funeral of an AIDS death within the last 14 days	911	8
5	Time spent to visit a HIV/AIDS sick person within the last 14 days	171	2

[19] We assume that one month has 26 working days.

As can be noted from these findings, within 30 days prior to the survey duration of HIV/AIDS illness covered a total of 5399 man-days out of which 3848 man-days were total loss equivalent to 35 average farming households' loss of agricultural labor. Put it differently, the workdays lost due to HIV/AIDS pandemic within 30 days prior to the survey were equivalent to loss of 35 farming households' labor force.

Note also that within 14 days prior to the survey a total of 579 man-days were used to attend and/or care for HIV/AIDS patients, 911 man-days were spent for funerals of AIDS death and 171 man-days were used to visit the HIV/AIDS sick persons. In terms of agricultural labor productivity this is respectively equivalent to 5 farming households losing total available labor force due to time spent to attend the HIV/AIDS patients, 8 farming households' loss of the total available labor force, due to time spent to attend funerals of an AIDS death and 2 farming households' loss of the total available labor force for agriculture due to time spent to visit HIV/AIDS sick persons. These findings are clear testimony that agricultural productivity has been adversely affected by HIV/AIDS pandemic through loss of the physical labor as well as man-days.

These findings are alarming which would therefore call for urgent corrective measures. This is particularly so because agriculture is an important sector to the economy accounting for more than 50 percent of GDP, more than 50 percent of foreign exchange earnings and is the largest employer. In addition it is a labor-based sector, yet it is the same labor force, which is currently under serious threat.

4.3.2 Food Security and Poverty Impacts of the HIV/AIDS Pandemic

4.3.2.1 Conceptual Framework

A number of attempts have been made to define and clarify dimensions and the key features of important concepts used in the current analysis namely Food Security, Nutrition and Poverty[20]. The World Bank (1996) defines food security as *the condition in which all people at all times have enough food for a healthy and productive life style*. Food security consists of three items namely, food availability, food accessibility and food utilization. While food availability is referred to as sufficient production or imports to meet the food needs of the population, food access refers to the ability of people to obtain food and food utilization is related to the nutrients intake. While food security is associated with food consumption, nutrition refers to the adequacy of the diet and/or nutritional intake as measured by body size and shape, and the mortality rate (World Bank, 2000b).

[20] See for example Makundi (1996), Likwelile (2000) and World Bank (2000)

In the attempts to define poverty many authors feel secure to associate it with the causes or manifestations of poverty. This is because of the complexity and multi-dimensions of poverty. Thus, one can hardly find it defined uniquely (Likwelile, 2000). Indeed there are variations and/or different views on how poverty should be defined and what it means to be poor. Poverty is caused by lack of adequate resources and capabilities to acquire basic needs. This problem has tended to increase food insecurity including malnutrition, prevalence of diseases and squalid surroundings, high infant, child and maternal mortality, among other effects. Thus, the most commonly used definition emphasizes the income dimension of poverty because all the manifestations listed earlier for instance, food insecurity and malnutrition, are translated through inadequate income flow. In other words, income is regarded as a relevant welfare indicator and therefore poverty occurs when one is *unable to attain a minimum standard of living*. Following this definition it is more or less conventional to measure poverty by income or expenditure level that can sustain a bare minimum standard of living[21].

The multi-dimensional characteristic of poverty has prompted scholars to the construction of two poverty lines namely Food Expenditure Poverty Line (FEPL) and Basic Needs Poverty Line (BNPL). FEPL is associated with expenditure on food (consumption) and/or Food Poverty (FP), which is generally defined as a condition of lacking the resources necessary to acquire a nutritionally adequate diet. The Food Poverty Line (FPL) is therefore the minimum amount of food an individual must consume to stay healthy. The FPL is the estimated cost of acquiring the recommended calorie and/or nutritional requirements. The BNPL is related to the Basic Needs Poverty (BNP), which specifies a consumption bundle deemed to be adequate for basic consumption needs, and then estimates its cost for each of subgroups being compared in the poverty profile. It defines the minimum nutritional requirement, which is converted into minimum food expenses, to which some considered minimum non-food expenditure is added. Poverty in this case is measured by comparing actual expenditures with minimum cost of basic needs.

The minimum cost specifies consumption bundle deemed to be adequate for basic consumption needs and is considered as a poverty line based on minimum cost of basic needs. Note that, while FPL considers only food items, the BNPL approach goes beyond that to incorporate non food items such as education, clothing materials and income.

4.3.2.2 Indicators for HIV/AIDS, Food Security and Poverty

(a) HIV/AIDS Indicators

Indicators used in this analysis to gauge the intensity of HIV/AIDS fall into three categories namely *morbidity*, *mortality* and *demographic indicators*. Chronically ill productive adults (aged between 15 to 60 years) have been used to measure morbidity while recent death (within the past 12 months) measures mortality. Demographic factors used include presence

[21] See also Msambichaka et al (2003)

of orphans as well as dependency load. Note that these are not the only indicators used to measure the magnitude of HIV/AIDS, judging from the existing literature. For example, in addition to the above indicators Southern Africa Development Community—Food, Agriculture, and Natural Resources Regional Vulnerability Assessment Committee (SADC FANR—RVAC, 2003) uses "*hybrid—morbidity/mortality indicators*" which combines morbidity and mortality indicators. The current analysis adopts morbidity, mortality and demographic indicators as proxies for the pandemic, because ascertaining whether or not a household has HIV/AIDS infected member or has lost someone due to the pandemic is extremely difficulty given the sensitivity of the disease among members of the public.

(b) Food Security Indicators

Food security is measured using different proxies. In the current analysis, proxy variables employed include *per capita income*, which reflects the purchasing power of individuals. This variable allows households to access food through market exchange as opposed to direct food production; *productive working hours spent for economic activities* and *lost hours by members of the household due to illness*. Note that some of the indicators used to gauge the magnitude of HIV pandemic in (a) above have also been used to provide an acceptable measurement of food security. They include *percentage of chronically ill members of the household*, *death of members during the last 12 months* and *dependence load*.

Loss of working hours can reduce not only the quantity but also the quality of food. Number of the households' working members, chronically ill members, death and dependence load are also important factors for food security as they affect the household labor force and therefore overall productivity. Presence of orphans is another important proxy variable included in the food security analysis. Clearly the presence of orphans can increase food insecurity problems on host households and can also lead to reduced care and provision of the basic needs such as nutrition and education, for the orphans themselves. Dependence ratio is computed as total number of household members divided by total household active members. The ratio defines total number of household members supported by one active member. Other important indicators of food security include availability of land and labour, productivity (of both land and labour), transportation, market availability, availability of farm inputs and storage facilities.

(c) Indicators for Poverty

In addition to the proxy variables linked to food security as presented above and through which HIV/AIDS – poverty linkage is transmitted, poverty can also be captured through health as well as income indicators, which have been mentioned earlier. There is undoubted relationship between chronic and/or prevalence of diseases and the magnitude of poverty. As noted earlier, poverty is caused by lack of adequate resources and capabilities to acquire basic needs. This problem has tended to increase malnutrition, ignorance, and prevalence of diseases, squalid surroundings, high infant, child and maternal mortality, among other effects.

To analyze HIV – poverty linkage, this analysis therefore employs poverty indicators as follows. First is the *per capita income*, which reflects the purchasing power of individuals; *productive working hours spent for economic activities* and *lost hours by members of the household due to illness*. Others are *percentage of chronically ill members of the household*; *death of members during the last 12 months* and *dependence load*. As noted earlier, most of these variables have also been used to measure the intensity of HIV/AIDS and food security.

The argument that HIV/AIDS epidemic impoverishes people, their households, communities and enterprises is now widely accepted (Barnett and Whiteside, 2002). The pandemic leads to the impoverishment of financial, income and overall resources in the society. Individuals and therefore households become poorer as a result of the illness and death of members, and particularly because in many cases it is the income-earning adults who are lost. Note that, impoverishment is more than financial. Illness and death leads to an erosion of social capital and socially reproductive labor, which are important variables for poverty reduction.

(d) Weaknesses of Selected Indicators

The accuracy of these indicators is obviously an important concern because estimates derived from these proxies are somewhat subject to errors. For example, the hypothesis made in the coming section that morbidity (a proxy for HIV/AIDS) has contributed to food insecurity in the study areas cannot be validated without some pessimism because isolating the HIV/AIDS component of the respective proxies is an important and challenging subject, which requires comprehensive research of its own. In other words, although it is an epidemic, HIV/AIDS is not the only disease, which has an adverse effect to agriculture, food security and poverty. However, as demonstrated earlier in section 4.2 that, judging from the responses of the sampled households, it is clear that many of the chronic illness cases and death is HIV/AIDS related. For example, about 32 percent of the households that reported to have had a very sick member was a HIV/AIDS case and close to 60 percent reported HIV/AIDS as a cause of a death of a household member died in the last 12 months. Thus, though not accurate, the explanatory power of these indicators can still provide an indicative causality between HIV/AIDS on one hand and agricultural performance, food security and poverty on the other.

4.3.2.3 HIV/AIDS, Food Security and Poverty

(a) HIV/AIDS Indicators

Results of the proxy indicators for HIV/AIDS pandemic are presented in Table 4.24. A comparison between HIV/AIDS Affected Households (HAAH) and HIV/AIDS Unaffected Households (HAUH), High Prevalence Areas (HPA) and Low Prevalence Areas (LPA) reveals that on average, the pandemic has impacted HAAH and HPA more than HAUH and LPA[22].

[22] HPA and LPA are based on the National AIDS Control Program (URT, 2002) while HAAH and HAUH are categorized based on the response by the head of the household on whether or not there is a household member affected by HIV/AIDS.

For example, during the span of six months prior to this survey, 52 percent of the total HAAH interviewed had at least one person who was chronically sick, while HAUH registered 48 percent. The same ratio was recorded in HPA and LPA respectively. The findings on dependence load show that each of the active household member supports 3.8 and 2.1 individuals in the HAAH and HAUH respectively. The corresponding figures for HPA and LPA are 3.3 and 3.1 respectively.

Table 4.24: Indicators for HIV/AIDS

Sn	Indicator	Categories of the Sampled Population					
		HIV/AIDS: Affected and Not Affected		HIV/AIDS: Prevalence		Rural and Urban	
		Affected	Not Affected	High Prevalence Areas	Low Prevalence Areas	Rural Areas	Urban Areas
1	Chronically ill Members during the last six months (percent)	52	48	52	48	39	61
2	Recent Death – During the last 12 months (percent)	65	23	39	54	38	26
3	Dependency Ratio	3.8	2.1	3.3	3.1	1.9	3.6
4	Presence of Orphans (individual members in percent)	28	10	16	14	6	24
5	Presence of Orphans (households in percent)	49	52	40	49	71	57

About 65 percent of the total interviewed HAAH lost at least one member during 12 months prior to the survey. This proportion is far above that of the HAUH, HPA and LPA figures of 23 percent, 39 percent and 54 percent respectively. The respective percentages of orphans in HAAH, HAUH, HPA and LPA are 28, 10, 16 and 14. Clearly, HIV/AIDS affected households have more orphans than households that have not been affected by the pandemic. Similarly, the high HIV/AIDS prevalence areas have more orphans compared to the low prevalence areas.

A total of 293 (25 percent) of the surveyed households reported to have orphans at the time of survey. However, approximately 52 percent of unaffected households were found to have orphans while only 49 percent of affected households had orphans. This may be explained by the fact that orphans are absorbed in unaffected households after the death of the household's bread earner.

Judging from the findings in Table 4.24 one can clearly conclude that the HIV/AIDS pandemic has caused not only death of members but also significantly reduced productive working hours as well as increasing the number of orphans. The dependence ratio or demographic load has therefore been on the increase throughout the area under study.

The findings for the urban and rural comparative analysis do not give a clear picture and therefore one cannot confidently make any conclusion in terms of severity of the HIV/AIDS pandemic. While the urban areas appear to be affected more by the pandemic using the first, third and fourth indicators, the rural sector takes the lead using the second and fifth indicators in Table 4.24. The difference in terms of severity of HIV/AIDS in urban and rural areas of the surveyed districts is therefore not conclusive.

(b) Impacts on Food Security

The proxy indicators for food security used in this analysis are presented in Table 4.25. As noted earlier the last five proxies are borrowed from Table 4.24 and have partly been discussed earlier. The findings presented in Table 4.25 confirm the hypothesis that food security is a severe problem in HAAH, HPA and rural areas compared to HAUH, LPA and Urban areas. For example, at TZS 320, per capita income is comparatively low in HAAH compared to TZS 864 in HAUH. Likewise, the proportion of working man-days lost within 4 weeks due to illness is higher in HPA and urban areas compared to LPA and the rural areas. The findings show that a total of 64 and 97 working man-days were lost within 4 weeks due to illness in the HPA and urban areas respectively. These figures are higher than those recorded in LPA and rural areas, which stand at 42 and 35 working man-days respectively.

In terms of time spent for productive activities, time spent in HAAH and HPA is far below that of HAUH and LPA. On average only 620 hours and 1304 hours are spent for productive occupation per day in HAAH and HPA respectively, which are far below 2011 hours and 1329 hours spent in the HAUH and LPA. The results for chronically ill members during the last 6 months, recent death and presence of orphans also indicate clearly that the HAAH and HPA are much more affected compared to the HAUH and LPA. The findings on illness, death, dependency ratio and presence of the orphans also give a similar trend, although urban-rural comparative analysis is still inconclusive.

(c) Other Indicators of Food Security

In terms of land availability the findings show that all the 840 farming households who responded to this question own land. However, there is a big disparity in size of land owned by different households. For example, a total of 137 households (16 percent of the total households who responded to the question) own less than an acre of land, 167 and 128 households (20 percent and 15 percent of responding households respectively) own one and two acres respectively. Judging from the respondents' opinions, 24 percent (205 households) of the farming households own poor land and 635 (76 percent) own good land[23]. Transportation and marketing are serious constraints to food security in the study area. The findings show that distant markets are not accessible and therefore traders who have tended to suppress producer prices at the expense of the farming households monopolize the local markets.

[23] In the current analysis, the quality of land is based on productivity (the amount of harvest and/or production)

The results are testimony to the fact that food security is a critical problem throughout the six districts under the study. This is particularly true within households affected by HIV/AIDS (HAAH) and High Prevalence Areas (HPA) as can be depicted from Table 4.25. In addition and using different proxy variables for food security, HIV/AIDS is detrimental to food security in the country as it erodes the capacity of the community to ensure food availability, food accessibility as well as food utilization which are pre-requisites for food security.

Table 4.25: Indicators for Food Security and Poverty

Sn	Proxy Indicator	Categories of the Sampled Population					
		HIV/AIDS: Affected and Not Affected		HIV/AIDS: Prevalence		Rural and Urban	
		Affected	Not Affected	High Prevalence Areas	Low Prevalence Areas	Rural Areas	Urban Areas
1	Per Capita Income (TZS)	320	864	592	592	591	593
2	Loss of Working Man-days due to Illness in 4 Weeks*	64 (69)	68 (87)	90 (106)	42 (50)	35 (37)	97 (119)
3	Average Time Spent for Main Occupation (hours) per day	620	2011	1304	1329	1449	1184
4	Chronically ill Members during the last six months (percent)	52	48	52	48	39	61
5	Recent Death – During the last 12 months (percent)	65	23	39	54	38	26
6	Dependency Ratio	3.8	2.1	3.3	3.1	1.9	3.6
7	Presence of Orphans (individual members in percent)	28	10	16	14	6	24
8	Presence of Orphans (households in percent)	49	52	40	49	71	57

*Figures in brackets are total man-days under illness

(d) Impacts on Poverty

As noted earlier, the proxy indicators for poverty used to make the present analysis are also presented in Table 4.25. It is evident from the findings that HIV/AIDS is one of the major impoverishing forces in the study areas. The findings presented in Table 4.25 confirm the hypothesis that poverty is a serious problem in areas with HIV/AIDS affected households (HAAH) and High Prevalence Areas (HPA). For example, the findings show that 28 percent and 16 percent of the response in the HAAH and HPA respectively consist of orphans. These proportions are higher than 10 percent and 14 percent recorded for HAUH and LPA

respectively. The presence of more orphans in areas and households affected by HIV/AIDS compared to other areas corresponds to the findings on dependency ratio, which is 3.8 and 3.3 for HAAH and HPA respectively. Again, the ratios are higher than 2.1 and 3.1 for HAUH and LPA respectively. These results demonstrate the severity of poverty in areas and households affected by the pandemic in comparison to other areas.

The findings on recent death and chronic illness in the most HIV/AIDS affected areas and High Prevalence area also indicate that poverty is severe in the area than it is in Low Prevalence Areas and within the households not affected by the pandemic. During the span of six months prior to the period of the field survey 52 percent of the members were chronically ill in both HAAH and HPA. In addition, about 65 percent of the HAAH lost at least one member of the household within 12 months prior to the field survey. Likewise, in terms of income flows, HAAH recorded low per capital income (TZS 320) compared to TZS 864 for HAUH. The proportion of working man-days lost within 4 weeks due to illness is higher in HPA and urban areas compared to LPA and the rural areas. A total of 64 and 97 working man-days were lost within 4 weeks due to illness in the HPA and urban areas respectively. These figures are higher than those recorded in LPA and rural areas, which stand at 42 and 35 working man-days respectively.

In terms of time spent for productive activities, time spent in HAAH and HPA is far below that of HAUH and LPA. On average only 620 hours and 1304 hours are spent for productive occupation per day in HAAH and HPA respectively, which is far below 2011 hours and 1329 hours spent in the HAUH and LPA.

As can be depicted from the conceptual framework presented earlier, poverty has many heads and therefore it can be gauged from different angles. Presence of orphans, chronic illness and loss of life (particularly the active labour) have negative impact on the labour force and therefore income flow as well the ability to make ends meet. The linkage between the three proxy variables (which are to a larger extent manifested by HIV/AIDS), and poverty is therefore clear and evident.

Loss of working man-days and time spent on productive activities are also important variables in terms of poverty reduction. As can be depicted from the findings, the pandemic has significantly reduced the working man-days and increased loss of time allocated for productive activities. The impacts on poverty reduction in the study areas are obviously negative.

4.3.3 Conclusions

HIV/AIDS pandemic impacts are found to be severe in the affected and high prevalence areas judging from the HIV/AIDS indicators. Also important to mention is the fact that HIV/AIDS has impacted negatively on agricultural productivity, food security as well as poverty

reduction in the surveyed districts. This is particularly true because, HIV/AIDS indicators have impacted on agricultural labour time, food security and poverty through declining per capita income, increased deaths, increased chronic illness and lost working man-days. Other intermediary variables are high dependency ratio, increasing number of orphans and declining time spent on productive activities by household members.

4.4 The Impact of HIV/AIIDS on Health Sector

Quantifying the impact of pandemic at health facility level has been difficult because of unavailability of data, poor quality of the little data that is available, and the widespread stigma associated with the pandemic that makes record keeping difficult. In addition, that stigma makes the health workers, just like the rest of the population reluctant to go for HIV testing. Despite these flaws, this section attempts to quantify the impact of the pandemic on the health facilities surveyed and the health sector at large using scanty data collected from different types of heath facilities and health workers in the surveyed districts.

4.4.1 Prevalence of HIV Cases Among Patients Attended at the Surveyed Facilities

A total of 61 health care facilities were studied and from each several questionnaires were administered to different types of respondents. The identities of those interviewed included administrative staff (21 percent), and health care workers including medical officers/clinical officer's in-charge, specialist, and general practitioners (19 percent). The rest of the respondents were nurses, and supporting staff such as laboratory technicians, dental assistants, Maternal and Child Health (MCH) Aides, cleaners, auxiliaries and radiology staff (60 percent). Stratification of nurses and other supporting staff by gender shows that 20.5 percent were males and the rest 79.5 percent were females, implying that most supporting staff are females. There were no significant differences between mean age by gender when males were compared to females (38 years versus 37.2 years for males and females respectively). Table 4.26 shows the distribution of the studied health care facilities. Dispensaries and health centers formed the bulk of the facilities followed by private and government hospitals.

All facilities were running outpatients services and 36 percent of these were hospitalizing patients. Those hospitalizing patients included all hospitals except one private hospital, all health centers and 3 religious affiliated dispensaries. Tables 4.27, 4.28 and 4.29 show the average number of patients seen per day, week and month respectively in 2002 at outpatient departments of the various types of health care facilities and those with HIV/AIDS related illnesses.

Table 4.26: Distribution of the Studied Health Care Facilities by District

District	Type of Health Facility					Total
	Referral, private hospital with specialist or district hospital	Private hospital without specialist	Health Center (public or private)	Dispensary (public or private)	Other facilities	
Dodoma Urban	1	1	3	3	1	9
Kahama	1	-	4	4	2	11
Kinondoni	1	-	4	5	1	11
Mbeya Rural	-	1	2	10	-	13
Mbeya Urban	3	-	5	3	-	11
Simanjiro	1	-	1	4	-	6
Total	**7**	**2**	**19**	**29**	**4**	**61**

Table 4.27: Average Number of Patients Attended to at Outpatient Departments Per Day and the Proportion of Patients with HIV/AIDS Related Illnesses by Type of Facility

Type of Facility	Number of Facilities	Average number of patients seen per day	Average number with HIV/AIDS related illness	Percent with HIV/AIDS related illness
Referral hospital	2	75 (50-100)	3 (1-5)	4.0
Private hospital with specialists	2	38 (23-50)	2 (1-3)	5.3
District hospital	2	400 (0-800)	10	2.5
Private hospital without specialists	2	59 (58-60)	8 (3-12)	13.6
Health center	11	67 (15-260)	13 (1-100)	19.4
Dispensary	3	70 (3-1116)	8 (1-92)	11.4
Other types of facilities	3	15 (6-30)	4 (3-5)	26.7

Note: Patient range in brackets.

Table 4.28: Average Number of Patients Attended to at Outpatient Departments Per Week and the Proportion of Patients with HIV/AIDS Related Illnesses by Type of Facility

Type of Facility	Number of facilities	Average number of patients seen per week	Average number with HIV/AIDS related illness	Percent with HIV/AIDS related illness
Referral hospital	2	450 (200-700)	13 (2-25)	2.9
Private hospital with specialists	2	180 (161-200)	7 (1-12)	3.9
District hospital	2	2800	28	1.0
Private hospital without specialists	2	433 (406-460)	24 (18-30)	5.5
Health center	11	407 (60-1200)	58 (2-450)	14.2
Dispensary	3	201(2-1406)	8 (2-30)	4.0

Other types of facilities	3	31(0-75)	11 (5-16)	35.5

Note: Patient range in brackets.

Table 4.29: Average Number of Patients Attended to at Outpatient Departments Per Month and the Proportion of Patients with HIV/AIDS Related Illnesses by Type of Facility

Type of Facility	Number of facilities	Average number of patients seen per month	Average number with HIV/AIDS related illness	Percent with HIV/AIDS related illness
Referral hospital	2	1900 (800-3000)	27 (6-48)	1.4
Private hospital with specialists	2	1131 (693-2000)	66 (5-127)	5.8
District hospital	2	12000 (0-24,000)	120	1.0
Private hospital without specialists	2	601 (750-1600)	56 (37-75)	9.3
Health center	11	2053 (120-11550)	222 (1-1900)	10.8
Dispensary	3	1130 (7-10500)	22 (1-92)	1.9
Other types of facilities	3	132 (0-300)	33 (1-77)	25.0

Note: Patient range in brackets.

The proportions of HIV/AIDS related illnesses varied by duration of reporting. The proportion of HIV/AIDS related illness reported at various health care facilities ranged from as low as 3 percent to 27 percent per day (Table 4.27). Figures representing the proportion of HIV/AIDS related illness reported at various health care facilities per week and per month are shown in Tables 4.28 and 4.29 respectively. In general there was a tendency for the proportions to increase as one approached the lowest health care delivery levels, indicating that the highest burden of disease for outpatient services is borne by the lowest level health care facilities. However it should be noted that data on the number of cases attended to as well as for admitted patients is not readily available because HIV/AIDS diagnosis is not routinely documented in the record books. This was reported to be either as result of difficulties in arriving at a proper diagnosis due to lack of laboratory support[24]and secondly it was reported to be a result of stigma associated with such diagnosis especially for nominal recording in the register books. This has resulted into a gross underestimation of the total number of AIDS cases and HIV/AIDS related illnesses recorded routinely in record books from almost all levels of health care facilities. Table 4.30 shows admissions per month in year 2002 and the proportion reported to have HIV/AIDS related illnesses broken down by sex.

Females were generally likely to occupy more hospital beds compared to males and even for HIV/AIDS related illnesses proportions being generally higher for females compared to

[24] This may however not be an excuse for lack of report because it is the policy of the MoH to encourage the peripheral centers to use clinical presentation/definitions in arriving at an AIDS diagnosis.

males. These differences however were not statistically significant (p=0.1). In addition, there was a tendency for the referral hospitals, and district hospitals to bear the highest burden of admissions compared to the rest of the facilities.

Table 4.30: Average Number of Admissions Per Month and Percent of Beds Occupied by HIV/AIDS Related Illness by Sex and Type of Facility

Type of Facility	Number of Facilities	Average number of admissions per month*			
		Number of male patients admitted	Number with HIV/AIDS related illness	Number of female patients admitted	Number with HIV/AIDS related illness
Referral hospital	2	275	48 (17.5)	375	80 (21.3)
Private hospital with specialists	2	23	3 (13.0)	38	2 (5.3)
District hospital	2	353	22 (6.2)	501	43 (8.6)
Private hospital without specialists	2	95	4 (4.2)	123	8 (6.5)
Health center	11	35	4 (11.4)	36	5 (13.9)
Dispensary	3	13	2 (15.4)	25	4 (16.0)
Total	**22**	**794**	**83 (10.5)**	**1098**	**142 (12.9)**

* The numbers in the brackets indicate percentages.

4.4.2 Consultation and Hospitalization Costs

Overall average cost for consultation was TZS 570 (range TZS 100-1500) when all types of facilities were combined and TZS 2600 (range TZS 500-10,000) for hospitalization for one day also all facilities combined[25]. Table 4.31 shows consultation and hospitalization rates by type of health care facility. As expected private hospitals regardless of whether they had a doctor (medical officer) or not had the highest hospitalization rates. In addition, patients with HIV/AIDS related conditions have to consult/or be hospitalized several times before they eventually die implying that they have to bear all these costs repeatedly.

Table 4.31: Consultation and Hospitalization Costs by Type of Hospital, 2002

Type of Facility	Consultation costs (TZS)	Hospitalization cost for one day excluding drugs (TZS)
Referral hospital	800	2000
Regional Hospital	-	-
Private hospital with specialists	700	6000
District hospital	300	2000
Private hospital without specialists	500	3500

[25] Note that the consultation and hospitalization figures reported at facility level differ from the figures reported by the PLWHAs. This could be attributed to the health condition faced by different individuals and the type of health facility visited.

Health center (Private and Public)	670	2300
Dispensary (Private and Public)	500	1200

Costs involved in the testing/screening for HIV infection were assessed. Table 4.32 shows the total number of persons tested, types of tests used and average cost for such tests. There was a tendency for the number of persons tested to increase with time, except for 2002 – where the data were only available up to third quarter. Most of these costs are borne by patients themselves or health care facilities through funds from the health sector and other stakeholders.

Table 4.32: HIV Infection Screening as Obtained from Laboratory Records for the Years 1999-2002, the Type of Tests Used and the Average cost Per Test

Variable		Year			
		1999	2000	2001	2002
Total tested in the surveyed health care facilities		801	815	1080	552
Total found HIV positive		419	390	428	244
Prevalence (%)		52.3	47.8	39.6	44.2
Type of test used;	Capillus (%)	50	56.3	63.2	66.5
	Elisa (%)	43	37.5	36.8	33.5
	Spot Medicine (%)	7	6.2		

Almost half (40-50 percent) of patients screened at the studied health care facilities, were HIV positive indicating that may be the underlying cause of hospital consultation may have been suspected HIV infection. The commonest test used was Capillus (a rapid test) in up to 67 percent of the cases in 2002 followed by Elisa in up to 30 percent of the cases. In the rest of cases, Spot Medicine was used. The cost per test did not seem to vary by test type, on average a single test was costing TZS 2200.

In making the diagnosis of AIDS illness, 37 percent of the clinicians relied on clinical symptoms alone, 3.7 percent on laboratory findings alone and 59.3 percent on both clinical and laboratory findings. Laboratory support for HIV testing was available in 41 percent of the studied facilities implying that some health facilities referred patients/samples to other facilities for HIV testing. Only 2 facilities could perform CD_4 counts at a cost of TZS 30,000 per test. Of the studied facilities none could perform viral load tests. The National AIDS Control Program estimates that in year 2001 about 2.2 millions Tanzanians were living with HIV/AIDS and 25 percent of these individuals require ARV therapy. This number translates to 550,000 people requiring ARV treatment. Apart from costs for the drugs, if every patient will require at least one CD_4 test this would translates into TZS 16.5 billions.

On average each clinician saw 32 (range 1-100) outpatients per day using an average of 13 minutes (range 5-45 minutes) per patient. Ninety-two percent of clinicians reported that they

are spending more time with patients having HIV/AIDS related conditions. On average they spent 18 minutes (4-60 minutes) more when compared to other types of patients. Fifteen percent of the studied clinicians had attended a certain form of course for management of HIV/AIDS disease. The following problems were identified by clinicians to be hindering provision of quality care to HIV/AIDS patients. They include: lack of counseling skills, lack of drugs/inability of patients to afford medicines, lack of adequate laboratory backup, lack of updates in management of opportunistic infections and AIDS illness in general, stigma leading to lack of openness among patients, lack of family/community support for patients, risk of getting infected, patients coming too late for management and care, and more time required to attend to AIDS patients and which is usually not available.

4.4.3 AIDS Mortality Among the Health Sector Workforce

Mortality statistics for health workers during the reporting period was difficult to obtain mainly due to poor record keeping. Despite this drawback, a total of 31 individuals were reported to have died of AIDS during the period of 1999-August 2002. The denominator population could not be established. Of these, 24 were females and the rest (7) were males. Their mean age differed slightly—males having a higher mean age than females at 40 years as opposed to 38 years for females. These differences however were not statistically significant p=0.08. A study by NIMR (2001) indicated the number of HIV/AIDS related deaths among health staff in regional hospital to range from 4 in 1990 to 19 in 2000. Table 4.33 shows some selected variables for those who died due to AIDS in the studied health care facilities.

Findings indicate that HIV/AIDS depletes the workforce individuals who had a long experience in their carrier. Nurses and other supporting staff seemed the most affected although this has to be interpreted with caution due to lack of appropriate denominators, that is, the total number of nurses during that specific period of time is required to arrive at comparable mortality rate estimates. Despite this however, loss of nurses and supporting staff require institution of measures to prevent infection among these cadres of staff. Infection may be from the workplace environment or from the workers lifestyles. Whatever is applicable, workplace interventions should be put in place in the health sector. Regarding the type of persons replacing the deceased, the respective cadres replaced the deceased cadres except for the specialists who were replaced by general clinicians. Loss of trained staff impacts on the economy since it requires training of fresh staff to take up jobs left by the deceased. On the other hand service delivery will suffer due to loss of manpower complicated by the bureaucratic system in replacement of the deceased.

Table 4.33: Selected Variables of Those Who Died due to AIDS During 1999-2002

Specialty/Background	Proportion (%) (N=31)
Specialist	3.2
Clinician	3.2
Para-Medical	13.0
Nurse	58.0
Supporting staff, for instance, cleaners	22.6
Mean Duration of employment in years	**Mean (Yrs) (N=31)**
Specialist	7
Clinician	17
Para-Medical	18
Nurse	10
Supporting staff, for instance, cleaners	7.4
Proportion having sick leave (%)	26
Average duration of sick leave in months (range in brackets)	3.6 (1-9)
Mean salary per month in TZS during sick leave (range in brackets)	65,000 (25,000-142,400)
Average treatment costs incurred by employer in TZS per month (range in brackets)	69,300 (10,000- 300,000)
Total treatment cost in TZS since became sick (range in brackets)	206,000 (40,000- 300,000)
Funeral costs paid by employer in TZS (range in brackets)	185,000 (50,000-1,000,000)
Proportion replaced (%)	52

4.4.4 Work Environment

Additional allowances for high-risk work environment were paid by 3.3 percent (2 out of the 61 health care facilities surveyed). The payments averaged TZS 12,000 per worker per month. The high risky environment for which these allowances were paid include: The laboratory, the dressing room including the minor theatre, injection room, dental department and workers in contact with TB patients. Only one health care facility (a health center) reported to have insurance schemes for workers working in risky environments. A total of TZS 13,100 is being paid per worker per year for such schemes. All these were additional costs for the health care system as a result of HIV/AIDS. This however as earlier pointed out should be taken further to improve/initiate good clinical practice initiatives in our health care delivery systems.

4.4.5 Mitigation of HIV Transmission Within the Health Care Delivery System Setting—Protective Gear

Protective gear when handling potentially infective material is necessary to avoid nasocomial transmission of HIV infection. This implies additional costs to the health care facilities to ensure that the necessary protective gear is available at all times. About 93 percent of the health facilities reported to be issuing protective gear to their health workers. Despite this however, 67 percent of the facilities still thought that their workers were at risk of acquiring HIV infection from their workplace. From the workers perspective, 80 percent perceived themselves to be at risk of being infected from the workplace. Reasons given for workers still being at risk despite the protective gear included: Accidental needle stick injuries, accidental cuts during operations and other invasive procedures, contamination/splashing of blood or fluids during emergency deliveries, and emergency room conditions that may result into contamination with potentially infected blood. Other conditions include: tearing of gloves or protective gear when handling difficult patients such as mentally ill persons or children, lack of adequate knowledge on how to use the protective gear, shortage of protective gear including irregular supply and lack of antiseptics/disinfectants. About 16 percent of the interviewed health care providers thought of leaving their work or shifting to another department due to the fear of being infected, while 1.6 percent of workers reported to have moved departments so as to avoid being infected with the HIV.

The possibility of workers being infected from their workplace calls for the need to ensure availability of post-exposure antiretroviral prophylaxis at all levels of health care delivery for use in case of such accidents. This provision was absent in all studied health care facilities. In general those attending to HIV/AIDS patients face several problems that need to be addressed so as to improve patient management and care. This definitely must have financial implications.

4.4.6 Recruitment/Training of Personnel Specializing in HIV/AIDS Management

Nine percent (one private hospital and four health centers) of the health care facilities reported to have ever employed a person specializing in HIV/AIDS management and care. The need to have such personnel for better management of HIV/AIDS was reflected by the expressed need of such personnel when responding to the question: “Do you lack personnel in specific areas in this facility which you think are needed to better manage HIV/AIDS disease?” Seventy-three percent of the health facilities indicated that they lack these types of personnel. Table 4.34 shows the identified training needs by Department, type of training, duration and if possible the cost for such training. Costs for the courses were available for 4 courses and they ranged from TZS 800,000 to TZS 9,000,000 implying huge costs for training such types of personnel.

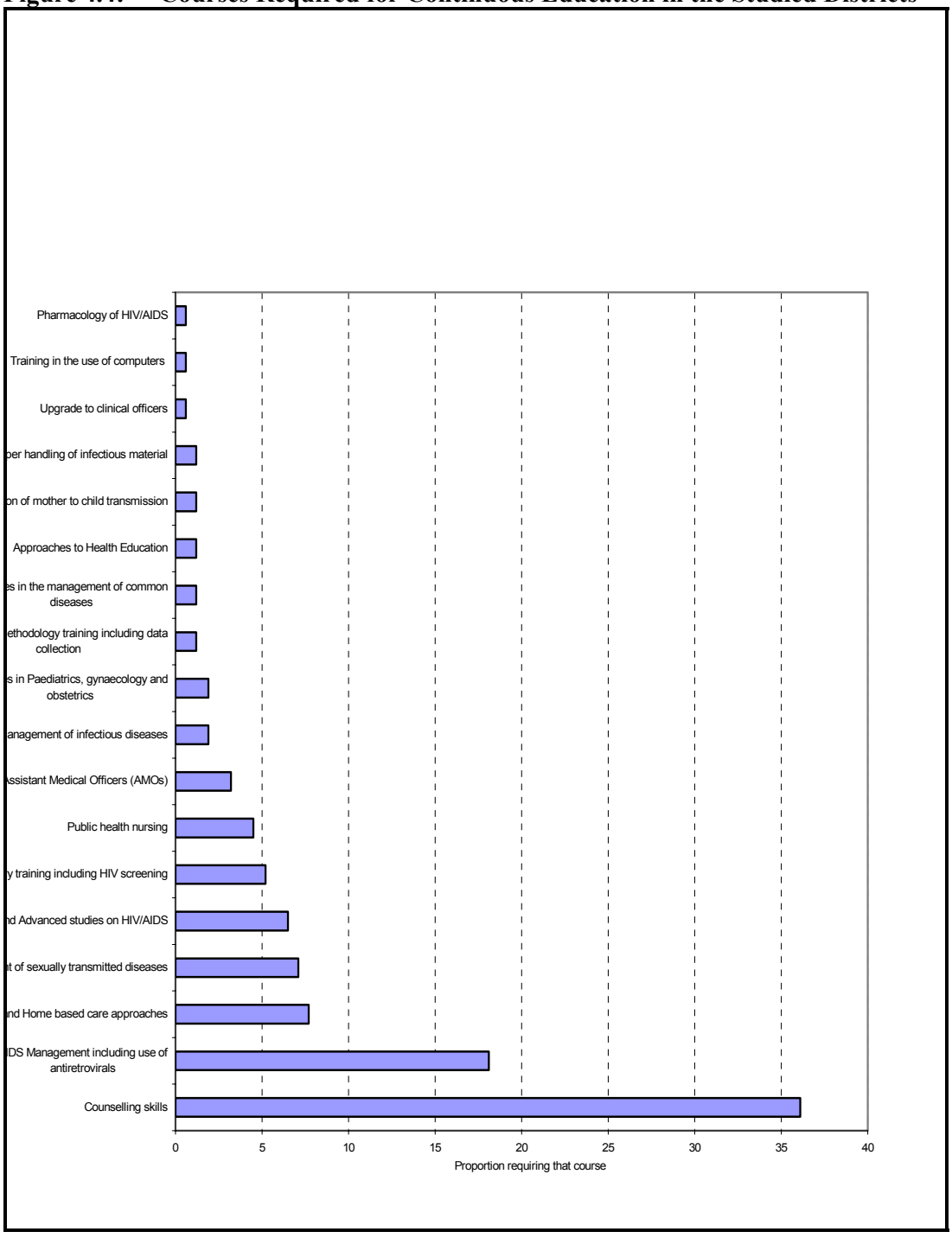
Table 4.34: Courses Required by Different Departments in order to Improve HIV/AIDS Patient Management and Care

Department	Type of Training	Duration
Outpatient, and other departments	Counseling and testing	3 weeks to 6 months
OPD and Internal medicine	HIV/AIDS management including use of antiretrovirals	3 weeks to 6 months
OPD, Internal medicine	- Management of HIV/AIDS related illnesses - Syndromic management of STIs - TB and HIV infection	2 months to 1 year 10 days to 1 month 1 year*
Laboratory section	Laboratory HIV testing	2 weeks
Nursing departments	Nursing/caring for HIV/AIDS patients	3 months
Pediatrics and child health	Management of pediatric HIV/AIDS illness	2 weeks
Nursing departments	Home visiting/Home based care approaches	1 week
Medicine, OPD	Occupational medicine	-
All departments	Handling and management of infected material	-
Psychiatry department	Mental Health	6 months **
Maternity department	Prevention of mother to child transmission (PMTCT)	8 weeks ***
Internal Medicine	Medical specialists	3 years****

Cost for the course: * TZS 1,080,000, ** TZS 800,000, *** TZS 1,900,000, ****TZS 9,000,000

There was clearly an expressed need for training in the identified areas. However to better manage HIV/AIDS, training and continuing education as will be seen later are essential in improving patient management and care. Regarding general continuing education among the health care staff, Figure 4.4 shows the identified areas.

Figure 4.4: Courses Required for Continuous Education in the Studied Districts



Most courses required for continuing education include counseling skills, AIDS case management including use of antiretrovirals, nursing AIDS patients and home based care approaches. The least mentioned courses included upgrading to clinical officers and training on the use of computers. These needs seem to be varied with a wide range of courses implying that needs are not only for HIV/AIDS management and care but general improvement in the general function of health care workers as clinicians.

4.4.7 Voluntary Counselling and Testing (VCT) Services

Voluntary counseling and testing services are key in the whole issue of HIV/AIDS prevention, treatment and care. These services are not only essential for prevention of HIV transmission but also are a gateway for the broad category of continuum of care for HIV infected individuals. To assess how health care facilities have coped in provision of these services, assessment was done regarding the availability of these services. For those areas where such services were not available, assessment was done regarding the type of resources the facilities would require to set up such services. VCT services were present in 37.3 percent of the studied health care facilities. The initial cost of establishing such a facility ranged from TZS 1 million to TZS 21.3 million with an average of TZS 4.76 million. The running costs for such a unit ranged from TZS 100,000 to TZS 415,000 with an average of TZS 233,000 for manpower costs per month and from TZS 50,000 to TZS 1,100,000 with an average of TZS 350,000 per month for other inputs including supplies.

Regarding manpower, very few counselors were available, with an average of 2 (range 0-8) counselors per studied health care facility. The same applied to technicians in which case there was on average 1 (range 0-2) technician per health care facility studied implying that there was a need for training, placement and retention of counselors in health care facilities. On average each VCT center saw 162 (range 1-650) clients and out of these 83 percent (that is, 134 range 1-650) consented for testing for HIV infection per month. Factors promoting the use of VCT services included: Privacy and confidentiality, quick test results, health education to clients, and community awareness. On the other hand factors hindering their use included: Lack of confidentiality, cost sharing/inability to pay for the services, stigma and discrimination, lack of adequate counselors, lack of modern testing facilities and poor location of centers—for instance, being out of reach for most people or being too conspicuous.

Most clinicians (over 75 percent) had no background training in counseling skills a deficiency identified earlier in the training needs. A small proportion (7 percent) were involved in running a specialized HIV/AIDS clinic. Approximately 90 percent of clinicians thought that it was a good idea to have a specialized HIV clinic although the whole idea was seen to be an expensive venture. Knowledge on the existence of antiretrovirals was low, only 59 percent of clinicians were aware of the existence of ARVs and its only 23 percent who had knowledge on the use of ARVs. Its only 13 percent of the clinicians who prescribed ARVs. However ARVs were only accessible to 9 percent of patients seen by the clinicians.

The availability of these centers/services is low, this may well be explained by both the initial investment and running costs being high but also lack of trained personnel, that is, lack of counseling training among the health care delivery personnel to enable them to deliver such a service. Adequate training of health care personnel would cut down some of the costs required to establish a stand-alone type of VCT facility. The need for training in the delivery

of VCT services has been echoed by all who expressed the need for further training. May be it is a high time that this is incorporated in the training curriculum of all health care staff since it will always be an invaluable asset not only for HIV/AIDS but also for all other diseases requiring such approaches, for instance, cancer.

4.4.8 Policy and Budget for HIV/AIDS Prevention at Workplace

Up to 30 percent of the facilities had policies or guidelines for HIV prevention in their workplaces. Most of the information given in the guidelines was directed to prevention of nasocomial infection within the health care facility setting and not, prevention of acquisition of infection by the workforce through other means, for example, sexual transmission. No health facility was found to have a specific program that could be classified as workplace interventions of HIV transmission.

Eighty six percent of the health care facilities indicated that they did not have any form of budget for HIV/AIDS prevention program. The 14 percent who had such budgets indicated that they were supported from the following sources in descending order: The Government, Non-Governmental Organizations, A combination of the first two, International Agencies, and The Council Health Basket Fund.

4.4.9 Conclusions

The HIV/AIDS disease is affecting the health care delivery system in a number of ways reflected by a high number of HIV/AIDS related patients attended to at various levels of the health care delivery. Findings from this study indicated that the proportion of HIV/AIDS patients seen at outpatient clinics increased as one went down the ladder of types of health facilities, that is, from referral hospital down to dispensary level indicating an increased burden at lower levels compared to the highest level. The findings further indicated an overwhelming burden of HIV/AIDS disease not only to the workforce itself in terms of illnesses costs, lost time in terms of excuse duties, cost for disposal of the dead but also the added requirements on the health care staff when caring for the sick both in terms of time, knowledge and skills, resources, fatigue and helplessness resulting from inability to cure.

Thus, the number of HIV/AIDS cases is increasing but on the other side the number of health workers is not increasing proportionally partly because of the inadequate government resources to train enough personnel, but also because health workers are also dying due to the pandemic. The number of health staff available to handle HIV/AIDS cases is therefore declining and pressure keeps on mounting. This problem is further complicated by the fact that, health workers are increasingly becoming reluctant to handle HIV/AIDS cases in particular and other cases in general because of the fear of being infected.

4.5 The Impact of HIV/AIDS on the Education Sector

4.5.1 Introduction

As the HIV/AIDS epidemic continues to erode human and other resources in different sectors, education, which is the main instrument for developing future human resources is no exception in suffering from the impact of the epidemic. An effective education system is one of the most important factors that contribute to sustainable human development in any society. Its effectiveness can be assessed both in terms of the quality and quantity of education services provided. Factors on either the supply and/or demand sides can work to enhance or reduce the effectiveness of the education system. HIV/AIDS has had adverse impact on the quality and quantity of education provided, thus undermining the very foundation of socio-economic development.

The impact of HIV/AIDS on the supply side is seen in terms of, among other things, decrease in the number of teachers due to death, decreased productivity of sick teachers (morbidity effects on productivity such as absenteeism and reduced work capacity even if at work) and impact on the available resources due to, for example, increased medical, transport, burial, and training costs. On the demand side the impact is in terms of falling enrolments and the ability to learn of affected children who are able to stay in school. The latter has implications on performance and achievement. This study utilizes field findings on these issues to assess the magnitude of the impact of HIV/AIDS on both the supply and demand sides of education, and makes recommendations on what could be done to mitigate the impact.

In this section we present findings on the education sector. As already pointed out in the section describing the sample and methodology, the findings cover both the supply and demand sides of education. On the supply side, data utilized were obtained at school, district, and ministry level. To the extent that data allow, we make effort to give the analysis a gender focus so as to capture the gendered impact of HIV/AIDS.

4.5.2 The Sample and Background Characteristics

The proposed sample design for each district was to collect data at school level, ward level (two) and district level. At school level three types of questionnaires were to be administered—one on the supply side and two on the demand side. The first demand side questionnaire was to be completed by head teachers or teachers in charge of student welfare and the second one by students who were orphans. Five out of six district education offices responded while at school level a total of 43 schools were covered as shown in Table 4.35.

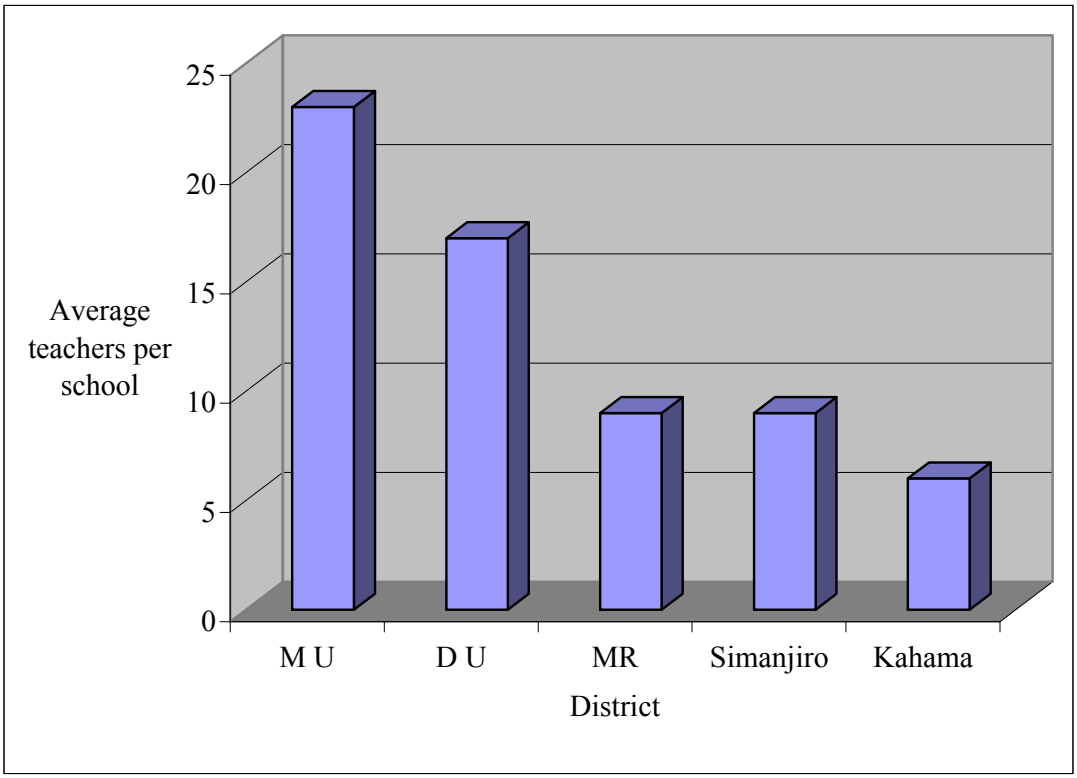
Table 4.35: Total Number of Schools Covered by District

District	Number of schools
Kinondoni	11
Mbeya Urban	7
Mbeya Rural	7
Dodoma Urban	8
Simanjiro	5
Kahama	5
Total	**43**

4.5.2.1 Teachers

District level data presented in Figure 4.5 suggest that on average, schools in urban districts have more teachers than schools in rural districts. Data obtained at school level (Table 4.36) is consistent with this finding. On average, sampled schools in urban districts had more teachers than schools in rural districts.

Figure 4.5: Average[26] Number of Teachers Per School by District, 2002



Note: MU = Mbeya Urban, MR = Mbeya Rural, DU = Dodoma Urban

[26] These are district data whereby the average number of teachers was obtained by dividing the total number of teachers in the district by the number of schools. Figures from Kinondoni District were not available.

Table 4.36: Total and Average Number of Teachers in Sampled Schools by District [27]

Variable	District					
	Kinondoni	Mbeya Urban	Dodoma Urban	Mbeya Rural	Simanjiro	Kahama
Number of schools	11	5	7	5	5	5
Total number of teachers	382	187	238	97	86	38
Average	35	37	34	19	17	8

Table 4.37 shows district level data on the total number of teachers disaggregated by sex. The data suggest that generally urban districts have more female teachers than male teachers while the reverse is the case for rural districts. For example, for Mbeya Urban and Dodoma urban, in 2002 female teachers constituted 76 percent and 78 percent of the total number of teachers in the two respective districts. On the other hand, in the same year, female teachers constituted 47 percent and 38 percent of the total number of teachers in Mbeya Rural and Kahama district respectively.

Table 4.37: Number of Teachers Disaggregated by Sex and District, 2002

District	Number of teachers		
	Male	Female	Total
Dodoma Urban	227	788	1015
Kahama	896	548	1444
Mbeya Rural	582	517	1099
Mbeya Urban	285	917	1202

4.5.2.2 Orphans

As already pointed out, the sample also included orphans in schools. A total of 226 orphans were interviewed in the six districts. Data in Table 4.38 show the number of orphans interviewed by class/grade. The majority of the interviewed orphans (74.3 percent) were in primary school.

Table 4.38: Number of Orphans Interviewed by Class/Grade

Class/Grade	Number of orphans	Percent
1 – 4	94	41.6
5 –7	75	33.2
9 – 12	51	22.6
13 – 14	6	2.7

[27] Note that some schools did not provide figures on total number of teachers. These schools are dropped from the analysis presented in this Table.

Total	**226**	**100.0**

Female orphans constituted 58 percent of the sample. About 96 percent of the interviewed orphans were aged between 7 and 18 years[28]. The majority of the orphans (74 percent) had lost both parents. About 66 percent of the orphans who had lost one parent said they had lost their father. Years in which parents died ranged between 1982 and 2002, with the numbers increasing over the years. For example, 71.6 percent of the fathers died from 1996 onwards and 79.8 of the mothers died over the same period.

4.5.3 Supply side Effects of HIV/AIDS

4.5.3.1 Effects of HIV/AIDS on the Teaching Force

School level data show that not all sampled schools reported to have had teachers who died in the period 1999 to 2002. Of those indicating to have had teachers who died, the number was generally higher in urban than rural schools. There are two possible explanations for this. First, the higher number of teachers who died in urban areas could be signifying the higher probability of a teacher dying in urban schools because of having more teachers. Second, evidence suggests that urban areas were initially the most affected by the pandemic compared to rural areas,

Tables 4.39 and 4.40 present data for districts whose respondents in sampled schools provided data on the total number of teachers who died and out of those, the number of teachers who died of AIDS related illnesses[29].

Table 4.39: Number of Teachers Who Died in Responding Schools by district, 1999

	District	
	Kinondoni	**Mbeya Urban**
Total number of teachers dead	7 (n = 6)	2 (n = 2)
Teachers died due to AIDS	6 (n = 5)	2 (n = 2)
Proportion of teachers died due to AIDS (%)	86	100

Table 4.40: Number of Teachers Who Died in Responding Schools by District, 2001

	District		
	Kinondoni	**Mbeya Urban**	**Dodoma Urban**
Total number of teachers died	8 (n = 5)	3 (n = 2)	3 (n = 2)

[28] Included in the sample are a few secondary school students who were above 18 years. While these fall beyond the definition of orphans (see chapter three), the basis for their inclusion is the fact that they were still in school at the basic level, and still fully dependent on their caregivers for their basic needs including those for their development such as education.

[29] In the districts not shown, the second set of data was not provided. For the districts presented, data on the number of teachers who died from AIDS related illnesses was not provided for the missing years, that is, 2000 and 2002.

Teachers died due to AIDS	6 (n = 4)	3 (n = 2)	2 (n = 2)
Proportion of teachers died due to AIDS (%)	75	100	67

Data in the Tables 4.39 and 4.40 show that the proportion of teachers dying of HIV/AIDS as a percentage of the total number of teachers who died is quite large. The proportions, as shown in the Tables range between 67 to 100 percent. These proportions are high despite the fact that data on the number of teachers dying of AIDS related illnesses might be an under-estimate. In most cases the underlying cause of death was not known. Respondents pointed out that, the majority of sick teachers who die either do not test for HIV/AIDS or if they do and find out their status, it is kept a secret. Most of the interviewed teachers explained that as long as tests are not done or if done the affected teachers are not revealing their status, then it remains difficult to confidently attribute a teacher's cause of death to AIDS. The main criteria used by those who identified teachers who had died of AIDS-related illnesses were AIDS-related symptoms such as unexplained long term illness, TB, skin disease etc.

Generally, a much less number of school level respondents in the rural districts reported to have had teachers who died in any one given year. Moreover, where respondents indicated to have had teachers who died, the numbers reported were lower than those reported in urban schools. All respondents in rural district schools did not indicate any of the dead teachers to have died due to AIDS, probably due to lack of knowledge on the exact cause of death.

Data disaggregated by sex on the number of dead teachers show that in urban districts, the majority of those dying because of AIDS were female. For example, five out of six teachers who died of AIDS related illnesses in Kinondoni district schools in 1999 and 2001 respectively were female. District level data suggest that the reverse was the case in rural districts. For example, while in 1999 only one male teacher died compared to 16 female teachers in Mbeya Urban, for Kahama district it was 10 male and 4 female teachers. For 2000, the numbers were 4 male and 10 female teachers for Mbeya Urban compared to 6 male and one female for Kahama. It is worth noting however, that again this could reflect the fact that many teachers in urban districts are female as background data show.

Table 4.41: District Level Data on the Number of Teachers Who Died by District, 1999 – 2002

District	Number of teachers who died by year							
	1999		2000		2001		2002	
	Number	% AIDS	Number	% AIDS	Number	% AIDS	Number	% AIDS
Dodoma Urban	9 (4)*	44	5 (5)	100	10 (10)	100	12 (2)	17
Kahama	14 (9)	64	7 (6)	86	18 (14)	78	18 (16)	89
Mbeya Rural	28 (25)	89	15 (14)	93	24 (23)	96	14 (14)	100
Mbeya Urban	17	-	14	-	25 (10)	40	11 (6)	55
Simanjiro	-	-	-	-	-	-	3 (3)	100

* Figures in brackets represent the number of teachers who died from AIDS related illnesses out of the total number of teachers who died. Where there are no numbers in brackets, the number of teachers who died from AIDS related illnesses was not provided.

Table 4.41 presents district level data on the total number of teachers who died and those who died from AIDS related illnesses (the latter is shown in brackets). Generally the picture depicted is similar to that emerging from school level data, with those dead due to AIDS constituting a significant proportion of the total dead. On average, 14 and 8 teachers died in 2001 and 2002 respectively per district. Data in Table 4.41 show further that for some of the districts in some of the years AIDS was the cause of death for all the teachers who died. In 50 percent of the cases, teachers who died due to AIDS accounted for between 86 - 100 percent of total deaths.

4.5.3.2 Effects of HIV/AIDS on Productivity of Affected Teachers

Decreased productivity has been identified as one of the adverse effects of HIV/AIDS on the education sector. This study also made an attempt to assess the extent to which HIV/AIDS affect the level of efficiency and productivity in schools. A number of issues were looked into, including comparison of years of experience and qualifications of dead teachers and those replacing them, and absenteeism rate and incidence of sick leave among the sick teachers compared to other teachers

(i) Experience and Qualifications of Teachers who Died Compared to Teachers Recruited to Replace Them

Data on salary scales and years of experience for teachers who died for whom this information was provided show that the majority had relatively high salary scales and had been in service for a substantial number of years before their death (Tables 4.42 and 4.43). For example, only five out of the 28 teachers who died and whose salary scales were indicated (18 percent) had salary scales below Tanzania Government Teachers Salary Scale 4 (TGTS) 4. At the same time, only 7 out of the 27 teachers (26 percent) for whom years of experience were indicated had less than 10 years of experience. Fifty percent of those with more than 10 years of experience had been in service for 20 years or more. The average years of experience were 15.4 with a minimum of 2 years and a maximum of 27 years.

Table 4.42: Salary Scales of Teachers Who died of AIDS over the Period 1999 – 2002[30]

Salary scale	Salary Range	Number of dead teachers
TGTS 1	63,500 – 67,050	1
TGTS 2	69,700 – 74,350	3
TGTS 3	81,950 – 87,450	1
TGTS 4	89,690 – 95,890	13

[30] Information on salary scales and years of experience could not be provided for all teachers who died.

TGTS 6	110,660 – 119,340	7
TGTS 7	123,970 – 135,450	2
TGTS 8	141,000 – 154,680	1
Total		**28**

Table 4.43: Years of Experience of Teachers Who Died over the Period 1999 – 2002

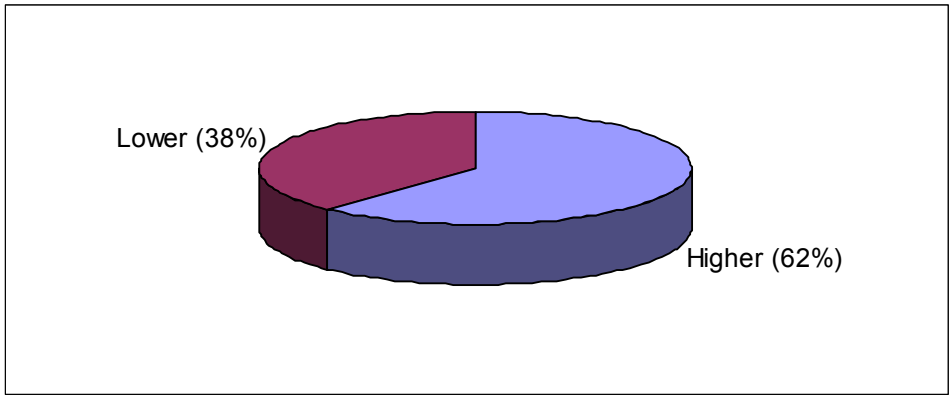
Years of experience	Number of dead teachers	Percent
0 – 4	4	15
5 – 10	3	11
11 – 15	3	11
16 – 19	7	26
20 and above	10	37
Total	**27**	**100**

Two out of the four districts in which interviewees responded to the question regarding recruitment of teachers said they had recruited teachers to replace those who died or retired prematurely. Data provided was for 10 teachers all of whom were in the salary scale TGTS 2, suggesting that these teachers either had less academic qualifications or less years of experience than most of the teachers who died. The latter is well supported by data on years of experience, which show that recruited teachers on average had 3 years of experience. The implication of this is that holding all other factors constant, one would expect the replacements not to be as effective as the teachers who died who had longer experience and/or higher academic qualifications would have been.

(ii) Absenteeism Rate

Comparing the absenteeism rate of sick teachers to that of the other teachers was rather difficult. Many respondents in schools either said they did not have teachers who had HIV/AIDS or simply that they did not know whether there were teachers with HIV/AIDS and therefore lacked a basis for comparison. Only 13 respondents chose one of the three options on the basis of which comparison could be made (same, higher or lower rate of absenteeism). Eight respondents (62 percent) out of 13 said the rate of absenteeism for teachers with HIV/AIDS was higher than for other teachers. The remaining said it was lower (Figure 4.6). Being absent means not being in school to teach, a factor that affects the quality of education outputs.

Figure 4.6: Rate of Absenteeism for Teachers with HIV/AIDS Relative to Other Teachers



(iii) Sick Leave

Data on sick leave does not allow for a comparison of total days of sick leave for teachers with AIDS relative to other teachers. Not only was data on sick leave very scanty as only very few teachers seemed to have taken sick leave over the four-year period, but also no respondent indicated days of sick leave for teachers with HIV/AIDS. This is probably again due to the fact that most of the respondents could not confidently say whether a sick teacher had HIV/AIDS or not. The average number of man days for teachers who had sick leave was 65 in 2001.

4.5.3.3 Effects of HIV/AIDS on Financial Resources

Two variables in the supply side questionnaire—medical expenses and transport and burial costs were meant to assess the magnitude of the financial burden attributed to HIV/AIDS relative to overall burden related to these expenses.

(i) Medical Expenses

In the case of medical expenses, no district reported the amount specifically spent on the teachers with HIV/AIDS. However, the trend of total medical expenses in the three districts which provided data (Table 4.44) show a steady increase in medical expenses on teachers for Simanjiro district and Mbeya Urban, with the exception of year 2002 for the latter. For Mbeya Rural, the largest amount was in 1999 and 2001, with the same amount indicated in both years. On medical expenses specifically for sick teachers with HIV/AIDS, we can assume that since analysis has shown that the cause of death for the majority of the teachers who died was AIDS-related illnesses, the majority of the sick teachers were suffering from AIDS-related illnesses. This would then imply that a larger proportion of the medical expenses were for teachers with HIV/AIDS. This assumption however is not supported by the only entry for medical expenses on teachers with HIV/AIDS.

Table 4.44: Total Medical Expenses by District, 1999 – 2002

District	Medical expenses (TZS)			
	1999	2000	2001	2002
Mbeya Rural	2,464,000	1,248,000	2,464,000	1,144,000

Mbeya Urban	800,000	1,248,000	1,250,000	800,000
Simanjiro	1,400,000	2,000,000	2,400,000	3,500,000

(ii) Transport and Burial Expenses

Only Dodoma Urban and Mbeya Rural districts provided data both on total transport and burial costs for primary school teachers who died and on transport and burial costs for primary school teachers who died from AIDS in all four years. For Mbeya Urban district both sets of data are provided for years 2001 and 2002 while for Simanjiro it is provided for years 1999 and 2002. Data on medical, transport and burial expenses could not be obtained at the school level because such funds are kept and disbursed at the district level.

District level data presented in Table 4.45 show that in all districts (except Mbeya Rural in 1999 and 2002), transport and burial costs for teachers who died of AIDS-related illnesses constituted a larger proportion of total transport and burial costs. Fifty percent (7 out of 14) of the presented percentages in Table 4.45 had teachers who died of AIDS accounting for over 70 percent of the transport and burial expenses.

Table 4.45: Transport and Burial Costs by District, 1999 – 2002

District	Cost category	Cost (TZS)			
		1999	2000	2001	2002
Dodoma Urban	Total cost	744,900	620,750	869,050	1,489,800
	Cost due to AIDS	496,600	496,600	620,750	1,241,500
	Proportion of cost due to AIDS (%)	67	80	71	83
Mbeya Rural	Total cost	5,404,000	4,648,000	4,825,000	2,509,000
	Cost due to AIDS	2,000,000	2,324,000	2,435,000	1,118,000
	Proportion of cost due to AIDS (%)	37	64	51	45
Mbeya Urban	Total cost	1,957,000	1,442,000	2,575,000	1,170,000
	Cost due to AIDS	-	-	1,300,000	980,000
	Proportion of cost due to AIDS (%)	-	-	51	84
Simanjiro	Total cost	100,000	-	-	500,000
	Cost due to AIDS	100,000	-	-	400,000
	Proportion of cost due to AIDS (%)	100	-	-	80

(iii) Teacher Transfer Costs

Only two districts provided data on costs related to the recruitment of new teachers to replace those who died or retired prematurely. The types of costs incurred included transport and subsistence allowance. The average cost for subsistence allowance was TZS 34,000 in one district and TZS 210,000 in the second district. Only one district provided data on transport cost, of which the average was TZS 122,000.

4.5.3.4 Level of Stigma and Discrimination Against Affected Teachers

Findings on questions aimed at assessing stigma and discrimination against teachers with HIV/AIDS suggest that this is on a low scale. Only one out of the five respondents at the district level was aware of acts of discrimination against teachers with HIV/AIDS. At school level, only seven out of 41 teachers (17 percent) responding to the question on discrimination said they were aware of incidents in which teachers with HIV/AIDS were being discriminated or treated differently by other teachers. "Other teachers not wanting to mix with affected teachers" and "finger pointing and labeling" were the types of discrimination mentioned.

On the other hand, there seems to be substantial consideration for teachers with HIV/AIDS in schools. Responding to the question on whether there is special consideration or provision of services to teachers affected with HIV/AIDS, two out of five respondents at district level said yes, two others said no and one did not know. Types of services mentioned include access to medical services, provision of transport to the health facility, sick leave with full pay, and staff visits to the sick teacher's home. One reason given by those who said no was absence of a policy setting out guidelines for such provisions.

At school level, 15 out of 36 interviewees responding to the same question said yes, while 14 said no. Seven respondents did not know whether there was special consideration for teachers with HIV/AIDS. Examples of special consideration or services given by those who said yes at school level included assigning affected teachers fewer subjects compared to other teachers and unofficial financial contributions by other teachers to assist the affected teacher.

4.5.3.5 Policy/Guidelines and Availability of Resources for Support of HIV/AIDS Intervention Programs

The analysis on both the supply and demand sides clearly suggest the need for intervention programs in terms of policies/guidelines and financial and material resources aimed at preventing the spread of the epidemic and mitigating its impact. To what extent are these in place? Responses to questions addressing these issues suggest that much more needs to be done.

On the supply side only two out of five respondents at the district level indicated to have had a policy or guidelines on HIV/AIDS prevention. It was pointed out that the policy was the one formulated at the national level. On whether there is a budget for HIV/AIDS programs, four interviewees out of five interviewees at the district level responded, three saying no and one saying he did not know. This suggests that resources hardly exist for the school system at local levels for HIV/AIDS prevention and impact mitigation activities. It was however noted by one respondent that teachers were attending seminars on HIV/AIDS related issues such as prevention and sensitization against stigma and discrimination.

4.5.3.6 Discussion of the Main Findings

In this sub-section we summarize the main findings on the supply side and discuss these findings in relation to findings in other existing studies. The results of the discussion show that, to a large extent findings in this study are consistent with findings in these studies.

(i) Teaching Force

Analysis in this sub-section has shown a number of findings on the impact of HIV/AIDS on the supply side of education. One major impact clearly emerging relates to the increase in the number of teachers dying. Analysis has clearly shown that a larger proportion of teachers who died during the period 1999 to 2002 died from AIDS related illnesses. Data collected at school level show that the proportions, of teachers dying from AIDS related illnesses as a percentage of the total number of teachers who died ranged between 66 to 100 percent. District level data generally depict a similar picture to that emerging from school level data, with the teachers dead due to AIDS constituting a larger proportion of the total dead. Evidence from other countries shows that not only is AIDS the cause of death for the majority of teachers, but also the number of teachers dying from AIDS as a proportion of the total number of teachers dead is much higher than the general population. For example, a study in Zambia (Malaney, 2000) shows mortality rate among teachers to be 38 out of 1,000 deaths. This was 70 percent higher than the general population aged between 15 and 49. Other studies (Cohen, 1999; World Bank et al., 2002; Gachuhi, 1999) show alarming numbers of teachers who have died of AIDS related illnesses in Sub-Saharan Africa (SSA) and other countries, including Swaziland, Malawi, Kenya, Cote D'Ivoire, Zambia, the Central African Republic, and South Africa[31]

The analysis has also shown that on average, the number of teachers dying from AIDS related illnesses in urban district schools was higher than in rural district schools. While this might be a reflection of the relatively higher number of teachers in urban schools, empirical evidence suggests that so far the number of deaths from AIDS related illnesses has been higher in urban than rural areas. For example, a study by Ainsworth and Semali (1998) showed that a disproportionate number of the adults falling ill and dying from AIDS at that time were "the well educated, urban, white collar workers." These do include teachers. In Malawi it has been estimated that over 40 percent of education personnel in urban areas will die from AIDS by 2005 (World Bank, 1998 cited in Iskasen et al., 2002)

(ii) Productivity

A number of variables were used in the analysis as proxy for productivity. One of these was years of experience for which, analysis shows that teachers who died were more likely to have higher productivity than the teachers recruited to replace them. For example, we have

[31] Refer to the section on literature review for more details on the findings in these studies.

shown that the majority of teachers who died of AIDS related illnesses had high salary scales and had on average been in service for a much longer period compared to teachers who were recruited to replace them. Gachuhi (1999) points to possible adverse effects of using less experienced teaching force on quality of learning outcomes. This is likely to happen "as trained and well qualified experienced teachers are replaced with younger and less well trained teachers."

Absenteeism was another proxy used. On this, a larger proportion of the respondents (62 percent) said teachers with HIV/AIDS had a higher rate of absenteeism than other teachers. Being absent means not being in school to teach, a factor that affects the quality of education outputs. Discussing the impact of HIV/AIDS on teachers' productivity Malaney (2000) points out that teachers with AIDS often have increased periods of absenteeism and that even if in classroom, ill health affect their productivity.

The third variable was sick leave. As already pointed out, data obtained on this did not allow for a comparison of total days of sick leave for teachers with AIDS relative to other teachers. However, it is logical to assume, given that AIDS patients often are sick for a long time, that teachers with AIDS are likely to be less productive than other teachers who might fall ill only occasionally. Hamoud and Birdsoll (2002) explain how AIDS affect productivity. They point out that because of long periods of illness, which characterize AIDS, affected teachers cannot be as effective as they would otherwise be. This is attributed to either often being absent or being sickly and weak to fully cope with the demands of teaching even if at work.

(iii) Medical Expenses and Transport and Burial Costs

Although data on total medical expenses showed an increase over the four-year period, comparison with medical expenses spent on teachers with HIV/AIDS was not possible because data on the latter was not provided. However, we have concluded that since the majority of the dead teachers died due to AIDS, the majority of those who were sick might have been suffering from AIDS related illnesses. The implication would then be that medical expenses on teachers with HIV/AIDS most likely constituted a larger proportion of total medical expenses.

On the other hand, good comparable data were obtained on transport and burial costs for teachers who died. District level data revealed that in all districts for almost all the years, transport and burial costs for teachers who died of AIDS related illnesses constituted a larger proportion of total transport and burial costs. As in other findings summarized above, this is not surprising. Existing literature identify increased medical costs for the sick and transport and burial costs to employers as one of the main outcomes of the AIDS epidemic (Kelley, 1999; World Bank et al., 2002). Studies done in workplaces attribute large increases in medical, and transport and burial costs to AIDS related illnesses and deaths.

(iv) Stigma and Discrimination

Findings on stigma and discrimination against teachers with AIDS suggest this to have been on a low level. Rather, there was evidence of some form of support to teachers with AIDS through, for example, provision of sick leave with full pay, access to medical benefits and being assigned fewer subjects compared to other teachers. It is likely however, that except for the latter, all teachers are entitled to these benefits when sick.

4.5.4 Demand Side Effects of HIV/AIDS

4.5.4.1 Effect of HIV/AIDS on Enrolment Numbers

In this sub-section we assess the effect of HIV/AIDS on enrolment numbers in terms of dropout rate for pupils whose parents have died. A question was asked seeking to find out the total number of pupils who dropped out of school in each of the four year period covered, and the number of those who dropped out of school as a result of their parents' death due to AIDS. Data presented in Table 4.46 show that in schools responding to this question, on average the number of students whose parents died increased steadily over the period covered from eight in 1999 to 22 in 2002. This suggests that the number of orphans has been increasing, with implications on the dropout rate.

Table 4.46: Average Number of Students Whose Parents Died, 1999 - 2002

Number of Students	Year			
	1999	2000	2001	2002
Total (Number of schools in brackets)	110	183	240	601
Number of schools providing data	14	21	20	27
Average	8	9	12	22

Data from a few schools providing data on both the number of all students who dropped out of school and those who were orphans is consistent with the preceding argument. Presented in Table 4.47, these data show that in most of the cases orphans constituted a larger proportion of the total number of children who dropped out of school in each of the four years.

Table 4.47: Total Number of Dropouts Due to Parent's Death by Level of School

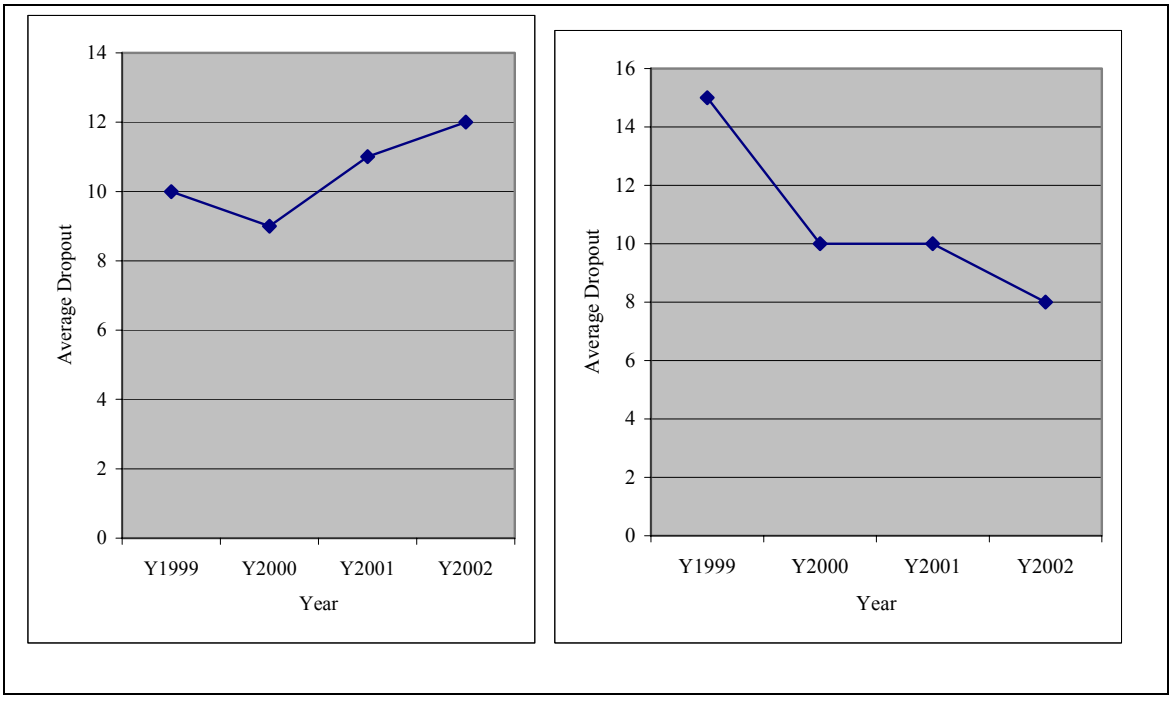
Level of School	Year		
	2000	2001	2002

	Total Dropout	Dropout due to parents' death	% dropout due to parents' death	Total Dropout	Dropout due to parents' death	% dropout due to parents' death	Total Dropout	Dropout due to parents' death	% dropout due to parents' death
Primary	71	37	52.1	81	47	58.0	93	59	63.4
Secondary	10	5	50.0	16	9	56.3	12	6	50.0
Total	**81**	**42**	**51.8**	**97**	**56**	**57.7**	**105**	**65**	**61.9**

Data from seven schools (Figure 4.7) shows that on average, the number of orphans dropping out of school was increasing over the four-year period from an average of 8 students per school to 12. On the other hand, data from a larger number of schools (Figure 4.8) show that on average the total number of students dropping out of school over the same period was decreasing, having dropped from an average of 15 in 1999 to 9 in 2002. The fact that on average the total number of students dropping out of school was decreasing notwithstanding, the implication of an increasing trend in the number of orphans dropping out of school is that, unless reversed, it can cause a reversal of the positive trend (decrease) in the number of total dropouts.

Figure 4.7: Average Number of Orphans Who Dropped Out

Figure 4.8: Average Total dropouts



Tables 4.48 and 4.49 provide a comparison of total dropout rate and dropout rate due to parents' death by sex. While overall more male students dropped out compared to female students, data on students whose parents died show that more female students dropped out compared to male students. For example, in 2000 the number of female orphans who dropped out was 39 compared to 23 male orphans (n = 7) (20 percent and 34 percent males and females dropped out respectively). In 2001, 52 female orphans dropped out in seven schools compared to 47 male orphans in eight schools (35 percent and 44 percent of males and females dropped out respectively). Twenty-nine teachers responded to a separate question on dropout rates by sex during year 2001. Out of these, 17 respondents were able to compare, with 14 (83 percent) indicating that girls had a higher dropout rate compared to boys. Only 3 respondents said boys had a higher rate of absenteeism.

Table 4.48: Total Number of Students Dropping Out of School by Sex, 1999 - 2002

Year	School dropouts (total and average)			
	Male		Female	
	Total	Average	Total	Average
1999	132 (n = 18)	7	129 (n = 16)	8
2000	116 (n = 20)	6	114 (n = 18)	6
2001	134 (n = 22)	6	118 (n = 22)	5
2002	117 (n = 21)	6	100 (n = 20)	5

Table 4.49: Number of Students whose Parents Died of AIDS Dropping Out of School, 1999 – 2002

Year	School dropouts (total and average)			
	Male		Female	
	Total	Average	Total	Average
1999	24 (n = 5)	5	33 (n = 6)	6
2000	23 (n = 7)	3	39 (n = 7)	6
2001	47 (n = 8)	6	52 (n = 7)	7
2002	51 (n = 9)	6	60 (n = 9)	7

In a separate question information was sought regarding, among other things, whether students whose parents died dropped out of school and reasons for dropout. Ten respondents (teachers) provided such information for 267 orphans, out of whom 33 (12 percent) were indicated as dropouts. This percentage is about twice the dropout rate in primary schools estimated at 6.6 percent, and currently thought to be decreasing. Of the reasons given for dropout, "both parents being dead" was the most mentioned (26 respondents), suggesting that double orphans are the most vulnerable. Death of one parent and truancy were the other reasons mentioned. Respondents suggested lack of proper supervision at home as the main reason for truancy. Data from household interviews is also consistent with the argument regarding vulnerability of orphans. This data show that orphans constituted 68.5 percent of

the children in households who could not go to school because of lack of money for school uniforms and fees.

4.5.4.2 Effect of HIV/AIDS on the Students' Ability to Learn

Factors such as absenteeism, responsibilities at home, stigma, and discrimination can affect a student's ability to learn and adversely affect his/her performance and potential for achievement. The demand side questionnaires thus had questions designed to assess the extent to which these factors affected orphans compared to other children in school and in households.

All 43 interviewees in schools responded to a question on whether there were students whose parents died during the period 1999 to 2002. The majority (83.7 percent) said yes, while three said no and two said they did not know. A follow-up question was asked, seeking information regarding each of these children on, among other things, performance in school subsequent to parent(s)' death. Regarding the performance of the orphans since their parents died, information was provided for 259 orphans. For 148 orphans (57 percent) it was indicated that performance in school deteriorated following death of parents. The second most mentioned response was "no change" in performance, which was mentioned by 68 respondents. Nineteen respondents indicated not to know the trend in performance. Surprisingly 21 respondents indicated that performance improved following death of parents. One explanation for this could be that some orphans end up with caring guardians in an environment where there is serious supervision and no stigma and discrimination. One teacher gave an example of an orphan whose performance improved because of close supervision by the guardian who was a teacher.

Another question was intended to find out whether there were observable changes in the learning process and behavior of orphans. Thirty-seven interviewees responded, out of whom 30 (81 percent) gave an affirmative response. The most mentioned change was "drop in performance" (27 respondents) followed by "paying less attention in class" (23 respondents). Nine respondents also indicated that children became withdrawn after their parents died.

(i) Absenteeism

Very few respondents in schools were able to indicate the number of days students whose parents died of AIDS were absent from school in each of the four specified years. In 1999 only 9 schools provided data on this with the minimum and maximum number of days being 5 and 123 respectively with an average of 44 days. In 2000, 10 schools provided data with 6 and 180 being the minimum and maximum number of days of absenteeism respectively with an average of 49 days. For 2001 and 2002 the number of schools providing data on days of absenteeism were 12 and 15 respectively. In the former case 8, and 110 were the minimum

and maximum days of absenteeism with an average of 42 days, and in the latter case it was 5 and 155 days respectively, with an average of 41 days.

Taking into account the fact that it might not have been possible to know the exact number of days of absenteeism because of recall problems, another question was asked regarding estimation of the average number of days orphans were absent from school during 2001. Data on this were provided for 26 orphans. The minimum and maximum numbers of days of absenteeism were 3 and 270 respectively, with the average of 48. This is rather a long time to lose in terms of classroom learning.

Data disaggregated by sex show that, as in the case of dropout rate, more female orphans were absent from school compared to male orphans. Of the 35 interviewees who responded to this question, 17 (49 percent) said girls had a higher rate of absenteeism than boys. Eight said boys had a higher rate of absenteeism and seven said it was the same. Three respondents were unable to compare (did not know). In comparison to other children, orphans on the whole were also more absent. Twenty-one out of 36 (68 percent) of the interviewees said orphans had a higher rate of absenteeism than other children. Six respondents said it was the same, five said it was lower and four were unable to compare.

Orphans were also asked as to whether their parent(s)' death affected their attendance in school. About 41 percent felt their parent(s)' death had affected their attendance in school. These orphans gave the following examples as some of the ways in which their attendance in school was being affected:

- Staying away from school because of lack of school fees.
- Being given too much work at home, which compels one to skip school.
- Being sent home by teachers because of lack of school supplies such as exercise books.
- Not going to school or arriving late because of lack of bus fare.
- Being emotionally upset and therefore not going to school.
- Staying at home to take care of younger children.
- Not going to school so as to work to earn money to buy school supplies and uniforms.

Not going to school because of lack of school supplies and uniforms and staying home to do some work assigned by guardians were the most mentioned factors affecting attendance of orphans in school.

(ii) Increased Responsibilities

The analysis above shows that having to do various work activities at home was the second most mentioned factor given by orphans as affecting their attendance in school. In a separate question, orphans were asked to indicate their level of involvement in selected activities (cleaning the house, cooking, taking care of younger children, farm work and income generating activities) compared to before their parents died. On all five activities, the majority of the orphans said the level of involvement was the same. Orphans saying they were more involved in the first four activities constituted the second largest proportion. On a question seeking to know whether orphans had been forced to look for employment as a result of their parent(s)' death, only a small proportion (15 percent) of the 233 respondents to this question said yes. A follow-up question shows that those who sought employment were engaged in the following income generating activities:

- Working in the mines.
- Assisting family members in their petty business.
- Loading bricks on lorries at a fee of TZS 10 per brick.
- Selling fruits, vegetables, cooked food such as cassava and drinking water on the streets.
- Transporting bricks in carts.
- Fetching water for neighbors.
- Working as house servant.
- Working as watchman.
- Casual laborer doing minor road works.
- Selling second hand clothes on the streets.
- Selling chips and roast meat in food stalls.

Teachers were asked what they thought were the reasons for orphans being absent from school. The most mentioned reason (51.2 percent) was "working to support other siblings". The second most mentioned reason (by 34.9 percent) was "taking care of sick family members". Only 18.6 percent of the respondents mentioned absenteeism due to illness. Other reasons mentioned by responding teachers were working to earn money to buy school supplies, staying out of school because of lack of school supplies, and lack of proper care and guidance by adults and therefore truancy.

(iii) Stigma and Discrimination Against Orphans

Teachers' responses regarding the level of stigma and discrimination against orphans suggest this to be at low levels in schools. Only four out of 40 responding interviewees said they were aware of orphans being discriminated or treated differently by other students and/or teachers. All four respondents mentioned "Laughing at, and/or making fun of orphans" as a form of discrimination. In addition, three also said other students did not want to mix with orphans while two said teachers isolated orphans.

Likewise, only a small proportion of interviewed orphans (12 percent) felt other students treated them differently after their parents died. As it was in the case of teachers, the form of discrimination mentioned most was "other students laugh/make fun of me" (18 orphans). This was followed by "other students do not want to mix with me" mentioned by 12 orphans. "Being isolated by teachers" was the least mentioned (4 orphans).

Acts of discrimination seemed to be more common in households. About 26 percent of the orphans said they were treated differently at home. "Not being treated equally to other children in the household by adults" was the most mentioned form of discrimination, (mentioned by 35 orphans), followed closely by "being given more work." Ten orphans said they were being teased/made fun of by other children in the house, and a few (6) said they were being teased/made fun of by other children in the neighborhood. Other acts by caregivers and of which the orphans felt were discriminatory include beatings, lack of expression of love and attention, and being given inadequate school supplies compared to children of caregivers.

4.5.4.3 Availability of Financial and Other Resources to Support Orphan

Responses to a question on whether orphans were facing difficulties in meeting school expenses after their parents died support the last point above. Fifty nine percent of the 226 orphans responding to this question said they were facing difficulties. This is also consistent with an earlier question on factors affecting school attendance of orphans. In this question the most mentioned factors were "lack of school supplies, uniforms and fees." In this case, the follow-up question on the type of school expenses also shows the same items, that is, school fees, supplies and uniforms.

On why orphans faced difficulties to meet school expenses after their parents died, the majority pointed to inadequate capacity of caregivers. Notable is the fact that a larger proportion of caregivers were those least likely to have adequate resources to meet the basic needs of orphans, which include education. About 34 percent of the orphans said they were being taken care of by their grandparents while 27 percent and 19.4 percent were being taken care of by their older sisters and brothers respectively. About 51 percent of the orphans taken care of by their grand parents responded to a follow-up question regarding the number of other orphans in the household. Responses to this question show that about 71 percent of the grandparents were taking care of between 1 and 3 other orphans. The remaining 29 percent were taking care of up to seven other orphans. This implies that grandparents are bearing a heavy burden of taking care of their grandchildren. In the latter two cases the implication is existence of child-headed households. However, as already pointed out earlier, that a few orphans attributed difficulties in meeting school expenses to mere discrimination. They pointed out that other children in the household were given adequate school supplies and school fees were paid without any problem. One orphan (with father dead) had this to say on

why he lacked school supplies: *"My late father was rich and left a lot of money and assets but my stepmother does not want to buy me school supplies."*

Fifty seven percent of the orphans said their caregivers were also taking care of other orphans. The number of other orphans in households ranged between 1 and 10. The majority of households in which orphans were living (about 70 percent) were taking care of 1-3 other orphans (or 2-4 orphans inclusive of the interviewed orphan). The remaining 30 percent were taking care of 5 - 10 other orphans.

Data provided in schools suggest existence of some form of support for orphans. Twenty-two out of the 43 respondents (51 percent) said they were aware of resources being provided in their districts for support of orphans. Seventeen respondents said they were not aware of any type of support and four did not know whether there was support. All 22 respondents who indicated to be aware of support being provided for orphans responded to a follow-up question on whether orphans in their respective schools benefited from this support. Seventeen said yes, 4 said no and 1 did not know. Institutions listed by the respondents to have been providing support to orphans in their schools are: Caritas (Tanzania), Municipal Council, Churches, Services, Health, and Development for People Living with HIV/AIDS (SHIDEPHA+), CCBRT, DCT, COMOCAH, Dogodogo Center, Care International, PASADA, WAMATA, and Teachers.

The type of support provided as listed by the respondents include: School fees, School supplies, Food, Medical expenses, Shoes, Counseling service, Study tutors, and Casual contributions. While acknowledging some form of support from different institutions, respondents did nonetheless say this was rather limited, benefiting only very few orphans. In one school, only one orphan was receiving support from an NGO owned by a Church the orphan belonged to.

Only 81 responded that they received any support from outside the households or institutions that were providing care for them said yes. The most mentioned group was "other relatives" (54 respondents), followed by "family friends" (14 respondents). Only six orphans indicated to have received support from community organizations. Organizations mentioned were PASADA, Churches, Municipal Council (Mbeya urban), WAMATA, World Vision and CCBRT. A follow-up question on the type of support provided had uniforms as the most mentioned response (52 orphans), followed closely by school supplies (49 orphans). Thirty-one orphans mentioned school fees while 28 also mentioned medical expenses. Other types of support mentioned include bus fare, pocket money, clothes, and food.

4.5.4.4 Discussion of the Main Findings

This sub-section provides a summary of the main findings on the demand side. Again effort is made to compare these findings with findings in other existing studies. As is the case on the

supply side, it is evident that findings of the current study are consistent with those in other studies.

(i) Dropout Rate

First, we have shown that on average the number of orphans was increasing over the four-year period covered. Consistent with this trend, the number of orphans dropping out of school was also increasing over the same period. Findings further suggest that the dropout rate within the orphans group is much higher than the dropout rate for other students. Studies done in other countries show similar findings. As we have shown in the literature review section, in Zambia for example, the proportion of orphans not enrolled in school was higher in both urban and rural areas compared to the proportion of children who were not orphans (Kelley, 1999). Evidence on the high rates of orphan dropouts has also been presented in findings in other SSA countries such as Swaziland, Namibia, and other developing countries such as Guatemala (Malaney, 2000; World Bank et al., 2002) Analysis of data disaggregated by sex shows a higher rate of dropout for girls than boys in sampled schools. This is also consistent with findings in other countries. In Swaziland, for example, girls were found to constitute a larger proportion of those dropping out of school due to AIDS.

(ii) Performance in School

The findings have also shown that performance in school for majority of the orphans drop after their parent(s)' death. Among the factors affecting student performance looked into included absenteeism, increased responsibilities at home and stigma and discrimination. Absenteeism analysis has shown that on average orphans were absent from school for more than one month and a half in 2001. These are rather many days to lose in terms of classroom learning, with adverse implications on performance. Studies which, were done elsewhere show similar findings (Gachuhi, 1999). A study done in Uganda showed students in a district hard hit by the pandemic to have been absent from school for periods ranging from five weeks to one and a half terms. It certainly would be difficult for a student staying out of school that long to catch up with other students. Data disaggregated by sex again shows that female orphans had a higher rate of absenteeism compared to male orphans (Malaney, 2000). Discussing ways in which the AIDS pandemic is likely to affect the rate of new human capital formation on both the demand and supply sides, Hamoud and Birdsoll (2002) point out how AIDS "increases the opportunity costs of children's time as children, especially girls, take on the responsibilities once handled by their parents." The report by World Bank et al., (2002) also points out the possibility of children, especially girls, being removed from school to take on household responsibilities.

(iii) Responsibilities in Households

Having to do various work activities at home was pointed out by both teachers and orphans as one factor affecting the attendance of orphans in school. Analysis showed the second largest proportion of orphans to have indicated that responsibilities at home increased after their parents died. The largest proportion indicated "no change," an outcome suggesting that probably orphans were equally busy taking care of their sick parents and doing work, which parents could no longer do because of illness. In other studies that have analyzed the impact of HIV/AIDS on education, increased responsibilities at home has been identified as one of the reasons children drop out of school or are absent from school for extended periods (World Bank et al., 2002; Gachuhi, 1999).

(iv) Stigma and Discrimination

Although still seemingly on a low level, particularly in schools, both teachers and orphans identified some acts of stigma and discrimination in schools and households. Within households, responses by orphans showed that stigma and discrimination was more common among adults than among other children. The implication of this is that other children within households and community neighborhoods can easily pick up this from adults who have the role of instilling values in children.

(v) Support for Orphans

The findings in this study have also shown that orphans face serious constraints in meeting their basic school expenses such as school fees, uniforms and supplies. Findings in other countries such as Uganda identify lack of school fees as the main cause of extended periods of absenteeism (World Bank et al., 2002). Findings have shown that most of the caregivers are those least likely to have adequate resources to effectively meet the needs of orphans (grandparents and elder sisters and brothers some of whom might be children themselves in the case of the latter two). Furthermore, findings suggest that the grandparents are bearing a heavy burden as most of them are taking care of more than 4 grandchildren.

The Tanzania Poverty Reduction Strategy Paper (PRSP) (2000) notes that in Tanzania the youth, the old and, large households are more likely to be poor. The elderly have been found to face problems in getting basic needs such as adequate quality housing, health care, food and water. In this study 34 percent of the orphans were being taken care of by their grandparents, a group, which is itself vulnerable and in need of care. However, provision of care for the elderly is also inadequate. The elderly are increasingly taking on the burden of caring for orphans in the context of an eroding traditional support system and inadequate or total lack of a formal social protection system for the elderly. Given this, the majority of grandparents are unable to provide adequate care for the orphans. Addressing the problems of orphans should therefore also involve strategic interventions at household level, targeting those headed by vulnerable groups such as the elderly.

While some institutions, mostly NGOs were providing some form of support to orphans, responding teachers pointed out this was limited, both in terms of the number of providers and the number of orphans being supported. Within households, findings show that the little support provided from outside the household was by other family members and family friends. Overall therefore, the level of support for orphans is very low.

4.5.5 Conclusion and Policy Implications

This section has analyzed data on the education sector and assessed the impact of HIV/AIDS on both the demand and supply sides of education. A number of key findings have emerged, with a discussion in relation to other studies revealing similar findings. On the supply side, while the exact number of teachers dying of AIDS remains unknown because of the apparent under-reporting of the AIDS cases among teachers, analysis nonetheless has shown that a significant proportion of the deaths are due to AIDS related illnesses. Analysis has also clearly revealed the financial burden of the epidemic. This is in terms of the significant proportions of medical and transport and burial expenses spent on teachers who were ill or died from AIDS related illnesses. The effect on productivity as indicated by higher absenteeism rates of teachers with HIV/AIDS and replacement of experienced teachers with less experienced ones clearly suggest an adverse impact on productivity and quality of education.

On the demand side, analysis has shown higher absenteeism and dropout rates among orphans compared to other children, with girls being the most affected. This, in combination with other effects of the epidemic such as mother to child transmission is a serious threat to enrolment numbers, particularly if the spread of the epidemic is not prevented and the trend in infection rates reversed. Absenteeism and dropping out of school also mean that a proportion of the future labor force cannot fully develop its potential. We note with concern that many orphans will continue to be denied their right to education if factors contributing to their being absent and dropping out of school are not effectively addressed. Those identified in this study include inability of guardians to afford school-related expenses such as fees, uniforms and school supplies, increased responsibilities at home and stigma and discrimination.

It is thus apparent that the impact of HIV/AIDS on the education sector is immense and unless abated, the consequences in terms of quality and quantity of the country's human resources and consequently on the country's socio-economic development will be quite severe. A number of interventions are suggested in the next chapter as ways through which the actual and potent impacts of the epidemic on both the demand and supply sides of education sector could be prevented and /or mitigated.

4.6 The Magnitude and Impact of HIV/AIDS at Workplaces

4.6.1 Background

HIV/AIDS is costly to productive and service giving industries/organizations and is likely to severely affect the industries' ability to provide goods and services. AIDS related illness and deaths of workers affect employers both by increasing their costs and reducing revenues. They have to spend more in areas such as health care, burial, family support training and recruitment of new employees to replace the sick and dead ones. Revenues may be decreased because of absenteeism due to illness or frequent funeral attendance, as well as time spent on training. New recruitments can lead to a less experienced and therefore less productive work force. In addition, social costs associated with stigmatization and discrimination resulted to pandemic affects the productivity of the workers negatively. This section explores some of these direct and indirect economic costs and social costs of the scourge, and intervention programs prevalent at workplaces to prevent the spread and mitigate the effects of the pandemic.

A sample of 33 productive and service giving industries/organizations was drawn from the five surveyed districts[32] (5 in Mbeya Urban, 5 in Mbeya Rural, 4 in Dodoma Urban, 10 in Simanjiro and Arusha Urban, and 9 from Dar es Salaam)[33]. The sample was then stratified into 8 categories as portrayed in Table 4.50. The sample size was largely determined by the time available to conduct the interview, willingness of the company to participate in the survey, and anecdotal evidence regarding incidence and prevalence of HIV/AIDS in these workplaces. The discussion in this section is based on year 2002 figures unless otherwise stated. The figures for other years whenever available were collected in order to establish trends overtime, whenever possible. The survey was conducted in September 2002. Consequently, the figures for year 2002 are from January to September 2002.

Table 4.50: Sample of Organizations[34,35,36]

Serial No.	Sector	Number of organizations Sampled	Range of Activities

[32] Note that only the results of 29 companies are presented and discussed in this section due to the fact that four questionnaires did not capture substantial information needed for the analysis done in this section. Note also that Simanjiro district is located in Manyara region which is a newly established region and many organizations are located in Arusha region. This necessitated sampling of workplaces located in Arusha region. Note further that in Dar es Salaam, workplaces outside Kinondoni District were also visited.

[33] The essence of sampling Kahama and Simanjiro Districts was to get the information from a mining community and Mwadui giant mining company in particular. However, management of Mwadui company was reluctant to participate in the survey and thus, no workplace was surveyed in Kahama District.

[34] The terms industry, company, enterprise, organization, institution, firm, and workplace are used interchangeably.

[35] For privacy purposes, the names of the companies are not disclosed unless where an example of best practice is cited.

[36] Note that sectoral comparisons are not conducted because some sectors were over sampled. In addition, the data is too scantly to allow for a reasonable sectoral comparisons.

Serial No.	Sector	Number of organizations Sampled	Range of Activities
1.	Mining	4	Mining of Tanzanite and other gemstones
2.	Manufacturing	10	Pharmaceutical, textiles, and cement production, milling activities
3.	Utilities	3	Electricity and water supplying
4.	Construction	3	Road and building construction
5.	Hotels	1	Hotel business
6.	Transportation	1	Transportation of passengers and goods
7.	Financial Institutions	2	Provision of insurance services
8.	Parastatals	5	Teaching, research, and consultancy work (Higher learning institutions), and service giving parastatals such as City Development Authorities.
	Total	**29**	

On average, the 29 companies included in the analysis have been in business for the past 25 years with the youngest and the oldest companies having been in business for the past 3 and 64 years respectively. Further, the surveyed workplaces employ between 19 and 1268 permanent workers with an average of 161 workers (Table 4.51). Temporary workers ranged from 0 to 612 with an average of 68 workers.

Table 4.51: Total Number of Permanent Employees in the Surveyed Companies, 2002

Cadre of the employee	Males	Females	Total
Executive cadre	153	19	172
Middle cadre	1034	434	1468
Low cadre	1483	440	1923
Total	**2670**	**893**	**3563**

4.6.2 Prevalence and Deaths Due to HIV/AIDS at Workplaces[37]

The HIV/AIDS pandemic has an impact on labor supply through increased mortality and morbidity. High morbidity rate results to high rate of absenteeism and ineffectiveness in the job. This is compounded by the loss of skills in key sectors of the economy. Decrease in the number of employees due to the pandemic is associated with the decrease in the manpower, and decrease in the human capital base of the organization as it becomes hard to make a replacement of the same experience, expertise, and/or professionalism.

[37] Note that some companies did not provide some of the information sought. In this and subsequent sections, the number of firms providing specific information is provided in the Tables of results.

The pandemic was found to have affected all sectors of the economy. Sixty eight percent of the surveyed companies had lost employees due to HIV/AIDS related problems[38]. A total of 78 employees were deceased in 1999. The number decreased to 55 in 2000 but it increased again to 62 and 67 deceased employees in 2001 and 2002 respectively (Table 4.52). The pandemic has cut across all cadres of employment, that is the executive, middle and lower cadres but the most affected cadres are the middle and lower cadres (Table 4.53). This may be explained by the fact that majority of employees are concentrated in these two cadres (Table 4.51). A total of 109 and 143 employees in the middle and lower cadre respectively died due to the pandemic from 1999 to 2002 at the time of survey compared to 10 employees at executive level.

Table 4.52: Total Number of Employees Lost in the Workplaces Due to HIV/AIDS Related Problems

Year	Number of Firms (n)	HIV/AIDS Related Deaths					
		Total	Average	Minimum	Maximum	Males	Females
1999	12	78	6	1	19	59	19
2000	14	55	4	1	14	37	18
2001	17	62	4	1	12	47	15
2002	14	67	5	1	11	51	16

Table 4.53: Total Number of Employees Lost in Workplaces Due to HIV/AIDS Related Problems by Category of Employment

Year	Category of Employment			Total
	Executive Level	Middle level	Low Level	
1999	1	24	53	78
2000	3	27	25	55
2001	2	26	34	62
2002	4	32	31	67
Total	**10**	**109**	**143**	**262**

Information on the employees on sick leave due to HIV/AIDS related problems for the past two years was also sought. Forty five percent of the surveyed companies indicated to have had sick employees due to HIV/AIDS related problems. However, only 21 percent and 38

[38] Note that some companies indicated to have lost employees due to HIV/AIDS related problems could not provide figures.

percent of these companies provided figures from years 2001 and 2002 respectively. What these figures are portraying is that in year 2002, for instance, the workplaces providing data lost an average of 6 employees (Table 4.54). Taking all the companies surveyed, one may conclude that there was at least two employees on sick leave due to HIV/AIDS related problems in every company. One may argue that if a company has 200 employees for instance, having two on sick leave may not result to a significant loss of productivity. That might be true for the casual laborers but for the professional (middle and executive levels), the cost might be exorbitant.

Table 4.54: Total Number of Employees on Sick Leave Due to HIV/AIDS Related Illness in 2001 and 2002

Year	Number of Firms (n)	HIV/AIDS Related Sick Leave					
		Total	Average	Minimum	Maximum	Males	Females
2001	6	48	8	1	21	40	8
2002	11	68	6	1	20	56	12

4.6.3 Social and Economic Costs Related to HIV/AIDS Illness

The economic costs associated with the pandemic are categorized into two categories, that is, direct costs and indirect costs. Direct costs include medical support, terminal benefits, costs of replacing an employee, funeral assistance, family support, and costs of running preventive and mitigation programs. Indirect costs include costs such as paid sick leaves, mandays of production lost due to absenteeism of the sick employees, and loss of experienced workers.

4.6.3.1 Indirect Costs of the Pandemic

The surveyed organizations have experienced decreased productivity due to mandays lost, paid sick leaves, and loss of experienced workers. Table 4.55 shows the number of employees given long sick leave and estimated mandays lost from such absenteeism for the year 2002 and for the companies providing data.

Table 4.55: Number of Employees on Paid Sick Leave Due to HIV/AIDS Related Illness and Estimated Man-days Lost from Such Absenteeism, 2002

Variable	Number of Firms (n)	Average	Minimum	Maximum
Number of employees on paid sick leave	6	6	1	13
Man-days Lost	7	598	60	1,530
Estimated Payments in salary per month (TZS)	5	158,281	76,000	350,000

Due to HIV/AIDS related opportunistic infections, companies loose money for paying workers who are not able to work. Table 4.55 shows that, at any particular time in those workplaces, there were workers who were debilitated by HIV/AIDS and unable to work but paid. These workers are not only paid for zero participation but also they are contributing to declining production in these workplaces. Companies loose in two ways: loss of labor and paying a non-working labor force. Table 4.55 shows that the workers on paid sick leave were paid an average of TZS 158,281 per month. This corresponds to TZS 989 per worker per hour, that is, 158,281/20x8 (assuming that one month has 20 work days and one day has 8 work hours). Thus, in year 2002 the company with sick employees paid an average of TZS 3.55 millions (598x6x989) to non-working employees.

In addition, the companies lost employees with between 2 years and 29 years of experience with an average of 6 years in 2001. The average salary of the deceased ranged from TZS 42,000 to TZS 2,842,000 with an average of TZS 837,168. Since it is not always easy to replace the deceased with employees with the same skills, the productivity of the company declines at least in the short run.

4.6.3.2 Direct Expenditures to Deceased and Employees Living with HIV/AIDS

(i) Medical allowance

Ninety four percent of all the surveyed companies provided medical allowance to their employees. The range of services provided to sick employees is presented in Table 4.56. These services are however provided to all sick employees and not only those who are suffering from HIV/AIDS related diseases. However, comparing to other common diseases, HIV positive individual becomes debilitated for a long period of time and suffers frequent spells of opportunistic infections. Thus, more resources would be spent on HIV/AIDS cases compared to what is being spent on other common diseases.

Table 4.56: Range of Medical Services Provided at Workplaces

Serial Number	Type of Service	Firms (%)
1.	**Contracted Out Services** The company channels medical support through contracted hospital or dispensary.	17
2.	**Company's Dispensary** Sick employees receive free medical services at the companies' dispensary.	7
3.	**Full Medical Support**[39] (a) The company incurs full medical costs including travel costs for referral cases. (b) The sick employee may get treatment at any health facility and submit the receipt for refund. (c) Full medical support for the employee and entitled family members. (d) Full medical support for services obtained at the public facilities only.	 31 3 7 3
4.	**Monthly Medical Allowance** (a) Medical allowance is consolidated in the salary. (b) Medical allowance is consolidated in the salary but it is differentiated by the cadre of the employee.	 14 3
5.	**First Aid** The company provides First Aid only	3

Only 21 percent (6 companies) of the surveyed companies provided specific medical support to employees living with HIV/AIDS. The range of medical services provided include support for testing, drugs to cure AIDS related/opportunistic infections, drugs to cure Sexually Transmitted Infections (STIs) related to HIV/AIDS infection, outpatient care, and impatient care (at the company's dispensaries or other health facilities) (Table 4.57). On average, TZS 11,758,667 per company were spent on such services in year 2002 with a minimum expenditure of TZS 80,250 and maximum of TZS 65,000,000.

[39] Some companies that pay full medical costs have fixed number of months of which a sick employee could be supported and some have fixed amount an employee could spend per year.

Table 4.57: Estimated Medical Expenses for HIV/AIDS Related Problems, 2002

No.	Variables	Number of Firms (n)	Average Cost (TZS)
1	Testing	1	1,000,000
2	Drugs to cure AIDS related diseases	2	32,500,000
3	Antiretroviral therapy	2	4,452,000
4	Drugs to cure STIs related to HIV/AIDS infection	1	2,000,000
5	Health Insurance	0	0
6	Outpatient care	1	20,000,000
7	Inpatient Care (at company's dispensary or other health facility)	2	10,600,000

Forty eight percent of the surveyed companies had health care facilities located at the companies premises. These were mainly dispensaries (86 percent) and health centers (14 percent). However, only 26 percent of these facilities provide HIV/AIDS related services. The services provided include counseling, provision of condoms, health education, provision of resuscitation fluids, take blood to referral hospital for testing, and treatment of some opportunistic infection.

(ii) Premature Retirements/Terminal Benefits

Ten percent (3 companies) of the surveyed companies had employees who retired prematurely due to HIV related problems in the past four years (Table 4.58). In total 4 employees were retired prematurely in year 2002. This was associated with payment of premature retirement/terminal benefits. The total benefits ranged from TZS 1,300,000 to TZS 16,500,000 with an average of TZS 10,300,000 (Table 4.58). In addition, some employees had quitted the job as the result of sickness. A total of 15 employees quitted the job in 4 of the companies surveyed in year 2002. However, only two companies were able to estimate the loss associated to such quitting. The first company estimated the loss to be at the magnitude of about TZS 2,000,000 whereas the second company estimated the loss to be TZS 30,000,000. However, only 34 percent of the companies surveyed which had lost employees (died, quitted the job or retired prematurely) due to HIV related illness were able to replace them.

Table 4.58: Premature Retirements/Terminal Benefits, 2002

Year	Number of Firms (n)	Total Employees	Average Cost (TZS)	Minimum Cost (TZS)	Maximum Cost (TZS)
1999	4	6	15,700,000	950,000	56,000,000
2000	4	11	18,200,000	800,000	64,200,000
2001	4	11	27,300,000	1,200,000	74,500,000
2002	3	4	10,300,000	1,300,000	16,500,000

(iii) Replacement Costs

Information regarding replacement costs was sought from the companies that had replaced the deceased, and the employees who quitted the job or retired prematurely. Only 24 percent of the companies which replaced employees incurred a cost to that effect. The replacement costs included costs of interviews, communications, transportation of prospective candidates to the interview centers, per diem etc. We understand that the cost of replacement would differ depending on the cadre of the employees. However, respondents were not able to tell how much was spent to replace different cadres of employees, that is, executive, middle and lower level cadres. Nevertheless, respondents were able to estimate figures on what it would cost to hire employees of different cadres in year 2002 (Table 4.59).

Table 4.59: Costs of Hiring Different Categories of Employees in Year 2002

Cadre	Number of Firms (n)	Average cost (TZS)	Minimum cost (TZS)	Maximum Cost (TZS)
Executive	4	872,325	189,300	1,500,000
Middle	5	391,700	97,260	1,098,240
Low	5	93,000	50,000	180,000

(iv) Funeral Assistance and Family Support

The majority (86 percent) of the companies surveyed provide funeral support for deceased employees (Table 4.60). Funeral support includes cost such as transport of the deceased to his/her domicile, costs of maintaining the well-wishers, and costs of buying flowers and casket. However, only 24 percent of the surveyed organizations have been providing financial support to the deceased families[40] (Table 4.61).

Table 4.60: Expenditures on Funeral (TZS)

Year	Number of Firms (n)	Average Cost	Minimum Cost	Maximum Cost
1999	9	2,164,444	100,000	7,500,000
2000	7	1,610,000	60,000	7,360,000
2001	8	1,572,500	30,000	6,400,000
2002	7	1,801,429	60,000	4,600,000

Table 4.61: Expenditures on the Family of the Deceased Employee (TZS)

Year	Number of Firms (n)	Number of Families Supported	Average	Minimum	Maximum
1999	3	17	221,000	63,000	500,000
2000	3	15	2,200,000	100,000	6,000,000

[40] The expenditure under funeral assistance code is expected to vary by the total number of deaths, and distance to the deceased domicile whereas the expenditure on family support is expected to vary by category of employee, that is, executive, middle or low cadre.

2001	5	21	1,800,667	30,000	8,333,333
2002	2	12	7,216,667	100,000	14,300,000

4.6.4 Social Cost of the Pandemic

The social cost of the pandemic at the workplace was measured by a variable measuring whether people living with HIV/AIDS have been discriminated or stigmatized at workplaces. Majority of the respondents mentioned to have not heard of such a behavior at their workplaces. However, discrimination and stigmatization is prevalent in many workplaces as portrayed in section 4.1. It is easy for a person living with HIV/AIDS to notice even subtle forms of discrimination and stigmatization compared to unaffected individuals, in this case workplace respondents.

4.6.5 HIV/AIDS Interventions at Workplaces

4.6.5.1 Prevention Programs

Initiating and launching preventive programs at workplaces is one of the strategies adopted to curtail the spread of the virus. Forty five percent of the surveyed companies have intervention programs to combat HIV/AIDS at their workplace (Table 4.62).

Table 4.62: HIV/AIDS Intervention Programs at Workplaces

Programs	Elements of the Programs	Number of Firms (n)
1. Educational programs	(a) Creating awareness by holding seminars and monthly meetings aimed at educating staff on HIV/AIDS and how to protect themselves from being infected. (b) Using audiovisual methods such as video on sexually transmitted infections (STIs). (c) Use of audiovisual methods to educate employees, their families, and neighbors (create awareness	5 1 2
2. Counseling Programs	(a) Invite/contract a private counselor to provide counseling services to the employees as well as students. (b) Providing counseling services to those already affected.	2 1
3. Testing	Program to encourage and provide voluntary testing	1
4. Condoms Promotion and Provision	Free distribution of condoms.	1

Note: Some companies are implementing more than one program

4.6.5.2 Direct Expenditures on Prevention Programs

The costs of running HIV/AIDS intervention programs presented in Table 4.62 are incurred by the organizations, but some of the services were contracted out to private service providers. Eight organizations supported the programs by themselves, 2 had contracted

outside service providers, and one organization practiced both. However, only few companies were able to provide the actual monetary costs for such programs (Table 4.63).

Table 4.63: Total Expenditure on Preventive Programs in the Year 2002 (TZS)

Program	Number of Firms (n)	Average cost	Minimum cost	Maximum cost
Counseling program	2	350,000	200,000	500,000
Educational programs	1	380,000	-	-
Distribution of Condoms	1	300,000	-	-
Other	1	984,000	-	-

Some of these preventive programs are extended to the neighboring communities as mentioned by 14 percent of the surveyed organizations. However, only one company indicated a budget for community educational programs. The company spent TZS 2,000,000 and TZS 1,500,000 in year 2000 and 2001 respectively. In addition, some NGOs were mentioned to have programs in the communities where the workplaces were located. These include African Medical and Research Foundation (AMREF) International, MWANGAZA, SHIDEPHA, COMOCAH, GTZ, WAMATA, and WORLD VISION. Other institutions mentioned include TACAIDS.

Some companies would like to initiate or scale up ongoing HIV/AIDS intervention at their workplaces. Forty eight percent of the companies which do not have intervention programs currently are willing to initiate such programs if funds are made available. Seventeen percent of the companies surveyed were not willing to start any preventive program, 3 percent were indifferent (do not know) and 31 percent did not respond to the question. The companies with the intension to initiate such programs would like to promote/initiate preventive programs such as; educational programs to encourage employees to abstain from unsafe sex, establishing play grounds for workers so as to keep them busy during leisure/rest time, programs to provide free diagnostic and treatment of STIs, extension of preventive programs to the neighboring communities, oral exchange of views about HIV/AIDS scourge (breaking the silence), peer group education, provision of ARVs to affected employees, and programs to help orphans.

It is worth noting that, many companies did not spend much on HIV/AIDS related programs as they did not have comprehensive HIV/AIDS policy and budget for the same. However, awareness has made the companies understand that HIV/AIDS problems must be solved through a multi-sectoral approach and are in the process of formulating and implementing workplaces HIV policies as explained in the next section.

4.6.5.3 HIV/AIDS Policy and Strategies

Only 21 percent (6 companies) of the surveyed companies had HIV/AIDS policy at their workplace. Tanzania Breweries Limited (TBL) had a coherent, elaborate, and already implemented health/HIV policy whereas another company (anonymity preferred) had a duly-developed HIV/AIDS policy that was however not implemented yet. Four other organizations were in the process of developing their workplace HIV/AIDS policy. TBL is for that matter cited as best practice company.

The objectives of the anonymous company policy are: to prevent and control the spread of HIV/AIDS, all chronic/life threatening diseases such as cancer and heart diseases, and other STIs. The policy is also meant to establish parameters for effective management of such diseases as they apply to the employees, their legally registered dependents, and their immediate communities. It is in addition meant to inform employees on their rights, benefits and responsibilities that encourage voluntary HIV/AIDS testing and medical examinations. Lastly, the policy states the role of institution in creating supportive environment for employees with HIV/AIDS including maintaining confidentiality and avoiding negative and harmful publicity. In applying the policy, confidentiality, care, compassion, fairness, and non-discrimination will be adhered to. The preventive strategies narrated included formation of Information, Education and Communication (IEC) unit to educate employees and their immediate family, counseling, condom promotion and utilization, and management of sexually transmitted diseases.

TBL has functional policy for chronic/life threatening diseases, HIV/AIDS inclusive. Principles regarding HIV/AIDS include: Respect for the right of employees living with HIV/AIDS; Keeping the information regarding an employee's HIV status confidential; Treating employees with HIV/AIDS with compassion and respect and in equitable way; Reducing and managing the impact of HIV/AIDS on the workplaces and where possible on the lives of employees and their dependants; Addressing the needs of employees and the organization in dealing with the problems imposed on the workplace by the pandemic; and Provision of an effective education program among others.

In implementing its policy, TBL has launched its HIV Policy and ARV Support program under the "AIDS Program ARV Policy" initiative. The ARV therapy costs between TZS 100,000 to TZS 200,000 per month, a bill TBL management has promised to foot in full (Mbaga, 2003). In addition, TBL has from this year amended its health policy to include the company's commitment to extend health care to the families of permanent employees who are HIV positive and those with AIDS. This new program that became effective from April 2003 makes treatment available to the employee, his/her spouse/partner and a maximum of three dependents.

Apart from having the HIV/AIDS policies, the companies surveyed had different pay-policies regarding employees on sick leave (Table 4.64). These pay-policies apply to every employee on sick leave and not only those who are on sick leave due to HIV related problems.

Table 4.64: Pay-policies Regarding Employee on Sick Leave[41]

Serial Number	Elements of the Different Policies	Number of Firms
1.	Six months full salary, followed by 12 months half salary.	1
2.	Six months full salary, three months half salary, thereafter, the employee is terminated on medical grounds.	4
3.	Six months full salary, 6 months half salary, after that the responsible organs have to make decisions regarding termination of the employee.	4
4.	Full salary before it is established that the person is unable to work. Otherwise half salary is provided for six months after which termination is sought.	1
5.	Full salary in the first 3 months, half salary in the next three months, then termination is sought on medical grounds.	1
6.	Pay full salary as long as the employee is alive (follow the parastatal service regulation).	4
7.	Six months full salary, then half salary while seeking the medical board to ascertain if the employee is able to continue with work or not.	1
8.	Six months full pay, followed by six months half salary, then six months no payment. After that termination is sought following recommendations from doctors.	1
9.	Three months full salary, then six months half salary. After that termination is sought following recommendations from doctors.	1

Having a sick employee is a burden to the firm as far as paid sick leaves are concerned. The majority of the surveyed companies paid the employees on sick leave three to six monthly salaries before the employee is terminated.

Information regarding new screening procedure followed by different workplaces in the era of HIV/AIDS was sought. This information is necessary to confirm the anecdotal evidence that companies (especially private companies) are forcing their employees to test for HIV and if found positive their contracts are terminated or not renewed. Only one company was found to have changed the screening procedure in the era of HIV/AIDS pandemic. However, the new screening procedure/regulations were not made available to the interviewer.

4.6.6 Discussion of the Major Findings

AIDS related illness and deaths of workers affect employers both by increasing their costs of keeping a sick employee and by reduced productivity. They have to spend more in areas such

[41] Note that employees working in the private sector work on contract basis. Their contracts might not be renewed if they are known to be HIV positive.

as health care, burial, training, and retirement of replaced employees. In addition, expenses on burial and family support are immense. Productivity may be decreased because of the absenteeism due to illness, or attendance at funerals as well as time spent on training new employees. Further, labor turnover can lead to a less experienced and therefore less productive work force. Overall, there is bound to be a reduction in profits if companies do not take early measures to prevent the impact of HIV/AIDS. In view of the expected impact of HIV/AIDS on the compositions of the available workforce, there is likely to be a mismatch of human resources and labor requirements in terms of qualifications, training and experience. Some companies have already begun to hire or train two or three employees for same position if it is feared that employees in key positions may be lost due to AIDS (ILO, 2000).

4.6.6.1 Reduced Labor Supply and Productivity

Many discussions of the potential economic impact being caused by the AIDS epidemic observe that, unlike most other infectious diseases, HIV/AIDS strikes working age adults during what should be their most productive and reproductive working years. While the mortality component of this loss is clear, that is, lives lost to AIDS can not contribute to economic growth, the morbidity component has however rarely been addressed. Although it is generally accepted that the morbidity associated with HIV/AIDS will lead to workers to be less productive, the trajectory of the decline is not well understood.

This study like some other earlier studies (Kapinga, 2000; Maziku, 2001; Mujinja, 2002) have used the changes in worker absenteeism caused by HIV/AIDS, loss of experienced employees, and paid sick leaves as a measure of loss in productivity. It was found that an average of 598 mandays per year were lost per company with sick employees due to absenteeism. This is associated with an average cost of TZS 3.55 millions per company per year been paid as salaries to workers on sick leave. Further, the companies lost employees with an average of 6 years of experience. An employee with 6 years of experience/on the job human capital investment will have a higher productivity compared to a newly employed employee (*ceteris paribus*).

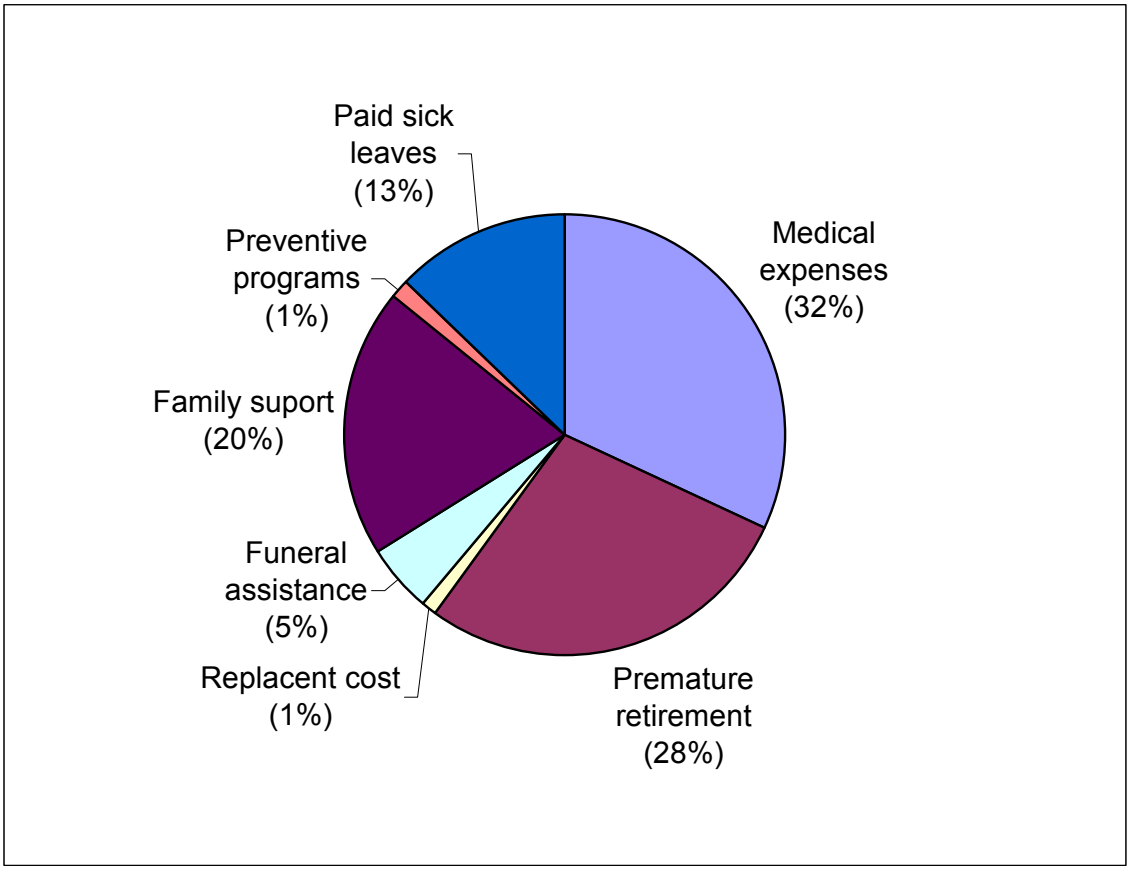
One reason for the dearth of empirical studies on loss of productivity is that in most settings, neither the health nor the productivity of an individual worker can be directly observed. An important exception to this rule is the commercial agriculture sector in developing countries whereby workers on agricultural estates are often paid by the amount harvested each day, and they typically receive health care from on-site company owned medical facilities. An excellent study on the impact of HIV/AIDS on labor productivity in Kenya was done by Fox et all., (2003). This study revels that, relative to other tea pluckers, in his/her last 365 days on the job, a tea plucker who eventually die of an AIDS related condition is absent from work 31 days, more often, spends 22 more days on light duty and produces an average of 7.6 Kg less tea leaf per day. Each of these effects reduces the workers value to the employer, they also

reduces his or her own earnings. The individual loss is detrimental to casual laborers. This calls for similar studies in Tanzania.

4.6.6.2 Direct Costs Related to HIV/AIDS Infection

Figure 4.9 gives an overview of amount spent on HIV/AIDS related problems by companies surveyed in year 2002. HIV/AIDS has lead to increased demands for spending for health and social welfare. The large share of expenditures related to HIV/AIDS goes to medical expenses (32 percent), premature retirement (28 percent) and family support accounts for 20 percent of total expenditures on HIV/AIDS related problems (Figure 4.9). The least expenditures are on preventive programs and replacement costs. For employers in small firms in the formal and informal sectors, the loss of one or more key employees may be catastrophic, leading to the collapse of a firm.

Figure 4.9: Distribution of Labor Costs Due to HIV/AIDS in the Workplaces Surveyed, 2002



A study conducted in Kenya reveals that, the greatest loss to business was related to HIV/AIDS absenteeism (37 percent), health care (12 percent), recruitment (10 percent) and the cost of providing burial benefits to families of workers who die of HIV/AIDS (10 percent) (Roberts et al., 1996). Relatively, minor costs were associated with lost productivity

during a period of labor turnover (5 percent), funeral attendance (3 percent), and productivity loss incurred after training (1 percent).

However, it is worth noting that this study's estimates could be underrepresented due to the fact that the source of death is rarely indicated to have been AIDS. A study conducted by Mujinja (2002) at few workplaces revealed that the management in one of the companies reported that they know a number of workers who could be suspected to have died of AIDS but record received from their health facilities do not indicate AIDS as the cause of death.

Workers who quitted the job or retired early are entitled to their retirement benefits. It is worth noting that there are no budgets for premature retirements. Thus, benefits are paid from other budget lines of the companies. Premature retirement is not only eroding the companies' resources but also the resources of the companies providing social security schemes. A study by Mujinja (2000) reveals that in 1998, the Parastatal Pension Fund (PPF) accounted for about 10 percent of the total benefits as death benefits. About 85 percent of the total deaths were AIDS, AIDS related complications and tuberculosis (Table 4.65).

Table 4.65: Death Benefits Paid by PPF (1995-1998)

Year	Contributions (TZS Billions)	Total Benefit (TZS Billions)	Death Benefits (TZS Billions)	% of Death Benefits over Total Benefits
1995	6.837	2.061	0.175	8.49
1996	11.400	5.219	0.491	9.41
1997	14.960	7.749	1.115	14.39
1998	18.815	10.569	1.000	9.46

Source: Mujinja, (2000).

Apart from funds that are paid through PPF for contributors who are working with Parastatal organizations, others contribute through the National Social Security Fund (NSSF), which also takes care of the private employees. Table 4.66 shows the proportion of survivors' benefits (amount paid to dependants of the dead survivors) has been increasing over time since 1994/5 financial year. It could be interpreted that out of the total funds paid to contributors, almost 5 percent of the benefits are not paid to contributors but to the survivors/dependants, and with increase of HIV/AIDS deaths more is likely to be paid to survivors.[42]

Table 4.66: Survivors Benefits as Paid by NSSF (1994/5-1997/8)

Year	Contributions (TZS Billions)	Total Benefits (TZS Billions)	Survivors Benefits (TZS Billions)
1994/5	9.032	1.945	0.102

[42] The figures in Table 4.66 could be under-reported for a number of reasons. For example, it takes time for the survivors to receive the death benefits of the dead relatives, and therefore it is likely that due to ignorance and bureaucratic red tape prevalent in such financial institutions, more funds have not been claimed by the survivors.

1995/6	11.796	2.953	0.160
1996/7	17.497	5.345	0.254
1997/8	25.400	9.967	0.454

Source: Mujinja, (2000).

It is apparent from this study that some of the workplaces in Tanzania have not been ready to invest on HIV/AIDS prevention. This finding is consistent with the findings by Mujinja, (2002) and Mujinja and Nguma, (2003). Mujinja, (2002) observed that few companies had continued with the interventions which were externally financed and implemented and had allocated funds for sustaining the interventions once the external assistance had been completed. In one of the companies surveyed, a senior officer interviewed lamented; "*It is a waste of resources to carry such interventions*." In another company, a company doctor lamented; "*We do not see a reason why we should budget and continue with the interventions because now all workers know what HIV/AIDS is*" (Mujinja, 2002).

It is evident from this study also that, HIV/AIDS interventions have mainly focused on preventive programs than cure. Care/treatment service remains minimal. Although the majority of the surveyed companies provide medical support to their employees, only 2 were supporting antiretroviral therapy. While in Kenya and Uganda there is increasing demand for antiretroviral therapy by employees and their unions, there is reportedly little pressure for businesses to provide ARVs to its employees in Tanzania. This may however change with the expansion of Foreign Direct Investment (FDI) in Tanzania. Most indigenous companies have neither the resources nor the motivation to offer ARV to their employees. This is not the case however, with multinationals. Companies such as Heineken, for example, have begun to offer HAART to their employees and the families of their employees in Africa.

4.6.6.3 Sectoral Impacts of the Pandemic

Although comparing differential sectoral impacts has been difficult due to data limitations, some conclusions could be drawn from studies conducted in other Sub-Saharan African countries. Transport sector contributes significantly to economic growth in Tanzania. The mining sector has also grown at a spectacular rate in recent years due to inflow of FDI (URT, 2002d). All available surveillance data indicate that infection rates are high and continue to rise along the main transportation corridor. The mining sector is also vulnerable to impact of HIV/AIDS because it is characterized by the requirement for workers to stay away from their homes for a long period of time. As mentioned earlier, gold mining giant AngloGold Company, estimated that between 25-30 percent of its South African workforce was HIV positive (Intelihealth, 2002). Another company (Gold Fields), a gold mining company based in South Africa reports that more than 25 percent of its 50,000 strong workforce is HIV positive. It is projected that the AIDS pandemic will cost the company up to $10 per ounce of gold it mines in added production cost if no interventions are put in place (BBC news, 2002).

4.6.7 Conclusions

HIV/AIDS is found to be costly to the surveyed companies not only in terms of increased expenditure on individuals living with HIV/AIDS, deaths related to HIV/AIDS, and intervention programs but also in terms of lost revenue due to loss of productivity of the debilitated sick employees. The surveyed companies were found to have spent substantial amount of money on medical expenses, premature retirement, and death benefits (family support and funeral assistance). Further, the productivity of the surveyed companies was found to succumb not only to HIV/AIDS deaths, but also to the high rate of absenteeism of the sick employees. Absenteeism results to double loss, that is, loss of labor, and paying a non-working labor force.

Replacement of the deceased and those who sought early retirement and/or quitted the job has not been straightforward and where it has occurred replacing the deceased with the same skills has been difficult if not impossible. HIV/AIDS intervention programs and policies at the majority of the workplaces surveyed are still at infant stage and some of the workplaces have not been ready to invest on HIV/AIDS interventions. The interventions in place were however found to focus mainly on preventive programs and rarely on cure. Recommendations on some measures to prevent the spread of the virus and mitigate the impacts of HIV/AIDS at workplaces are presented in Chapter 5.

4.7 Copping with HIV/AIDS Pandemic[43]

4.7.1 Introduction

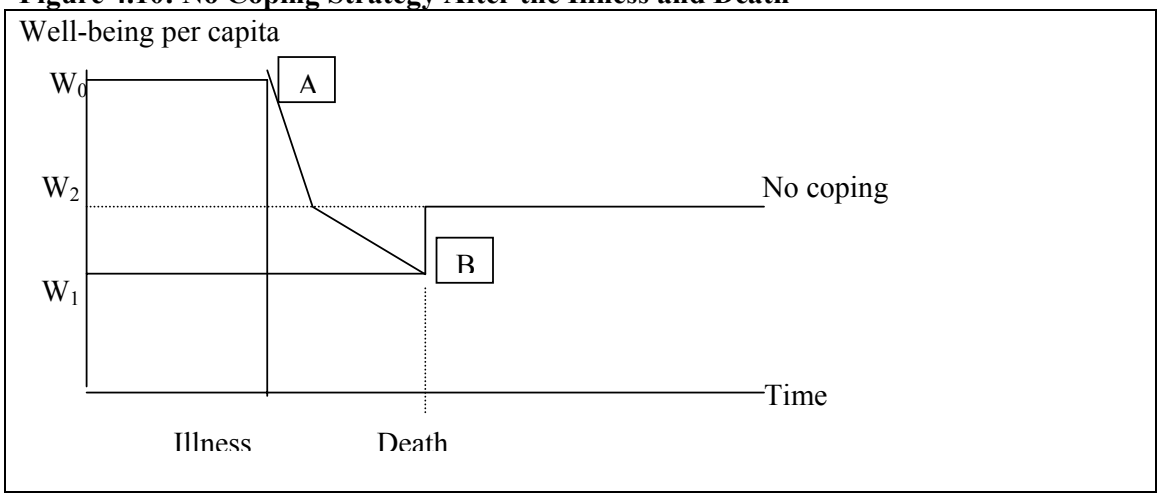
Although HIV/AIDS affected households are faced with particular and severe challenges, various studies indicate that the actual sequencing of coping behaviour is similar to that undertaken by rural households in response to, for instance, acute food insecurity caused by crop failure. As it becomes apparent that a household member is HIV/AIDS infected, the coping strategies are adopted immediately or after a short while (Haan and Olivera, 2003). The combination of coping strategies affects individual or household health-seeking behaviour, resource base, working time, social relations, etc. Rugalema, (2000) cited in Barnett and Whiteside, (2002) revealed that many households affected by HIV/AIDS do not cope. On the contrary, some households break up and their members, for instance, orphans, widows and the elderly join other households. Moreover, the effects of "coping" are shouldered unequally between the poor and the better off households, men and women, generations and different social groups and geographical locations.

The literature on coping strategies reveals that coping strategies from a death caused by fatal illness is different from that of accident and hence its impact spreads over a longer period of time. Mujinja et al, (1992) developed a conceptual framework explaining the change in per

[43] This section draws heavily from previous sections.

capita well-being over time due to fatal adult illness as shown in Figure 4.10. From the initial level of wealth (W_0), per capita well being begins to decline as the illness robs the family the adult's labour and consumes resources used for medical expenses and/or home—based nursing care. Per capita well being of survivors drops from W_0 to W_1 after the illness and death and to W_2 sometimes after death. Welfare after death stabilizes at W_2 and it is typically lower than W_0, because of the loss of the adult household member's productive and psychological contributions to the household.

Figure 4.10: No Coping Strategy After the Illness and Death

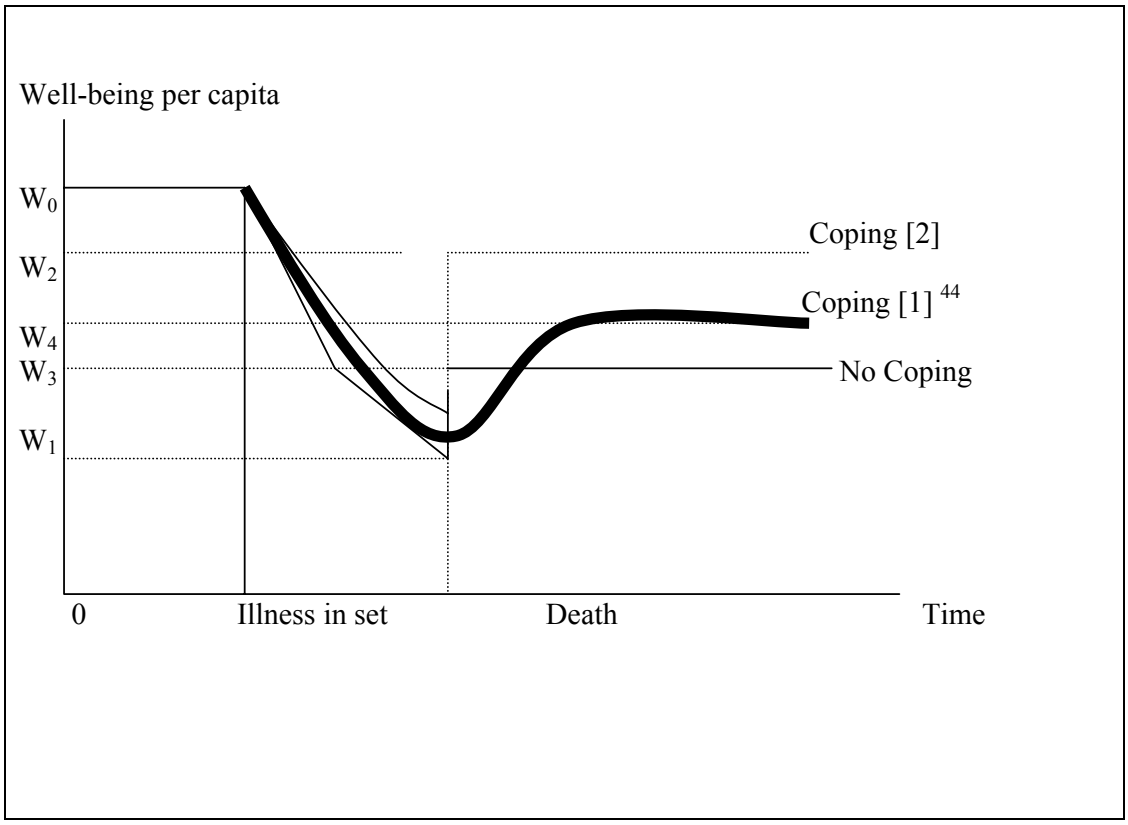


Source: Adapted from Mujinja et al., (1992)

In this naive model of impact, households are assumed not to have made any adjustments. The economic impact of death could simply be estimated by comparing the path that per capita household consumption would have followed without the death, a straight horizontal line at W_0, with the path it actually follows, down to W_1 and then up to W_2. The total impact of the death is the area between these three consumption paths, that is, W_0-A-B-W_1-W_2-W_1).

A more realistic model of the impact of fatal adult illness with coping represents a costly and time-consuming adjustment. Household members may adjust their time to maximize their well being or sell valuable assets for resilience. Selling of assets is more expensive coping strategy compared to for instance, adjusting household's time allocated to productive and leisure activities. Figure 4.11 depicts the postulated effect of the cost of coping on the profile of well being over the course of adult illness and the adjustment period after death. The economic impact of the death is estimated by comparing the path that per capita household consumption would have followed without the death, a straight line at W_0, with the path that it actually follows, down and then up to W_4.

Figure 4.11: Coping Strategy in the Course of Adult Illness and Adjustment Period After Death



Source: Adopted from Mujinja et al., (1992)

Based on the above depicted coping strategy frameworks, this section analyses different coping mechanisms adopted by different social institutions/organizations surveyed in this study. Different coping mechanisms were employed at different levels, that is, PLWHAs, households with a sick or a dead individual, social community, government, NGOs and employers. Table 4.67 summarises some of the coping mechanisms observed in this study.

[44] Coping [1] depicts more expensive coping mechanisms such as sell of valuable assets whereas Coping [2] depicts less expensive coping strategies such as adjusting time allocated to productive and leisure activities.

Table 4.67: Coping Mechanisms Adopted by Different Social Economic Organizations

Copying Mechanisms		
Individuals Living with HIV/AIDS/ Households With a Sick Individual/Lost a Household Member	**Social Community**	**Government/NGOs and Employers**
▪ Paying for the opportunistic infections ▪ Selling assets ▪ Leaving permanent or formal employment ▪ Engaging in HIV/AIDS NGOs ▪ Hiding sero status ▪ Taking children out of school ▪ Borrow or request for help ▪ Acquire or reallocate labour ▪ Reduce working hours ▪ Seek support from NGOs and other institutions	▪ Social and economic arrangements to support widows, elders, and orphans. ▪ Social and economic arrangements for funerals.	▪ Support orphans in terms of school fees, uniforms and food. ▪ Setting budgets for HIV/AIDS campaigns. ▪ Establish HIV/AIDS programmes. ▪ Provide Counselling and HIV Testing services. ▪ Support direct costs such as medical, ARV, family support etc.

4.7.2 Coping Strategies Employed at Different Levels

4.7.2.1 Copping at Individual and Household Levels

(i) Paying for Opportunistic Infections

The analysis shows that HIV/AIDS infected individuals sought and paid for treatment for opportunistic diseases. The amount paid ranged from TZS 5000 to TZS 38,000 for investigation and drugs while for hospitalisation the amount paid was as higher as TZS 600 per hospital bed per day. About 600 respondents at the household level revealed to have incurred expenditure to obtain medical care. However, since health care in rural public health centres and dispensary in Tanzania is still free, there is a possibility that few households could not spend any money to obtain care in case care was obtained in such health facilities. The survey indicates that in one year prior to the survey, the medical expenditures on illness at the household level ranged from TZS 200 to TZS 1,000,000 depending on the type of the opportunistic infection and the source or place where care was sought. Expenditures on HIV/AIDS related problems ranged from TZS 2,500 to TZS 521,000 with an average of about TZS 79, 000.

(ii) Leaving Permanent/Formal Employment

The analysis shows further that the HIV/AIDS infected individuals left their permanent/formal employment and stay at home, or change their occupation to lighter ones due to ill health. About 40 percent of PLWHAs were employed prior to their ill health whereas 35 percent were engaging in small-scale activities. About 6.7 percent were not engaging in any of the economic activities at the time of survey.

(*iii) Volunteering in HIV/AIDS NGOs*

In trying to cope with the infection, there are other PLWHAs who volunteer in HIV/AIDS NGOs for psychological and moral comfort. In this study, only 1 out of 60 sampled individuals living with HIV/AIDS was found to be volunteering in HIV/AIDS NGOs.

(iv) Reducing Working Hours

The survey data indicates that PLWHAs reduced working hours from between 1 to 183 working days with an average of 43 hours in the past six months prior to the survey due to ill health. The analysis of the household data shows that there were household members who were too sick to work due to HIV/AIDS and the related opportunistic infections. A total of 19 HIV/AIDS infected individuals had lost up to 112 days in the past 12 months (Table 4.17). Further analysis was also made on the impact of the pandemic to working hours of household members. About 18.5 percent of all who reported to have had taken time to attend AIDS patient were from Dodoma Urban, followed by those from Kinondoni (11.3 percent) and the least were from Kahama (2.7 percent). Analysis of the time taken in attending the HIV/AIDS patient in the last 14 days prior to the survey revealed that the majority of households members spent 5 hours or less (42 percent) and 20 hours or more (41 percent).

A lot of time was also spent in attending funerals and visiting HIV sick individuals as presented in Tables 4.18 and 4.19 respectively. As a result the welfare of the HIV/AIDS affected household was affected as much time was used for attending the HIV/AIDS related problems and not on productive activities. For self-employed individuals, reduction of working hours meant loss of income and hence, inability to meet medical and other expenses needed for a functional livelihood.

(v) Selling of Assets

Some other individuals/households resorted into selling of assets as a means of meeting individual/household expenses including paying for medical expenses (consultation, treatment, drugs and transportation to and from the health facilities). This was necessary as the costs were high while at the same time cash available at the household disposal was limited. The household data shows that 76.5 percent of the surveyed households used the readily available cash in the household while 6.6 percent, sold livestock and poultry.

Further analysis shows that households with HIV/AIDS cases sold more of the assets compared to their counterparts. Out of 68 households who sold a piece of land, 56 (82.3 percent) and 12 (17.7 percent) were households with and without HIV/AIDS cases respectively.

(vi) Borrowing and Requesting for Support

Some households resorted into borrowing and requesting for support from other households so as to meet medical and other expenses at their respective households. A total of 104 respondents reported that they were assisted by someone else outside the household to pay for treatment costs. The amount received as a help ranged from TZS 200 to TZS 60,000 per person. The support from employers or health insurance ranged from TZS 1,700 to TZS 400,000. The analysis shows further that a total of 22 household members had their medical expenses paid by either employers or health insurance. Out of these, 12 household members who received such support were suffering from HIV/AIDS related problems. Most of the outside support (over 91 percent) was given purely as assistance and the remaining percentage (nearly 9 percent) had to be repaid.

(vii) Taking Children Out of School

A failure to afford school fees/uniforms to orphaned children resulted into poor attendance to school and sometimes led into school drop out. The study findings show that a total of 99 (8.4 percent) out of 1,184 households surveyed reported to have a child who was not attending school because they could not afford uniforms and/or fees. A total of 74 (67.89 percent) of the children who could not afford school uniforms/fees were orphans of both or single parents(s). However, 35 (32.11 percent) of the not attending school children due to being unable to afford school fees/uniforms had both parents alive. These results imply that orphans are more likely to miss school compared to children who have their parents alive.

(viii) Hiding Sero Status

The HIV/AIDS affected individuals were also found to hide their sero status for fear of being finger pointed and being laughed by others or discriminated. One of the PLWHAs lamented that: "*I don't visit my boyfriend anymore as I do not want to reveal the information*" while another one mentioned: "*I have not told anybody including my family members as I feel ashamed."* Some households did not also want to reveal that one of their members is HIV positive because of the fear that they would thereafter be discriminated and stigmatized by the community.

4.7.2.2 Coping at the Social Community Level

(i) Social Economic Arrangements to Support Marginalized/Vulnerable Groups

Information regarding presence of social economic arrangements to support widows, elders or orphans was also sought because these social groups are mostly vulnerable and marginalized groups in the society. The social economic arrangements were in place but they were found to be limited. Out of the total households surveyed, only 11.2 percent of the households indicated to have economic and social arrangements for widows, orphans and/or

elders in their respective communities. Majority of the respondents were either not sure whether such arrangements existed or were not involved at all.

(ii) Social Economic Arrangements for Funerals

After the death of the HIV/AIDS infected person, there are also a number of coping strategies employed by the survivors in the household or the community. In the first place, funerals are considered to draw a lot of household resources in terms of time and money. Funeral expenses include transport and burial and other rituals. The survey shows that household members that were affected and not affected with HIV/AIDS made contributions to funerals. The amount of contribution ranged from TZS 100 to TZS 300,000 for funeral for the year 2002. The mean contribution was about TZS 11,797 with a median of TZS 2,000. An average household reported to have had spent more than what their members contributed for the funeral implying that household received assistance from relatives, friends, and neighbours to finance the funerals.

Although social and economic arrangements for widows, orphans and/or elders were limited, those that were related to helping each other among the households residing in the same community to meet costs of illness, funeral or celebrations were highly practiced. Both HIV/AIDS affected and unaffected households were highly involved in these types of arrangements. Over 80 percent of the interviewed households were in such arrangements. This was observed to be an efficient way of mitigating the impact of the pandemic as it provided some sort of social insurance and created high level of social capital.

4.7.2.3 Coping Strategies at the Government, NGOs and Employers' Levels

(i) Support to PLWHAs and Orphans

The analysis shows that some PLWHAs were supported by their employers to meet several expenses related to their illness. Because the opportunistic diseases tend to re-occur to the HIV infected individuals, employers' support is a crucial and efficient way of mitigating the impact at the household level. Nonetheless, this support was provided to all employees irrespective of their medical condition, that is, whether suffering from HIV/AIDS related illness or not. The support for ARV was found to be very limited. Results from workplaces surveyed reveal that, apart from terminal benefits, 21 percent of the companies surveyed provided specific medical support to employees living with HIV/AIDS. Such support included support for testing, drugs to cure AIDS opportunistic infections, drugs to cure STDS related to HIV/AIDS infection, outpatient care and impatient care. On average TZS 11.8 millions were spent on such services in year 2002 with a minimum expenditure of TZS 80,250 and maximum of TZS 65 millions.

This study found that some government institutions (for instance, Municipal councils) and NGOs dealing with HIV related problems were providing support to PLWHAs and orphans whose parents have died of HIV/AIDS. The support provided was limited and includes: food, drugs, counseling, school uniforms, school fees and school supplies.

(ii) Spending on Preventive Programs to Combat HIV/AIDS

Some of the workplaces surveyed have established preventive programs as one of the strategies to combat the spread of HIV/AIDS. However, out of 29 surveyed companies, only 13 had preventive programs at their place. Some of these programs included educational programs (8 companies), counseling programs (3 companies) HIV testing (1 company) and condoms promotion and provision (1 company). The analysis shows that some of these programs were extended to the neighboring communities. The maximum budget allocated for these programs in year 2002 averaged TZS 350,000 (counseling), TZS 380,000 (education) and TZS 300,000 (distribution of condoms).

(iii) Family Support and Funeral Assistance

Moreover, in order to mitigate the impact to the PLWHAs and their families, different workplaces have established different programs to support individuals and families of those affected by the pandemic. This has been going on simultaneously with paying terminal benefits. As observed, the companies provided family support to the deceased families. The average amount paid in year 2002 was TZS 7.2 millions per company. Substantial amount of money was also spent on funerals. The companies that experienced deaths of employees due to HIV/AIDS related sickness in year 2002 paid an average of TZS 1.8 millions per company with a minimum of TZS 60,000 and maximum of TZS 4.6 millions.

4.7.3 Assessment of the Different Coping Mechanisms Employed

Households and different institutions surveyed have adopted different mechanisms in preventing the spread of the virus and mitigating the impacts of the pandemic. For households in particular, while pursuing a combination of copping strategies, there is a greater likelihood of strategies that damage household resilience to other future shocks and which increases the likelihood of these households spiraling into increased poverty. One way to classify the copping strategies is according to whether they are “erosive” or “non-erosive.” Non-erosive strategies are those that are reversible, that is, they do not result in permanent damage to the household’s ability to cope in the future. Erosive strategies on the other hand are those that deplete assets in such as way that the household’s resilience to future shock is permanently weakened.

Different copping mechanisms are opted by different households but some are effective in mitigating the impact than the other, and some are erosive while others are none erosive. Assessment of the effectiveness and erosiveness of some of the discussed coping strategies is presented in Table 4.68. The analysis shows that seeking support from NGOs and other

institutions, social economic arrangements to support widows, elders and orphans, and social economic arrangement for funerals are observed to be very effective and non- erosive. Engaging in HIV/AIDS NGOs as a volunteer could be effective in the sense that the infected individual could get some kind of moral and psychological support but if no financial support is given to the volunteer, this could be erosive in the long run.

Table 4.68: Assessment of Different Forms of Copping Mechanisms

Type of Coping Mechanism	Factors Assessed	
	Effectiveness	Erosiveness
Selling assets	E	RR
Leaving permanent or formal employment	NE	RR
Engage in HIV/AIDS NGOs	E	NR
Hiding Sero Status	E	R
Taking children out of school	E	RR
Seek support from NGOs and other institutions	EE	NR
Borrow or request for help	E	R
Reducing hours allocated to productive activities	E	R
Reducing hours allocated to leisure activities	EE	NR
Social economic arrangements to support widows, elders and orphans	EE	NR
Social and economic arrangements for funerals	EE	NR

Note: The E, NE, R, NR indicate whether the coping mechanism is effective, not effective, erosive or non-erosive respectively. Note also that EE means very effective where as RR means very erosive.

Copping mechanisms such as selling of assets and taking children out of school could be effective in the short run but very erosive in the long run whereas reducing hours spent on leisure activities is very effective. However, reducing hours allocated to productive activities could be effective in the short run but erosive in the long run. It is important to note that the coping strategies adopted by different institutions including employers are effective and non erosive to the PLWHAs/households but they are erosive at the institution's level. For instance, supporting individuals and families infected by the pandemic draws employers' resources that could be used for other alternative activities. The more efficient coping method at institutional level could be spending on preventive programs to combat the spread of the virus and thus reduce expenditures on medical, and death benefits etc.

Coping strategies that are erosive are also considered to be negative as they expose the infected household into higher risk of HIV/AIDS infection. For instance, taking children out of school increases the possibility of such children engaging into risk activities such as prostitution. This is particularly possible after the death of their parents.

4.7.4 Conclusions

This section analyses some of the copping strategies adopted by PLWHAs, households and other institutions to mitigate the impacts of HIV pandemic. Whereas most of the coping strategies adopted are found to be effective, in the sense that they serve to mitigate the shock at hand, they are erosive in the long run. However, as the epidemic sways, it has resulted to formation of non-erosive social economic arrangements in different societies. Following the studies already done in this area, the poor are the most affected when hit by HIV/AIDS pandemic and in most cases the coping strategies they adopt devastate the family in the long run. This is because the poor are marginalized and in most cases do not have any social capital.

It is difficult to recommend best coping strategies to be adopted by different individuals and households/communities in order to avoid the long run effects, as this would mostly depend on the social and economic status of the infected individual/household or the community. For instance, it is difficult to prevent a household not to sell a piece of land or any other asset or not taking a child out of school as these are influenced by the degree to which the respective household has been hit by the pandemic as well as the initial social and economic conditions before the household was hit. However, coping strategies related to social capital formation are highly encouraged because the impact of the shock is spread in a bigger segment of the society.

4.8 Demographic and Macroeconomic Impacts of HIV/AIDS

4.8.1 Background

The main and obvious impact of HIV/AIDS, like all health-related epidemics, is its likely effect on the demography and human resource development of a country. But unlike other diseases, HIV/AIDS mainly occurs in the sexually active population, which is also the economically active age group and it is fatal. It is this characteristic that makes AIDS of great concern to economists and planners because it has the potential to reduce the human resources available for production as well as affecting their productivity. The reduction in population due to AIDS, unlike programs for population control is unusually damaging to the economy in two ways; First, while planned parenthood and population programs support the increase of social capital, AIDS death does essentially the opposite, that is, it reduces the size of the economically active population. Second, AIDS mortality tends to impose a “shock” to the household economic structure since the death of an economically active individuals could force changes in size, composition, and socio-economic status of the household and in the use of time devoted to building human capital.

This section estimates the likely demographic impact of the epidemic and its implications for the overall availability of labor in the economy, and the macroeconomic impacts on specific variables using the Spectrum Models. The purpose of preparing national estimates and projections is to give leaders and decision makers information on the magnitude/impacts of the pandemic in the future, given the current conditions, interventions and trends in the epidemic so as to inform the planning and policy processes.

4.8.2 The Spectrum Models

The Spectrum Models were developed by the Policy Project, a United States Agency for International Development (USAID) funded project implemented by the Futures Group International. The Model has several active modules used for different estimations[45]. Two sub-routines of the Spectrum Model, that is, DemProj and AIM are used for the estimations presented in this section. DemProj is a program to make population projections based on the current population and fertility, mortality, and immigration rates for a country whereas AIM projects the consequences of the AIDS epidemic including the number of people infected with HIV, the number of AIDS deaths, and the number of AIDS orphans. The DemProj is used to make the demographic projections whereas the AIM model is used to project the economic impacts of HIV epidemic. The projections are based on the assumptions about the population, adult prevalence rate, fertility, mortality, and HIV/AIDS related expenditures (see AIM Manual Version 4.0 (1999) for details on how the projections are made). Detailed information on data and assumptions used for the projections is provided in Chapter 3, section 3.5 whereas Annex 1 provides graphic presentation of the projections.

4.8.3 The Projections

4.8.3.1 Demographic Impacts

The DemProj model is used for estimations presented in this sub-section. The model employs a two-stage estimation framework. First, it estimates the annual incidence of AIDS on the basis of recent estimates of HIV prevalence; and second, by making assumptions about the probability of progress from HIV infection to AIDS and from AIDS to death, various demographic indicators are derived. Using the data and assumptions discussed in detail in Chapter 3, section 3.5, this section assesses the impact of HIV/AIDS by focusing on the demographic variables such as the total population size, additional deaths due to HIV/AIDS, crude death rate, life expectancy at birth and infant mortality (Table 4.69). The demographic impacts for 15 years, that is, from 2000 to 2015 are discussed.

[45] See AIM Manual Version 4.0 (1999) for description of all active modules.

Table 4.69: Summary of Selected Demographic Indicators

Indicator	2000	2005	2010	2015
Crude Death Rate (%)				
With AIDS	18.7	16.2	13.8	11.4
No AIDS	15.9	12.6	9.8	7.5
Infant Mortality Rate				
With AIDS	117.1	94.9	74.1	55.2
No AIDS	111.7	89.0	68.2	49.2
Life expectancy at birth (Years)				
With AIDS	43.2	46.1	49.7	54.3
No AIDS	49.2	54.1	59.1	64.2
Total deaths				
With AIDS	607,900	588,490	560,700	511,550
No AIDS	528,000	476,880	422,470	364,050
AIDS deaths (annual)	92,040	130,280	162,420	175,220
Cumulative AIDS deaths	650,000	1,230,000	1,980,000	2,840,000
New AIDS cases	99,460	137,680	166,100	177,180

A: Mortality Impact of AIDS

The number of deaths from 2000 to 2015 attributable to HIV/AIDS are presented in Table 4.69. Also shown is the projected crude AIDS deaths, infant mortality (infant deaths per 1,000 live births), crude death rate, cumulative AIDS deaths, and new AIDS cases. The results indicate that annual cumulative AIDS deaths are increasing from 650,000 in year 2000 to about 3 millions in 2015. Without AIDS, the annual number of deaths in 2015 would be about 364,050 compared to about 511,550 with AIDS, a 40 percent difference. Majority of the AIDS deaths is expected to fall on the 15-49 years age group, the most sexually active and in the prime of their productive years (43 percent). The annual AIDS deaths are also increasing from about 99,000 deaths in 2000 to about 175,000 deaths in 2015. This translates to increased number of AIDS deaths per day, that is, from 252 deaths in 2000 to 480 deaths in 2015.

Projections by Cohen (2003) show the same trend whereby the losses due to HIV/AIDS are shown to be concentrated in the age range15-34 but over time the projections display greater percentage losses of the labor force in the older age cohorts. Thus, the labor force will contain more younger workers who are less well educated and with less experience. The long-term pressure on productivity is stunning.

B: Crude Death Rate and Infant Mortality

The impact of AIDS on the crude death rate is usually severe in countries with high HIV prevalence. Crude death rate is defined as the number of deaths per 1,000 people in a particular period of time. The crude death rate for Tanzania is projected to decline from 15.9 years in 2000 to 7.5 years in 2015 in the absence of AIDS, whereas with AIDS the crude

death rate is projected to decline only to 11.4 years in 2015. That is, by 2015, the crude death rate is projected at approximately 34 percent higher than it would have been in the absence of AIDS. A contributory factor to the expected high crude death rate is the expected increase in infant mortality. Is it estimated that approximately 32 percent of the children born to HIV-positive mother are likely to acquire the infection from their mothers. During the period under review, the infant mortality rate in without AIDS scenario is projected to decline much faster than with AIDS. Whereas infant mortality is about 5 percent higher with AIDS in 2000, it would be 12 percent higher in 2015. The same trend is observed with under-five mortality. In 2015 there will be 9 percent more under five deaths than it would have been in the absence of AIDS.

C: Impact of HIV/AIDS on Life Expectancy

Life expectancy, which is a basic measure of human welfare, is expected to decline on account of AIDS. Life expectancy at birth measures the average number of years that a newborn child would expect to live at current levels of mortality. Life expectancy at birth without AIDS is the average number of years a person could expect to live in the absence of HIV related mortality. As a result of increasing mortality due to AIDS life expectancy is increasing at a decreasing rate compared to without AIDS scenario. Life expectancy is estimated to fall by 6 years to 43 years in 2000 instead of 49 years in the absence of AIDS. By 2015, the difference in life expectancy, with and without AIDS is projected to reach 10 years. The projection results by World Population Prospects, 2002 revision cited in Cohen (2003) show the same declining trend. The life expectancy at birth with AIDS and without AIDS in 2000-2005 is projected to be 43 and 53 years respectively.

D: New AIDS Cases

Analysis of the new AIDS cases shows an increasing trend despite the fact that the adult HIV prevalence was leveled off at 10.41 percent from 2008 to 2015[46]. This is because infected people will develop AIDS signs and it will take time before the prevalence curve takes a downward spiral. New AIDS cases are projected to increase from 99,460 in 2000 to 177,180 cases in 2015 (Table 4.69). This is equivalent to 78 percent increase.

E: Orphans

AIDS is associated with the increase of orphans observed in different societies today. It is estimated that there are presently some 11 million children in Africa who have lost one or both parents to HIV related illness and that by 2010 these numbers are projected to increase to some 20 million (Cohen, 2003). The projections in this study show that there was a total of

[46] Note that the prevalence rates are leveled at around 10.41 percent for the period starting 2008 to 2015 because we assume major behavioral changes that are likely to alter the trend in the long-term population growth.

2.4 million orphans in year 2000 of which 683,710 were AIDS orphans[47] (Table 4.70). The number is estimated to be about 2.7 millions in 2015 of which 1.45 millions will be AIDS orphans. Whereas AIDS was responsible for about 28 percent of the total number of orphans in year 2000, the simulations show an increase to 53 percent in 2015. Projections by UNAIDS et al., (2002) show much higher impact. It is estimated that AIDS deaths represented 42 percent of all orphans in 2001 and this percent would increase to 54 in 2010. UNAIDS (2002b) epidemiological facts sheet shows that in Tanzania the number of children who have lost their mother or father or both parents to AIDS and who were alive and under age 15 at the end of 2001 to be 810,000. This number is quite close to the figure obtained in this projection for year 2001, that is, 759,620. These trends pose a serious burden on the elderly, extended family, and institutions dealing with orphans and elderly.

Table 4.70: Orphans Estimates (2000-2015)

Variable	2000	2005	2010	2015
All orphans	2,430,000	2,800,000	2,920,000	2,750,000
AIDS orphans	683,710	1,054,080	1,348,960	1,454,330
AIDS orphans as % of all orphans	28	38	46	53

4.8.3.2 Effect on the Population Size and Labor Force

Analysis of population growth rate, total population size, and the size of the labor force taking into account the demographic impact of AIDS as well as hypothetically projections excluding the impact of AIDS was conducted. Analysis of the annual population growth rate reveals that the population will grow at an annual rate that is 18 percent lower than it would have grown in the absence of AIDS in 2015. The absolute difference between the projected populations without AIDS indicates the cumulative impact of AIDS. The total population is projected to be 48.72 million without AIDS whereas it would be 44.99 with AIDS, 8 percent lower than it would have been without AIDS (Table 4.71). Estimations by US Bureau of Census shows that by 2015 the population is expected to be 43 millions (with AIDS scenario) (Center for International Health Information [CIHI], 1999). Both projections thus indicate that AIDS is likely to have a very serious effect on the population size over the longer term given the current parameters.

Table 4.71 also provides estimates of the total projected labor force (individuals aged 15-64) with and without AIDS for the period 2000-2015[48]. As can be seen, the total labor force continues to grow over the projected years as would be expected given the underlying

[47] These include maternal, paternal and dual orphans.

[48] The definition of the labor force employed in the simulations applies to the economically active population, which includes the employed and unemployed . Because the economically active group tend to be almost the same as the sexual active group in the society, the relative effect of HIV/AIDS is larger among this group than the general population.

demographics. The active labor force is estimated at 25.44 millions by 2015, about 2.33 millions fewer or 9 percent lower than it would have been in the absence of AIDS. The projections thus indicate that AIDS is likely to have serious relative effect on productive labor force over the long term, and the active labor force could decline even more rapidly during the projected period. The reasons for the expected decline in population growth are the projected rapid rise in new AIDS cases, the limited time from full-blown AIDS and death, and relative low fertility associated with AIDS (Gregson and Zaba, 1998, cited in World Bank, 2000a).

Table 4.71: Total Projected Active Labour Force With and Without AIDS

Variable	2000	2005	2010	2015
Population growth rate (percent)				
With AIDS	2.19	2.19	2.13	2.06
No AIDS	2.48	2.55	2.52	2.42
Total Population (millions)				
With AIDS	32.51	36.32	40.50	44.99
No AIDS	33.27	37.82	43.01	48.72
Labor force (15-64 years) (millions)				
With AIDS	17.43	19.88	22.52	25.44
No AIDS	17.90	20.79	24.07	27.77
Loss of labor force due to AIDS (millions)	0.47	0.91	1.55	2.33
Percent loss due to AIDS	2.67	4.62	6.90	9.15

These results are in line with the study presented by Cohen (2003) whereby the active labor force in Tanzania (individuals 15-49) is expected to decrease by 9 percent by year 2020. A study by ILO, (1995b) gives more glaring figures whereby it is estimated that by year 2010, the size of the workforce in Tanzania would be only 80 percent of what it would have been without AIDS. Estimated figure from the present study is 91 percent. In addition, the ILO study estimates that the mean age of the working population (15-64) will fall, in the with-AIDS scenario, from 32 years to 29 years by 2010, and to 28 years by 2020, versus about 31 years without AIDS scenario.

Table 4.72 has disaggregated the total active labor force projections by gender so as to separately identify the effects of HIV/AIDS on men and women workers. This is important because HIV infection tends to be higher for women than for men and is often much higher for young women than their male counterparts. Further, women and men have gendered economic and social roles and it is important to be able to identify the probable impacts of the HIV epidemic on these separately.

Table 4.72: Projected Active Labour Force With and Without AIDS by Gender

Variable	2000		2005		2010		2015	
	M	F	M	F	M	F	M	F
Labor force with AIDS (millions)	8.52	8.91	9.70	10.18	10.98	11.54	12.41	13.04
Labor force without AIDS (millions)	8.74	9.16	10.12	10.68	11.68	12.39	13.45	14.32
Labor force losses due to AIDA	0.22	0.25	0.42	0.50	0.70	0.85	1.04	1.28
% Loss due to AIDS	2.57	2.75	4.31	4.91	6.37	7.41	8.40	9.87

Note: M=Males; F=Females

Over the whole of the projected years, the losses of females exceed those of males and these become cumulatively larger by 2015. By 2010, the gap in years becomes more sizable, that is, more than 1 percent in terms of the aggregated losses due to HIV/AIDS. By 2015 the reduction in the active labor force for women is about 9.9 percent whereas it is only 8.4 percent for men. The implications of these changes in the active labor supply are difficult to predict but clearly gender roles have to change to accommodate these changes.

4.8.3.3 The Impact on Health Sector Budget

Due to increased number of AIDS cases more resources would be spent on taking care of HIV/AIDS related problems and thus overstretch the already burdened health budget. The burden on hospital budget is characterized by increased admissions, prolonged stay for AIDS patients, increased expenditure on drugs to treat opportunistic infections, purchase of HIV screening reagents, and increased X-rays tests among others. Under the assumptions presented in Chapter 3, section 3.5, the health budget would increase from 25 billions in 2000 to 59 billions in 2015. By 2015, 22 percent of the health budget would be spent on HIV/AIDS related patients if the current situation prevails. It is worth noting that only about 11 billions were actually spent on HIV/AIDS in the financial year 2001/02 (URT, 2003a) despite that the projections made in this study show that about 28 billions would have been spent on HIV/AIDS in year 2001 (not presented in Table 4.73). Similarly, for the financial year 2002/03, the budget allowance for HIV/AIDS programs was about 22 billions but the projections show that 33.2 billions ought to be spent in 2003[49].

Table 4.73: Selected Health Sector Impacts of HIV/AIDS

Indicator	2000	2005	2010	2015
Aids Care Expenditure (Billions)	25.4	38.8	51.3	59.5
Percent of Ministry of Health budget	12.2	17.0	20.5	22.0
Percent of hospital beds	28.7	39.2	46.7	49.2

[49] It is worth noting that tracking HIV/AIDS expenditure has been difficult because there are a lot of uncoordinated institutions running different HIV/AIDS intervention programs. However, with the inception of TACAIDS, improvements are expected in many aspects including tracking HIV/AIDS expenditures.

The pandemic has also affected usage of hospital beds. In some urban areas of Tanzania the hospital beds are fully occupied and some patients are obliged to share a bed, or sleep on the floor. The pandemic is adding to the stress by claming even more beds leaving just a few for other medical conditions (Table 4.73). While about a third of hospital beds are projected to have been occupied by HIV/AIDS patients in 2000, this figure would increase to about 50 percent in year 2015. A study by NIMR, (2001) estimated the length of hospital for HIV/AIDS patients to range from 12 to 60 days with a mean stay of 25 days. The average length of stay for non-HIV patients is estimated at 5 days. This shows that an HIV positive patient stays in the hospital, five times as compared to non-HIV patients.

4.8.3.4 Macroeconomic Impacts

The impact of HIV/AIDS on macroeconomic variables is much more complex to estimate than the demographic impacts. From the macroeconomic perspective, HIV/AIDS is likely to affect the savings/investment relations. Since expenditures for mitigating the impact of HIV/AIDS at both the household and public sector are likely to reduce the amount of capital (both public and private) available for more productive investment, in the absence of external investment flows, the higher the proportions of care financed from savings, the larger the reduction in growth resulting from the epidemic.

As mentioned earlier, two approaches have been adopted in previous studies to estimate macroeconomic impacts. Cuddington, (1993) extended the Solow growth model to study the effect of the AIDS epidemic on the growth path of the economy and GDP per capital in Tanzania. The model used conjectures about the morbidity, mortality and expenditures related to HIV/AIDS to estimate the macroeconomic impacts. The results suggest that the economy would be between 15 to 25 percent smaller in 2010 because of the epidemic and per capital GDP would be up to 10 percent lower in 2010 due to the HIV pandemic.

Using the Cob-Douglas production embedded in Excel Version of the AIM model and the macroeconomic data and assumptions presented in Chapter 3, section 3.5, the with and without AIDS projections were made. GDP is calculated with Cobb-Douglas production function that expresses the size of GDP as a function of the size of the labor force, the amount of capital stock, and the rate of technical progress. The results indicate that the GDP growth will be 8.3 percent smaller than it would have been without AIDS. Analysis of change in GDP per capita shows that, GDP per capital will grow at a rate that is 4 percent smaller than it would have grown without AIDS.

The estimations using such Cobb-Douglas production function have been criticized for underestimating the impact of the epidemic. Critiques of such models point out that those estimations generally show that GDP growth is slowed by loss of labor but GDP per capital does not change too much. This approach misses some important factors such as the loss of entrepreneurs, current human capital, and disruption of human capita investment process as

children become orphans. Nevertheless, the projections are important in providing the direction of growth path of the economy with and without AIDS.

A recent study by Bell et al., (2003) using an Overlapping Generations (OLG) model traces the impact of HIV/AIDS on South African economy for three generations. This study emphasizes the importance of lost human capital due to HIV/AIDS on economic growth. They argue that, not only does AIDS destroy existing human capital, but by killing mostly young adults, it also weakens the mechanisms through which knowledge and abilities are transmitted from one generation to the next. Children of AIDS victim will most likely be left without one or both parents to love, raise, and educate them. They conclude that, in the absence of AIDS, there is a modest growth with universal and complete education attained within three generations. However, if nothing is done to combat the epidemic, a complete economic collapse will occur within three generations.

4.8.4 Conclusions

The long-term demographic and macroeconomic impact of HIV/AIDS is likely to be significant. In the absence of effective interventions, the epidemic could enter another phase characterized by high mortality rates, and large dependency ratio (many children and elderly without support). The demographic simulations suggest cumulative AIDS deaths and infections that translate to declining life expectancy and labor force, and increased number of orphans. Although the macroeconomic effects of HIV/AIDS do not appear devastating, the impact is not uniformly felt across households. At the household level, HIV/AIDS morbidity and death exacerbates poverty and social inequality. Lower income households will be less resilient when hit by HIV/AIDS compared to higher income households. The loss of social capital and the resilience level of households are two areas that require urgent policy attention.

5.0 KEY FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Key Findings and Conclusions

This study analyzes the social and economic impacts associated with HIV/AIDS pandemic at individual, household, selected sectors and macro level. The main objective is to quantify the monetary and non-monetary costs associated with the pandemic so as to divulge the magnitude of the impacts, understand the copping strategies employed, and propose ways through which the presented pandemic could be averted. In addition, the study seeks to propose improvements in preventive, and curative interventions, and coping mechanisms and/or strategies at the national, sectoral and local levels. The following is the summary of the major social and economic impacts accentuated by this study, major conclusions drawn, and a set of recommendations for different stakeholders.

5.1.1 The Economic Impacts of the Pandemic

5.1.1.1 Impact on Labor Supply

The pandemic has resulted to decreased labor supply at household and the sectors studied through HIV/AIDS related mortalities. Analysis of the survey data revealed that 28 percent of the households interviewed reported to have had experienced a death of household member one year prior to the survey. About 57 percent of those households mentioned HIV/AIDS as the main cause of the death of their members. Respondents from health facilities surveyed reported that 31 individuals died of AIDS during the four-year period in the studied health facilities.

The education sector is not spared. HIV/AIDS deaths as percentage of the total number of teachers reported to have died one year prior the survey was quite large. The reported proportions at district level for year 2001 ranged from 40 percent (Mbeya Urban District) to 100 percent (Dodoma Urban District). District level data on the number of teachers who died from HIV/AIDS related causes in each district revealed further that, on average 14 and 8 teachers died in 2001 and 2002 respectively per district. The total number of deaths due to HIV/AIDS related illness ranged from 2 (Dodoma Urban District), to 16 (Kahama District) in year 2002. At workplaces, the companies that provided data reported to have been losing an average of 6 employees per company per year.

Information on the age of PLWHAs and those who died of HIV/AIDS related illness was sought. The study revealed that the majority of interviewed PLWHAs were in the age group 30-39 years whereas those who died of HIV/AIDS related illness at household level were reported to be dying at an average age of about 33 years with a median of 35 years. These are the most economic and social productive years. Thus, the household remains with less

productive and inexperienced labour force, which is supposed to sustain production and consumption in the household. Analysis of demographic characteristics of health sector personnel dying of AIDS revealed further that the deceased had a mean age of 40 years (males) and 38 years (females). Over half of them were nurses and a quarter were supporting staff including cleaners. These figures are very close to the figures reported at individual and households levels. Thus, the loss of productive labor is evident at the household and all sectors surveyed.

5.1.1.2 Impact on Labor Productivity

The loss of labor productivity was measured by three proxy variables namely rate of absenteeism, total years of experience lost, and paid sick leaves. AIDS has resulted in increased rate of absenteeism (and hence a loss of labor time), and loss of skills and experiences that results to difficulties in manpower planning at workplaces. Frequent illness and poor health forces PLWHAs to reduce their production time and sometimes to change their main occupation. The survey data show that 67 percent of PLWHAs were forced to reduce time previously allocated to production activities because either they had to use time to seek care (treatment) or because they were too sick to work. It is indicated that each respondent interviewed lost between 1 to 183 working days with an average of 43 days in the past six months prior to the survey attending their illness. At household level, out of 130 households that reported to have had someone who was too sick, a total of 31 reported that they had a member suffering from HIV/AIDS.

Loss of productivity was also manifested in the loss of experienced workers and paid sick leaves. Findings for the health facilities, education sector, and surveyed workplaces confirm the same trend, that is, HIV/AIDS depletes individuals who had a long experience in their carrier. In the health sector, nurses and other support staff seemed to be the most affected. Infection may be from the workplace environment or from the workers' lifestyles. The mean years of service of deceased ranged from 7 years (specialists) to 18 years (Para-medicals). About 26 percent of the sick employees in the surveyed health facilities were granted sick leave in the survey period. The average duration of sick leave was 3.6 months with a range of 1-9 months. The salary paid to these employees ranged from TZS 25,000 to TZS 142,000 with an average of TZS 65,000 per month.

Data on salary scales and years of experience for teachers who died show that the majority had relatively high salary scales and had been in service for a substantial number of years before their death. Only 5 out of the 28 dead teachers whose salary scales were indicated (18 percent) had salary scales below TZS 89,690-95,890 (TGTS 4). At the same time, only 7 out of 27 dead teachers (26 percent) had less than 10 years of experience. The average years of experience were 15 with a minimum of 2 years and a maximum of 27 years. Data provided for 10 teachers who replaced the deceased show that all of them were in the salary scale TZS 69,700-74,350 (TGTS 2), suggesting that these teachers either had less academic

qualifications or less years of experience than most of the teachers who died. The latter is well supported by data on years of experience, which show that recruited teachers on average had 3 years of experience. The implication of this is that holding all other factors constant, one would expect the newly recruited employees not to be as effective as the dead teachers who had longer experience and/or higher academic qualifications. The effect on productivity as indicated by higher absenteeism rates of teachers with HIV/AIDS and replacement of experienced teachers with less experienced ones clearly suggest an adverse impact on productivity and quality of education.

Sixty eight percent and 45 percent of the surveyed companies indicated to have lost employees and had sick employees due to HIV/AIDS related problems respectively. These companies lost employees with between 2 years to 29 years of experience with an average of 6 years in 2001. In addition, the companies that provided data had an average of 6 employees on paid sick leave and companies lost a range of 60 to 1530 man-days with an average of 598 man-days per company in 2002. The salary associated with this loss ranged from TZS 76,000 to TZS 350,000 with an average of TZS 158,281 per month in year 2002. Since it is not always easy to replace the deceased with employees with the same skills, the productivity of the company declines at least in the short run.

Loss of trained staff impacts the economy negatively since the experience and skills are eroded and it requires training of fresh staff or recruiting less experienced staff to take up jobs left by the deceased and that has a cost implication. On the other hand service delivery by social sectors will suffer due to loss of trained and experienced manpower complicated by the bureaucratic system in replacement of the deceased.

5.1.1.3 Impact on Time Allocation

HIV/AIDS was found to have affected the time allocation of infected and affected households. In addition to days lost by PLWHAs, individuals in the household have to take time out of other productive activities to caring, visiting and burying HIV/AIDS patients. About 8 percent of the individuals interviewed at the household who were above 10 years of age indicated that they had attended a HIV/AIDS patient in or outside the household in the past 14 days prior to the survey. Of those who had attended a person living with HIV/AIDS, 59 percent and 41 percent were females and males respectively, and their difference was statistically different. The majority spent less than 5 hours and more than 20 hours (42 percent and 41 percent respectively). More than 43 percent of women respondents spent more than 20 hours in two weeks time prior to the survey caring for HIV/AIDS patients compared to men (36 percent). About 8 percent of all adults aged 16 years and above had spent time visiting a HIV/AIDS patient in the past 14 days prior to the survey. The majority of them reported to have had spent at least 3 hours and about 37 percent reported to have used up to 2 hours. The fact that HIV/AIDS patients are likely to be continuously suffering for a longer

period compared to patients suffering from most communicable diseases, the impact of the disease on household production is profound.

Results from the household survey further show that about 13 percent of the respondents reported to have had attended a funeral of a person who died of HIV/AIDS related problems 14 days prior to the survey. The time spent for such activity ranged between 1 hour to 280 hours per individual. More than 50 percent of both males and females (who were 10 years of age or above) respectively spent up to 10 hours attending funerals.

It was also found that health care providers take longer time with patients suffering from HIV/AIDS compared to the time they take to attend to patients suffering from other diseases. On average each attending clinician saw 32 patients per day (range 1-100) with an average time of less than 13 minutes per patient (range 5-45). An average of 18 (range 4-60) more minutes were spent for patients with HIV/AIDS related illnesses.

5.1.1.4 Impact on Financial Resources

(a) Medical Costs

One of the obvious impacts of HIV/AIDS is the increased expenditure that arises from medical treatment of opportunist infections affecting people living with HIV/AIDS. The costs are borne by PLWHAs themselves, household members, extended family members and friends, employers, private sector, donor community and the government. The range of medical support needed include support for testing, drugs to cure AIDS related opportunistic infections, drugs to cure sexually transmitted infections related to HIV/AIDS, outpatient care, and inpatient care. Frequent illness due to HIV/AIDS increases the frequency of seeking medical care and subsequently the cost of care.

Increased medical expenditures were evident with PLWHAs. About 44 percent of the interviewed PLWHAs indicated to have received the VCT services free of charge. However, for those who paid for the services, the cost for testing ranged from TZS 1,000 to TZS 12,000 with an average of TZS 3,000. In addition, PLWHAs reported to have paid an average of TZS 2,400 as consultation fee per visit to see an attending physician (range TZS 600 to TZS 5,000). Despite the known fact that ARV therapy prolong the life of the infected, they were not provided free of charge and thus, very few PLWHAs could afford them. The prices for ARVs ranged from TZS 40,000 to TZS 60,000 per dose per month depending on the brand name. The study revealed further that infected individuals spend around TZS 300 to TZS 15,000 with an average of TZS 2,700 for transportation to the health facility and TZS 5,000 to TZS 28,000 with an average of TZS 4,000 for drugs to cure opportunistic diseases. For those who have to be hospitalized, the average cost per hospital bed was TZS 600 per day. All these costs lumped together are unbearable to a common Tanzanian.

HIV/AIDS indicated to be an expensive illness, and on average, it costs the individual more than other health problems that were reported by the respondents to be affecting people at the household level. Although HIV/AIDS cases did not report the highest expenditures, on average the respondents incurred more—a mean of TZS 79,206 and median of TZS 28,000 which were more than 200 percent of the respiratory related health problems, for instance. Furthermore, the median and mean expenditures were higher than other reported illnesses. While most communicable diseases would take relatively shorter time to get cured, HIV/AIDS is not curable, and has more frequent episodes that need immediate attention.

The health sector is facing a double jeopardy. As a workplace, it has to take care of its sick employees and as the service provider, it has to take care of other sick individuals[50]. At workplaces, the surveyed health facilities spent a range of TZS 10,00 to TZS 300,000 with an average of TZS 69,300 per month per sick employee for treatment. Findings from the education sector on treatment costs are not conclusive since no district reported the amount specifically spent on treatment for the teachers with HIV/AIDS. However, the trend of total medical expenses in the three districts which provided data (Mbeya Rural, Mbeya Urban, and Simanjiro) show a steady increase in the medical expenses on teachers for Simanjiro district and Mbeya Urban district from 1999-2001. Since the analysis has shown that the cause of death for the majority of the teachers who died was AIDS related illness, then we can assume that the majority of teachers were suffering from AIDS related illness. This would then imply that a large proportion of the medical expenses were for teachers with HIV/AIDS.

Findings from workplaces reveal that 21 percent of the surveyed companies provided specific medical support to employees living with HIV/AIDS. On average, about TZS 11.76 millions per company were spent on such services in year 2002 with a minimum of TZS 80,250 and maximum of TZS 65 millions.

(b) Cost of Funerals

At household level, funeral costs are found to be higher than the medical treatment costs. Funeral costs are seen to be more of a communal responsibility that has a reciprocation than medical costs that are seen to be more of "private household costs" and hence a more responsibility of the household and the nuclear family. An average cost of TZS 158,000 per funeral was reported at household level with a range of TZS 2,000 to TZS 2 millions. Individual households members' contribution to this cost ranged from TZS 100 to TZS 300,000 with a mean contribution of about TZS 11,797. An average household reported to have had spent more on a funeral than what their members contributed for the funeral implying that households received assistance from relatives, friends, neighbours and other sources to finance the funerals.

[50] Impacts on health care service delivery are discussed in section 5.1.1.5.

Data from the health sector show the funeral costs incurred by the employer to range from TZS 50,000 to TZS 1 million with an average of TZS 185,000 per person dying of HIV/AIDS related problems. District level data on the supply side of education sector revealed that in all districts for almost all years, transport and burial costs for teachers who died of AIDS related illness constituted a larger proportion of the total transport and burial costs. In year 2002, for instance, the total transport and burial costs of teachers died of HIV/AIDS related illness accounted for 83 percent of the total cost of all dead teachers in Dodoma Urban District. For Mbeya Urban and Simanjiro districts, the costs were 84 percent and 80 percent of the total cost respectively. In the workplaces surveyed, the majority (86 percent) of the surveyed companies provided funeral support for deceased. On average, TZS 1.8 millions was provided in year 2002 with a range of TZS 60,000 to TZS 4.6 millions.

(c) Other Curative and Preventive Costs Incurred by the Surveyed Sectors

Family support, terminal benefits, replacement measures, and preventive programs are among other expenses incurred due to the epidemic. Although data on these costs are scanty, some general conclusions regarding their effect on the private and government's budget could be drawn. District data on costs related to the recruitment of new teachers to replace those who died or retired prematurely indicate that some costs have been incurred in transferring teachers from one area to another. However, only one district provided data on transport cost, of which the average was TZS 122,000 in year 2002. Likewise, data on the expenditure on the family of the deceased employee was reported by 2 companies only. The companies had supported a total of 12 families in year 2002 and they spent an average of TZS 7.22 millions with a range of TZS 100,000 to TZS 14 millions.

It was further noted that the surveyed workplaces had spent very little on preventive programs to combat HIV/AIDS. In addition, only 10 percent of the surveyed companies had employees who retired prematurely due to HIV/AIDS related problems and this was associated with payment of premature retirement benefits. The total benefits paid ranged from TZS 1.3 millions to TZS 16.5 millions with an average of TZS 10.3 millions in year 2002.

5.1.1.5 Impact on Delivery of Social Services

(a) Education Services

AIDS affects delivery of education services in at least three observable ways: the supply of experienced teachers is reduced by AIDS related illness and death; there is decreased productivity due to illness and absenteeism; and depletion of resources due to increased HIV/AIDS related expenses such as those on medical treatment, transport and burial of teachers who die and training costs.

It is shown in the analysis that in schools and districts reporting both sets of data the number of teachers dying of AIDS related illnesses constituted a significant proportion of the total number of teachers dying. Data collected at school level show that the proportions, of teachers dying from AIDS related illnesses as a percentage of the total number of teachers who died ranged between 67 to 100 percent in year 2001. District level data generally depict a similar picture to that emerging at school level. We have further shown that the majority of teachers who died had more years of experience compared to teachers who were recruited. This has implications in terms of the quality of education delivery.

The education system is also experiencing the problem of increased teacher absenteeism due to HIV/AIDS related illnesses. In the surveyed schools the problem of teacher absenteeism due to HIV/AIDS related problems is evident. Teachers with HIV/AIDS were more likely to be absent from school than other teachers. This, and reduced capacity to work due to illness has adverse impact on productivity and also affects the quality of education delivery.

The analysis has also shown that AIDS-related expenses constitute a significant proportion of total expenses examined. Increased financial expenses that the sector has to bear, reduces resources that could otherwise be spent on the improvement of the education system to ensure delivery of quality education. All these have a negative impact on the education system's ability to effectively plan, manage and deliver quality education under the meager resources available for education sector.

(b) Impact on Delivery of Health Services

The HIV/AIDS disease is affecting the health care delivery system in a number of ways reflected by a high number of HIV/AIDS related patients attended to at various levels of the health care delivery system. One in 10 of patients seen at outpatient departments in dispensaries and health centers everyday is reported to be suffering from HIV/AIDS related illnesses. Findings from this study also indicate that the proportion of HIV/AIDS patients seen at outpatient clinics increased as one went down the ladder of types of health facilities, that is, from referral hospital down to dispensary level indicating an increased burden at lower levels compared to the highest level. On the other hand, about 46 percent of the patients attended to in the health care facilities tested HIV positive between 1999-2002 indicating that almost half of persons undergoing an HIV test were likely to be HIV positive. Thus, if all these persons were to be attended at a health care facility when they develop symptoms, the burden of the disease to the health facilities would be elevated. Apart from other costs such as consultation and treatment of opportunistic infections, if only one CD_4 count test is done per recommended number of PLWHAs requiring ARVs, the cost would be about TZS 16.5 billions.

Protective gear when handling potentially infective material is necessary to avoid nasocomial transmission of HIV infection. This implies additional costs to the health care facilities to ensure that the necessary protective gear is available at all times. About 93 percent of the health facilities surveyed reported to be issuing protective gear to their health workers. However, 80 percent of the health workers perceived themselves to be at risk of being infected from accidental needle stick injuries, accidental cuts during operations and other invasive procedures, contamination/splashing of blood or fluids during emergency deliveries among others.

The possibility of workers being infected from their workplace calls for the need to ensure availability of post-exposure antiretroviral prophylaxis at all levels of the health care delivery for use in case of such accidents. This is a costly provision and it was absent in all studied health care facilities. In addition, those attending to HIV/AIDS patients face several problems that need to be addressed so as to improve patient management and care. About 73 percent of personnel had difficulties in managing HIV/AIDS patients due to lack of skills, and thus need HIV/AIDS training to better manage their patients. The commonest type of training required was counseling skills followed by management and care of HIV/AIDS disease including use of ARVs. Costs for the courses were available for 4 courses and they ranged from TZS 800,000 to TZS 9 millions implying huge costs for training such types of personnel.

Voluntary counseling and testing services are key in the whole issue of HIV/AIDS prevention, treatment and care. These services are not only essential for prevention of HIV transmission but also are a gateway for the broad category of continuum of care for HIV infected individuals. To assess how health care facilities have coped in provision of these services, assessment was done regarding the availability of these services. VCT services were present in about 37 percent of the studied health care facilities. For those areas where such services were not available, assessment was done regarding the type of resources the facilities would require to set up such services. The initial cost of establishing such a facility ranged from TZS 1 million to TZS 21.3 million with an average of TZS 4.76 millions. The running costs for such a unit ranged from TZS 100,000 to TZS 415,000 with an average of TZS 233,000 for manpower costs per month and from TZS 50,000 to TZS 1.1 millions with an average of TZS 350,000 per month for other inputs including supplies.

Thus, HIV/AIDS has overburdened the health sector not only to the health sector workforce in terms of illness costs, loss of time in terms of excuse duties, cost for the disposal of the dead but also the added requirements on the health care staff when caring for the sick both in terms of time, knowledge and skills, resources, fatigue and helplessness resulting from inability to cure. Further, the resources for supplies needed for HIV testing, drugs to cure opportunistic infection, and ARVs is burdensome. With increasing incidence and prevalence and with the advent of ARVs, the cost of the disease to the nation has significantly increased. In absence of care, and increase in new cases, more resources would be required to safeguard and improve those already affected. The burden on the government expenditure on the health

services is implicit bearing in mind that the majority of Tanzanians live in the rural areas and depend on government facilities for health services.

5.1.1.6 Impact on Agriculture and Food Security

Crop agriculture is the major and reliable source of both subsistence requirements and income, and an important factor towards ensuring food security in almost all the sampled districts. HIV/AIDS pandemic have affected the performance of agricultural activities in the study area in different ways. The potential labor force in the sector has generally lost the ability to perform agricultural activities following loss of strength due to long illness and lack of nutritious food. In this analysis, labor productivity is measured through indicators such as chronic sickness of members of the households, HIV/AIDS related deaths and loss of working man-days.

It is noted from these findings, within 30 days prior to the survey duration of HIV/AIDS illness covered a total of 5399 man-days out of which 3848 man-days were total loss equivalent to 35 average farming households' loss of agricultural labor. Further analysis revealed that within 14 days prior to the survey several household members spent time to attend and/or care for HIV/AIDS patients, attended funerals of AIDS deaths, and visited the HIV/AIDS sick persons. In terms of agricultural labor productivity this is respectively equivalent to 5 farming households losing total available labor force due to time spent to attend the HIV/AIDS patients, 8 farming households' loss of the total available labor force due to time spent to attend funerals of an AIDS death and 2 farming households' loss of the total available labor force for agriculture due to time spent to visit HIV/AIDS sick persons. These findings are clear testimony that agricultural productivity has been adversely affected by HIV/AIDS pandemic through loss of the physical labor as well as man-days.

Food security is measured using different proxies. In the current analysis, proxy variables employed include per capita income, which reflects the purchasing power of individuals; productive working hours spent for economic activities and lost hours by members of the household due to illness. Others include percentage of chronically ill members of the household, death of members during the last 12 months and dependence load.

A comparison between HIV/AIDS Affected Households (HAAH) and HIV/AIDS Unaffected Households (HAUH), High Prevalence Areas (HPA) and Low Prevalence Areas (LPA) reveals that on average, the pandemic has impacted HAAH and HPA more than HAUH and LPA. For example, per capita income is comparatively low in HAAH (TZS 320) compared to TZS 864 in HAUH. In terms of time spent for productive activities, time spent in HAAH and HPA is far below that of HAUH and LPA. On average only 620 hours and 1304 hours are spent for productive occupation per day in HAAH and HPA respectively, which are far below 2011 hours and 1329 hours spent in the HAUH and LPA. The results for chronically ill members during the last 6 months, recent death and presence of orphans also indicate clearly

that the HAAH and HPA are much more affected compared to the HAUH and LPA. The findings on illness, death, dependency ratio and presence of the orphans also give a similar trend, although urban-rural comparative analysis is inconclusive.

Judging from these findings, one conclusion about the impact of HIV/AIDS on food security cannot be dismissed. The pandemic impacts the productive time of household members and thus productivity. In addition, erosion of households' income is a threat to household food security because income is a prerequisite for accessing food from the market.

5.1.1.7 Impact on Poverty

There is undoubted relationship between chronic and/or prevalence of diseases and the magnitude of poverty. As noted earlier, poverty is caused by lack of adequate resources and capabilities to acquire basic needs. To analyze HIV—poverty linkage, the study employs most of variables used to measure the intensity of HIV/AIDS and food security.

It is evident from the findings that HIV/AIDS is one of the major impoverishing forces in the study areas. The findings confirm the hypothesis that poverty is a serious problem in areas with HIV/AIDS affected households (HAAH) and High Prevalence Areas (HPA). As can be depicted from the conceptual framework presented earlier, poverty has many heads and therefore it can be gauged from different angles. Presence of orphans, chronic illness, and loss of life (particularly the active labour) have negative impact on the labour force and therefore income flow as well the ability to make ends meet. The linkage between the three proxy variables (which are to a larger extent manifested by HIV/AIDS), and poverty is therefore clear and evident.

Loss of working man-days and time spent on productive activities are also important variables in terms of poverty reduction. As can be depicted from the findings, the pandemic has significantly reduced the working man-days and increased loss of time allocated for productive activities. The impacts on poverty reduction in the study areas are obviously negative.

5.1.1.8 Demographic and Macroeconomic Impacts

The main and obvious impact of HIV/AIDS, like all health-related epidemics, is its likely effect on the demography and human resource development of a country. Assessment of the impact of HIV/AIDS on demographic variables such as the total population size, additional deaths due to HIV/AIDS, crude death rate, life expectancy at birth and infant mortality were done. The results indicate that annual cumulative AIDS deaths are increasing. Without AIDS, the annual number of deaths in 2015 would be 40 percent less. Majority of the AIDS deaths is expected to fall on the 15-49 years age group, the most sexually active and in the prime of their productive years (43 percent). The annual AIDS deaths are also increasing from about

99,000 deaths in 2000 to about 175,000 deaths in 2015. This translates to increased number of AIDS deaths per day, that is, from 252 deaths in 2000 to 480 deaths in 2015.

The crude death rate for Tanzania is projected to decline from 15.9 years in 2000 to 7.5 years in 2015 in the absence of AIDS, whereas with AIDS the crude death rate is projected to decline only to 11.4 years in 2015. That is, by 2015, the crude death rate is projected at approximately 34 percent higher than it would have been in the absence of AIDS. During the period under review, the infant mortality rate in without AIDS scenario is projected to decline much faster than with AIDS. Whereas infant mortality is about 5 percent higher with AIDS in 2000, it would be 12 percent higher in 2015. The same trend is observed with under-five mortality. Likewise, as a result of increasing mortality due to AIDS, life expectancy is increasing at a decreasing rate compared to without AIDS scenario. Life expectancy is estimated at 43 years in 2000 instead of 49 years in the absence of AIDS, a loss of 6 years. By 2015, the difference in life expectancy, with and without AIDS is projected to reach 10 years. As discussed in section 4.5, AIDS is associated with the increase of orphans observed in different societies today. Whereas AIDS was responsible for about 28 percent of the total number of orphans in year 2000, the simulations show an increase to 53 percent in 2015.

Analysis of the annual population growth rate reveals that the population will grow at an annual rate that is 18 percent lower than it would have grown in the absence of AIDS in 2015. The total population is projected to be 8 percent lower than it would have been without AIDS. Further, the active labor force is estimated to be 9 percent lower than it would have been in the absence of AIDS. The projections thus indicate that AIDS is likely to have serious relative effect on productive labor force over the long term, and the active labor force could decline even more rapidly during the projected period. Disaggregation of the total active labor force projections by gender so as to separately identify the effects of HIV/AIDS on men and women workers was done. Over the whole of the projected years, the losses of females exceed those of males and these become cumulatively larger by 2015.

Further analysis shows that by 2015, 22 percent of the health budget would be spent on HIV/AIDS related patients if the current situation prevails. The pandemic has also found to have affected usage of hospital beds. While about a third of hospital beds are projected to have been occupied by HIV/AIDS patients in 2000, this figure would increase to about 50 percent in year 2015.

From the macroeconomic perspective, HIV/AIDS is likely to affect the savings/investment relations. Since expenditures for mitigating the impact of HIV/AIDS at both the household and public sector are likely to reduce the amount of capital (both public and private) available for more productive investment, in the absence of external investment flows, the higher the proportions of care financed from savings, the larger the reduction in growth resulting from the epidemic. Conjectures were made about the morbidity, mortality and expenditures related to HIV/AIDS to estimate the macroeconomic impacts. The results suggest that the economy

would be 8.3 percent smaller in 2015 because of the epidemic and per capital GDP would be about 4 percent lower in 2015 due to the HIV pandemic.

5.1.2 Social Impacts of the Pandemic

5.1.2.1 The Plight of Orphans

Children are probably the most vulnerable group and suffer hard from the HIV/AIDS epidemic. Children may grow up in circumstances less than optimal for their development as limited resources may restrict the family's ability to provide sufficient care. Possible consequences are deterioration of the children situation in terms of education and nutrition. Analysis done in this study projected that by the year 2015 there will be 2.7 million orphans in Tanzania of which 1.45 millions will be AIDS orphans. Children who are affected by HIV/AIDS often find it difficult to attend school for various reasons discussed in Section 4.5. Girls are the first to suffer as they are the most likely to be taken out of school to support the household. It is reported that children are increasingly seen as part of the labor force and expected to assist the parents from the age of 8-9 years.

The findings from education sector show that the number of orphans was increasing over the four-year period covered. Consistent with the trend, the number of orphans dropping out of school was on average increasing over the same period. Findings further suggest that the dropout rate within the orphans group is much higher than the dropout rate for other students and that girl orphans are more likely to drop out of school than boy orphans.

The findings have also shown that performance in school for majority of orphans drop after their parents' death. Among the factors affecting student performance looked into included absenteeism, increased responsibilities at home and stigma and discrimination. Absenteeism analysis has shown that on average orphans were absent from school for more than one month and a half in year 2001. These are rather many days to loose in terms of classroom learning, with adverse implications on performance. Comparative analysis has shown that orphans are likely to be absent from school than other children and that female orphans are more likely to be absent from school than male orphans.

At household level, orphans were found in about 25 percent of the households, and a total of 99 (8.4 percent) out of 1184 households reported to have had a child who was not attending school because they could not afford school uniforms and/or fees. If appropriate actions are not taken purposively, for instance, targeting orphans then HIV/AIDS is building an "army" of poor and illiterate people whom would be the burden to the nation thus aggravating the poverty situation in which poor people are in now.

5.1.2.2 Burden to Elderly

In many Tanzanian families and many other parts of the world, individuals have taken much of their identity and their expectations of support from their immediate family and, ultimately from their much more extended kin group, sometimes called lineage. In the early days of the HIV/AIDS epidemic, it was expected that these social units would cope with the burden of orphaning. However, this has turned out to be only partially the case, as number of orphans has exceeded the custodians' ability to cope. As a result of the pandemic the elderly are left without the support of their adult children and at the same time they have to support the grandchildren. Thus, HIV/AIDS disintegrates and destabilizes the traditional support systems as younger people die. This becomes a cause of impoverishment for the elderly and the family they are supporting.

The findings from this study reveals that, 34 percent of the orphan students interviewed were being taken care of by grandparents while 27 percent and 19 percent were being taken care of by their older sisters and brothers respectively. About 51 percent of the orphans being taken care of by their grandparents mentioned that their grandparents were also taking care of other orphans. About 71 percent of these grandparents were taking care of between 1 and 3 other orphans while the remaining 29 percent were taking care of up to 7 other orphans. Economic capability of most grandparents and other guardians does not permit them to meet all the basic needs of the orphans due to insufficient resources at their disposal. Grandparents are the most affected as intuitively they are also dependants. As a result, some orphans (15 percent) were forced to engage into income generating activities during school or after school hours.

While the elderly are increasingly bearing the burden of taking care of their grandchildren, provision of care for them as a vulnerable group remains inadequate. The elderly are increasingly taking on the burden of caring for orphans in the context of an eroding traditional support system and inadequate or total lack of a formal social protection system for the elderly. Given this, the majority of grandparents are unable to provide adequate care for the orphans. Therefore, addressing the problems of orphans should also involve strategic interventions at household level, and targeting those headed by vulnerable groups such as the elderly.

5.1.2.3 Stigma and Discrimination Against PLWHAs and AIDS Orphans

Increasingly, people living with HIV/AIDS and AIDS orphans have been discriminated and stigmatized in the household and workplaces/schools, and in the community. Furthermore, due to stigma associated with the disease and lack of knowledge, the pandemic was found to have direct impact on social relations of the PLWHAs within family members, neighbors, close friends, relatives and co-workers. This is mainly attributed to strong stigma associated with the disease in our society. Elements of discrimination, neglect and problems in marital relations were also observed.

The level of stigma and discrimination against AIDS orphans was found to be low at the schools surveyed. Some of the acts of stigma mentioned include; laughing at, and/or making fun of orphans, other students did not want to mix with orphans and being isolated by teachers. However, acts of discrimination were more common in the households. About 26 percent of the orphans said they were treated differently at home. Not being treated equally to other children in the household by adults was the most mentioned form of discrimination followed by being given more work.

The loss of colleagues at workplaces, increased workloads, potential discrimination, and general uncertainty about HIV/AIDS and the fear of infection may undermine work morale and school attendance.

5.1.3 Institutional Support to PLWHAs and Orphans

Data provided from PLWHAs and schools suggest an existence of some form of support for PLWHAs and orphans. The organizations/NGO's that provides support to PLWHAs were observed to provide great support especially in free treatment of opportunistic infections, counseling and transportations cost. The activities of these organizations/NGO's were found to be stronger in the urban areas. While it is well acknowledged that ARVs drugs help to slow down the progression infection, very few PLWHAs receive support for that. Only 4 out of 60 PLWHAs interviewed were using them and only one was receiving the drugs free of charge under the mother to child transmission program.

About 51 percent of the 22 responding schools mentioned that some institutions and NGOs were providing some form of assistance. Institutions listed to have been providing support to orphans in their schools include Caritas (Tanzania), Municipal Council (Mbeya Urban), Churches, SHIDEPHA+, CCBRT, DCT, COMOCAH, Dogodogo Center, Care International, PASADA, WAMATA, World Vision, and some teachers. The type of support provided as listed by the respondents include: school fees, school supplies, food, medical expenses, counseling services, casual contributions among others.

It is worth pointing out that while acknowledging some form of support from different institutions, respondents did nonetheless mention that this was rather limited, benefiting only very few PLWHAs and orphans.

5.1.4 Policy/Guidelines on HIV/AIDS Intervention Programs

Despite that the national HIV/AIDS policy is in place, few sectoral and workplaces policies have been formulated. Up to 30 percent of the health facilities visited had policies/guidelines for HIV prevention in their workplaces. Most of the information given in the guidelines was directed to prevention of nosocommial infection within the health care facility setting and not, prevention of acquisition of infection by the workforce through other means, for

example, sexual transition. It was further noted that no specific policy was found in place for education sector. In addition, only 6 surveyed companies had HIV/AIDS policy at their workplaces/were in the process of formulating their workplace HIV/AIDS policy. Tanzania Breweries Limited (TBL) was the only company that was found to have already implemented coherent and elaborate HIV/AIDS policy.

The fact that HIV/AIDS epidemic affects all sectors, it demands a well-coordinated multi-sectoral response. Therefore it is necessary to have policies at different sectors and workplaces which provide the framework, direction and general principles in the interventions in prevention, care and support of those infected and affected by the epidemic and mitigation of its impacts.

5.1.5 Budget for HIV/AIDS Intervention Programs at Workplaces

Information regarding existence of budget for HIV/AIDS intervention programs revealed that to be minimal. About 86 percent of the health care facilities surveyed indicated that they did not have any form of budget for HIV/AIDS prevention programs. The 14 percent who had such budgets indicated that they received support from government, non-government organizations, international agencies, and Council Health Budget Fund. The results from education sector reveal the same situation. Three interviewees out of 5 at district level mentioned that budget does not exist for such programs. This suggests that resources hardly exist for the school system at local levels for HIV/AIDS prevention and impact mitigation activities.

It was further noted that many companies surveyed did not spend much on HIV/AIDS related programs as they did not have comprehensive HIV/AIDS policy and budget for the same. Out of the surveyed workplaces, two spent an average of TZS 350,000 in 2002 on counseling services whereas another company spent TZS 380,000 on educational programs. In addition, only one company indicated a budget for community educational programs. The company had spent TZS 2 millions and TZS 1.5 millions in year 2000 and 2001 respectively. However, awareness has made the companies understand that HIV/AIDS problems must be solved through a multi-sectoral approach and are in the process of formulating and implementing workplace HIV/AIDS policies and interventions.

5.1.6 Adopted Coping Mechanisms

Several copping mechanisms were employed from micro to macro levels. These include; borrowing and selling assets, taking children out of school, formation of social arrangements to support marginalized groups, setting budgets for HIV/AIDS campaigns, providing counselling and HIV testing services, support direct costs such as medical, ARV, family support among others. As the study shows, nearly all employed coping strategies are observed to be effective but some were found to be erosive, that is, weakening household's

ability to cope with future shocks. This may clearly be observed in two of the discussed coping strategies, that is, borrowing and selling of assets. The implication of increased borrowing and selling of assets in the long run is the increased poverty since the available assets are eroded and more resources are crowded out favoring debt repayment in case the household income does not improve.

It was further noted that, as the epidemic sways, it has resulted to formation of non-erosive social economic arrangements in different societies. It is difficult to recommend best coping strategies to be adopted by different individuals and households/communities in order to avoid the long run effects, as this would mostly depend on the social and economic status of the infected individual/household or the community. However, coping strategies related to social capital formation such as social economic arrangements for widows, elders, and orphans are highly encouraged because the impact of the shock is spread in a bigger segment of the society.

5.2 Recommendations

Following the findings, two sets of recommendations have been made based on the analysis. One set addresses the role of government in collaboration with other stakeholders including civil society and donors while other comprises recommendations to be implemented by specific sectors and households.

5.2.1 Recommendations to Government and Other Stakeholders

The impact of HIV/AIDS as the main cause of premature deaths is reflected in ages of members who were reported to have died. A premature death has a dual effect on welfare of the economy. These are: Decrease in labor force ("death effect"), and decline in productivity caused by high rate of absenteeism of sick workers, paid sick leaves, and comparatively unproductive young and inexperienced and old labor force ("productivity depletion effect"). To mitigate the decrease in productivity, the use of ARV therapy is instrumental. Very few health facilities were found to have ARVs in stock and it was constantly reiterated that these drugs were "very expensive" (minimum cost per monthly dose was found to be TZS 30,000). In line with that, very few PLWHAs were using ARVs. With regard to this observation, the following is recommended:

- The government and other stakeholders working at all levels should ensure availability of these drugs either free or at a subsidized price to those who need them. In the long run, this approach may be cost effective because the number of man-days lost due to illness will decrease, the number of beds occupied by HIV/AIDS related illnesses will decrease, funds and resources used to purchase drugs for opportunistic infections will decrease and all this summated will result into substantial saving by

the government and the community in general. ARV support should go in line with nutritional support so as to alleviate some adverse negative effects of ARVs.

- Furthermore, households should be assisted to create some "social insurance mechanisms" that would pool resources together that could be used to meet costs of treatment of opportunistic infections and ARVs.

- The possibility of workers being infected from their workplace calls for the need to ensure availability of post-exposure antiretroviral prophylaxis at all level of the health care delivery for use in case of accidents.

The following are recommended in relation to lack of enough VCT centers, specialized HIV clinics, and sensitization programs at different health facilities and workplaces:

- Scaling up of VCT services should be organized and done. This is a well-known intervention and it has to be made available for all who need it at an affordable cost. Parallel to this, HIV/AIDS clinics depending on the need should also be established to cater for patients who need the services. However their acceptability should be investigated because of the possible associated stigma that may deter their use.

- Undertake more sensitization programs in different sectors on the importance of testing and making public the sero status of individuals. This is important so as to exactly determine the magnitude of the epidemic among different workplace and sectors. This in turn will make it possible to have a realistic estimate of the impact of the epidemic on different sectors in particular and at the macro level. It is worth noting that under-reporting of AIDS cases could undermine recognition of the gravity of the problem in the economy. Testing and being open with one's results will enable researchers to have a robust data on the magnitude of the epidemic, rather than continued reliance on fragmented anecdotal evidence.

The following recommendation is made in relation to HIV/AIDS national, sectoral, and workplaces HIV/AIDS policies:

- The government should make sure that the National Policy on HIV/AIDS is disseminated widely, enforced and clearly understood by the public. In addition, the National HIV/AIDS policy should set a framework within which sector policies could be developed.

Individual and community vulnerability to HIV/AIDS is partly a function of their economic, political, legal and social resources. Thus, a multi-sectoral approach to combating the spread of the virus and mitigating the impacts is imperative. Recognizing this, the following are recommended:

- On its own, Ministry of Health lacks the resources to cope with the growing demands of the prevention of HIV transmission and care for PLWHAs. There is, therefore, a clear consensus that effective HIV/AIDS interventions require the collaboration of a range of stakeholders, including government agencies, Non-governmental Organizations (NGOs), Civil Society Organizations (CSOs) and businesses, and international donors.

- The burden that is already shouldered by the health and education sectors calls for a need to redistribute the country's scarce resources from other national sectors to health and education due to the fact that both sectors have a direct implication on the improvement of human capabilities. Harnessing other sectors would not only increase the resources available to respond to HIV/AIDS, but would also encourage new and more broad-ranging approaches. While it could be argued that because of underemployment in the country, loss of labor force might be taken care of by just employing the unemployed, a long-term training is required to feel such a gap. However, skills needed in the health and education sectors are rare and require a long training.

- Until recently, most workplaces in Tanzania had done nothing directly to address and mitigate the HIV/AIDS effects at workplaces and in communities where their workforce resides because they lack policies stipulating the types of activities/interventions to be executed and sources of funds. In addition, private investors are not ready to invest in long-term training of their labor force. A call for workplaces to support training programs, not only those that are directly related to awareness of and protection from HIV/AIDS, but also those that focus on improving skills of the workforce should be emphasized. This would create a pool of multi-skilled workers that will serve as a fallback position in case a skilled worker is lost due to the disease. In this regard, positive human resource development policies at workplaces that are geared towards improving workers skills and also addresses the broader social, cultural and community contexts that are determinants of HIV/AIDS transmission are envisaged.

- Continued support and interventions aimed at changing behavior are needed at sectors and workplaces so as to reduce the rate of infection and eventually the number of AIDS cases. The preventive programs should encourage people to perform voluntary testing. Efforts should also be directed in counseling the HIV positive individuals so as to prevent deliberate transmission and doctors should be transparent to HIV positive individuals.

- The fact that severity of the impact of an adult death has been found to be intense in poor households compared to relatively richer households suggests that programs aimed at poverty reduction could provide more assistance to the poorest households to

help them cope with the impact of adult death in areas which are hard-hit by AIDS pandemic. Particular attention should be given to households headed by the elderly taking care of orphans and child headed households.

Poor data/record keeping as regards expenses on employees' welfare was prevalent in all sectors surveyed. In relation to that, the following is recommended:

- Record keeping for individual workers at their workstations and at higher levels should be improved tremendously so as to be able to keep track of what is available, what do we need and forecasting for the future requirements.

5.2.2 Ministry of Health

The health care delivery system was found to be overburdened at all levels (OPDs for lower level and inpatients for higher levels) by HIV/AIDS related conditions. Further, 20 years into the epidemic the personnel have minimal knowledge and skills to manage and care for HIV/AIDS patients, in an environment complicated by lack of laboratory support. In addition, the health sector is loosing personnel of all levels from highly qualified specialists to cleaners, due to lack of workplace based interventions to reduce the spread of HIV infection both in and outside the workplace. Consequently, the following are recommended:

- A way has to be worked out for proper recording of HIV/AIDS morbidity and mortality so as to be able to have reliable and accurate data regarding HIV/AIDS morbidity and mortality. Investigations should be made on the best possible ways of keeping proper records without compromising "confidentiality" and any other associated factors.

- Support in terms of training and provision of equipment and supplies should start with the lower Health Care Facilities (HCFs) which seem to be more overburdened with outpatients than the higher health care facilities.

- Clinicians attending up to 32 patients per day (range 1-100) is quite unacceptable at any standard. A variety of reasons including: increase in the number of patients consulting the HCFs, lack of manpower, unequal distribution of labor, lack of motivation etc may be responsible for this discrepancy. These reasons should be confirmed and dealt with to improve this ratio otherwise the quality of consultation will continue to suffer.

- The high costs of consultations, testing and medicines and their relationship to accessibility of care by patients of all calibers should be addressed since these could hinder the use of services including those for counseling and testing which are a gateway for care and support of HIV infected individuals. Since the majority of

patients using heath care facilities have HIV/AIDS related conditions, the government policy of exempting patients with these conditions should be reinforced. Implementation of this policy may result into clinicians recording correct diagnoses and in the long run stigma may be reduced.

- Personnel attending to HIV/AIDS patients require training in counseling and proper management of their patients including monitoring the use of ARVs and the condition of patients on ARV therapy. This type of training should be provided in time before an overwhelming availability of ARVs on the market. Lack of timely training may lead to misuse of these drugs cultivating ground for emergence of resistant viral strains in the Tanzanian community. In addition, laboratory support or its alternatives should be put in place to be used for monitoring of therapy for those on antiretrovirals. Counseling courses should form part of health worker training curriculum. This when supplemented with continuing education courses will result into a pool of the required counselors who may meet the required number of such workers.

- Good clinical practice principles should be reinforced at all levels of the health care delivery system in order to decrease the rate of nasocomial transmission. Workplace based interventions should be put in place which take care of personnel when at their workplaces and out of their workplaces. The assumption that health care workers know how to prevent themselves and can prevent themselves from being infected is wrong and alternatives should be sought.

5.2.3 Ministry of Education and Culture

It is apparent that the impact of HIV/AIDS on the education sector is immense and unless abated, the consequences in terms of quality and quantity of the country's human resources and consequently on the country's socio-economic development will be quite severe. The following is recommended with regard to school curriculum development:

- Integrate sexual/reproductive health education (including HIV/AIDS and STDs issues) in the school curriculum from the very basic level. Curriculum revision is part of the quality improvement undertaken by the Ministry of Education and Culture (MOEC). It would thus be quite timely to have these issues included in the curriculum changes to be made. We note however that this will require substantial investment in materials and personnel.

The plight of orphans will have serious consequences not only to themselves but also to the country as a whole. In relation to this, the following is recommended:

- There is urgent need to design and put in place mechanisms for ensuring that orphans are enrolled and stay in school. Such strategies should be designed in collaboration with other key sectors such as health, and social welfare so as to address all factors that contribute to orphans being absent and dropping out of school. Pertinent to this, while recognizing that the country HIV/AIDS strategy is now in place and preparations are underway for developing the HIV/AIDS strategy for the Sector, we urge that implementation be as soon as possible. This should be in line with the 2001 United Nations General Assembly Special Session (UNGASS) declaration of commitment on HIV/AIDS requiring, among other things, implementation of strategies for provision of a supportive environment for orphans and children infected and affected by HIV/AIDS.

5.2.4 Households and Communities

In light of the weakening community social capital formation and maintenance, the following is recommend:

- The communities and households are urged to establish/strengthen the social economic arrangements to support widows, elders and orphans who have been impacted seriously by the pandemic and social and economic arrangements for funerals.

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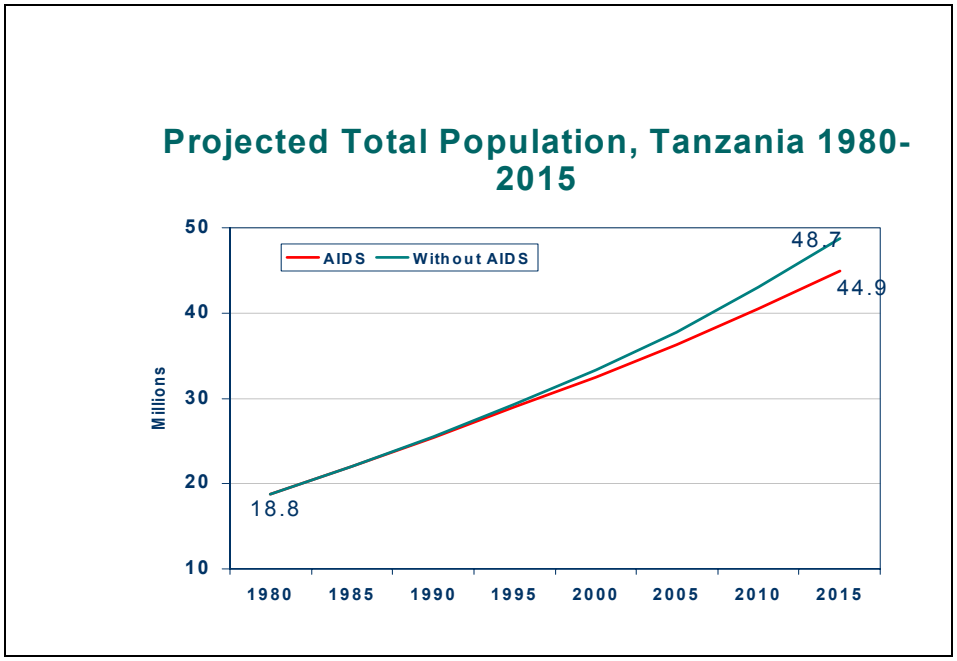
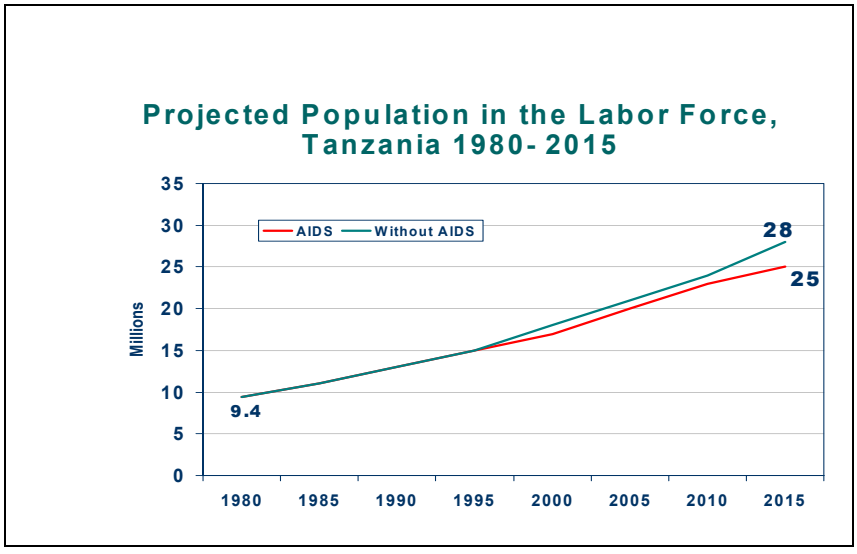
Annex 1:Graphic Presentation of Some of the Demographic and Macroeconomic Projections

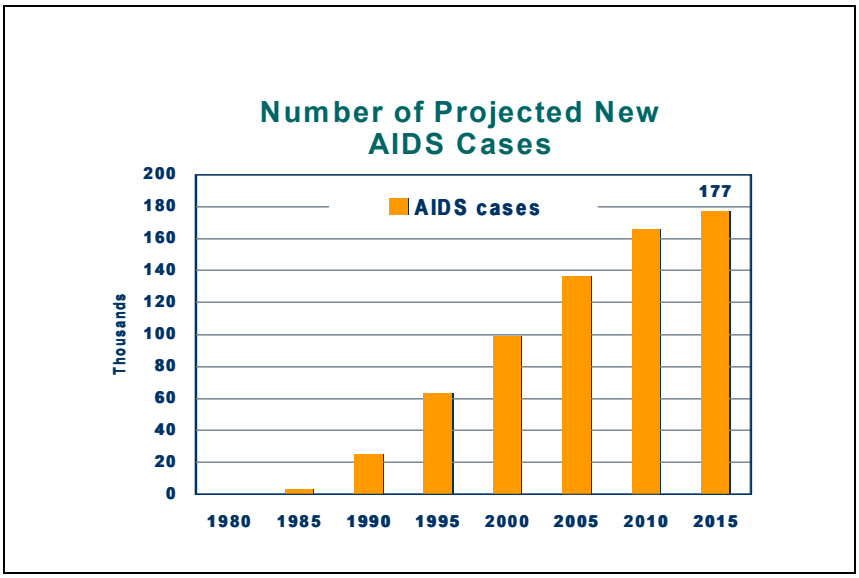
1: Projected Total Population, Tanzania 1980-2015



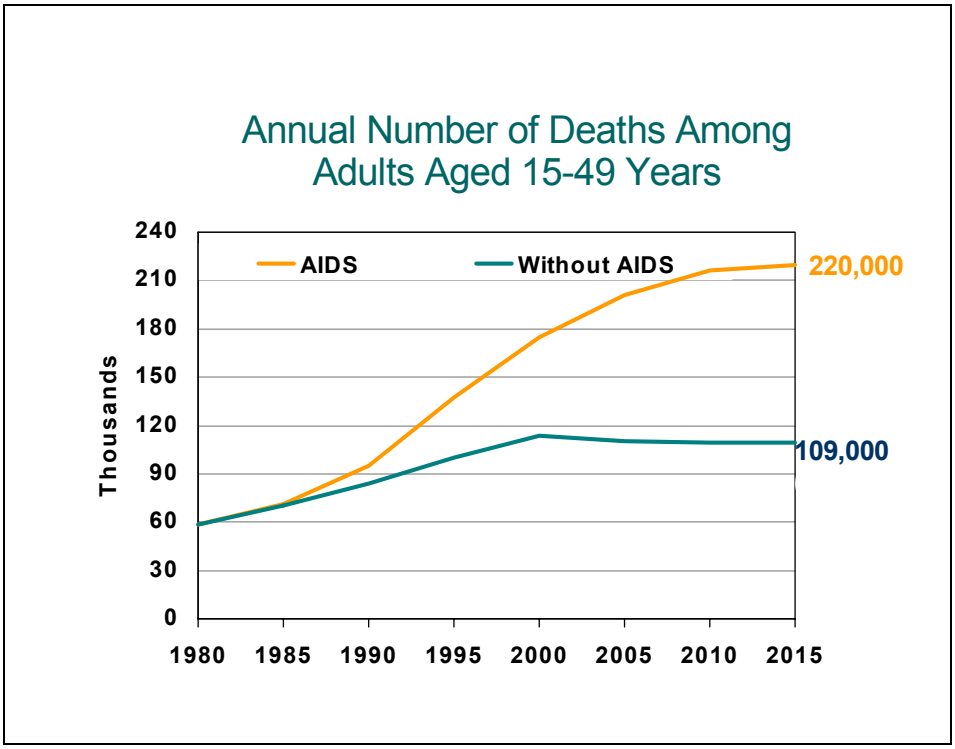
2: Projected Population in the Labor Force, Tanzania 1980-2015



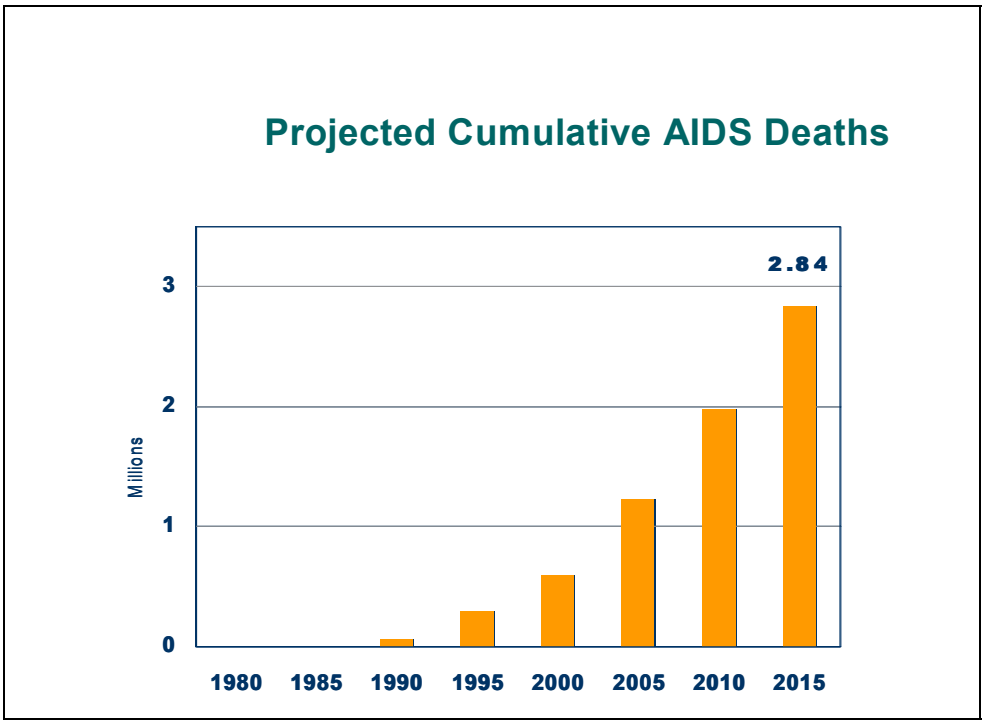
3: Number of Projected New AIDS Cases



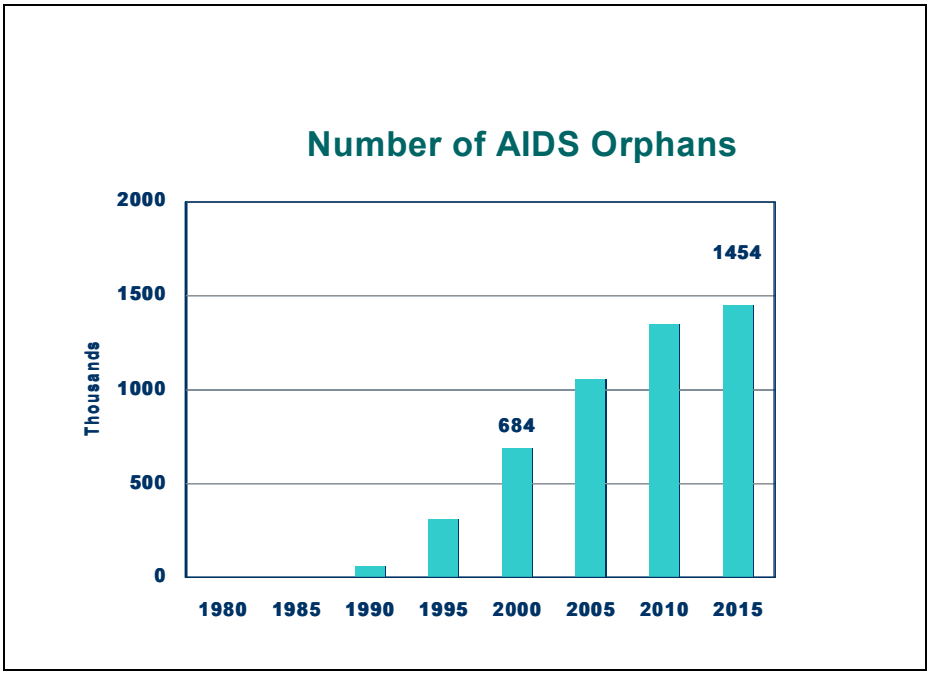
4: Annual Number of Deaths Among Adults Aged 15-49 Years



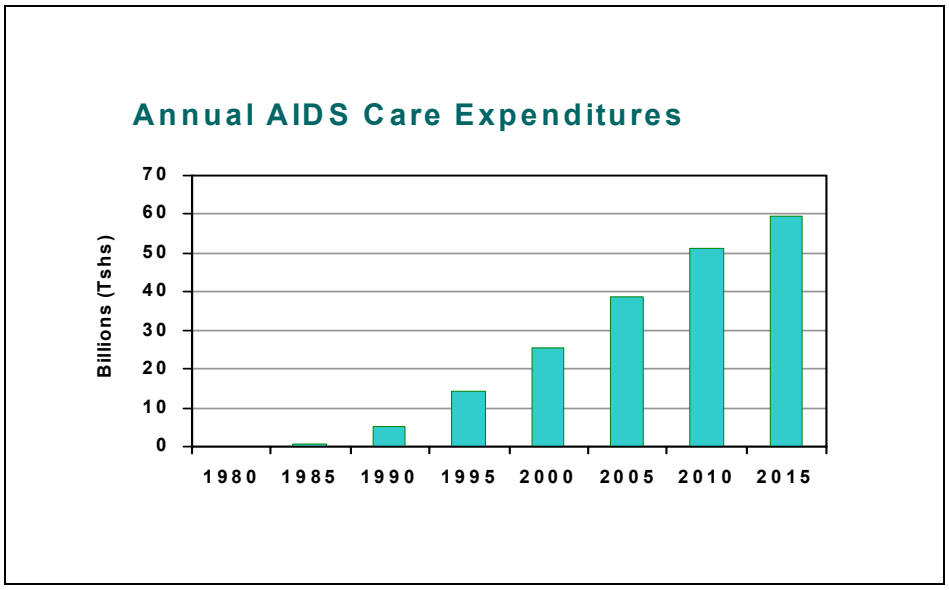
5: Projected Cumulative AIDS Deaths



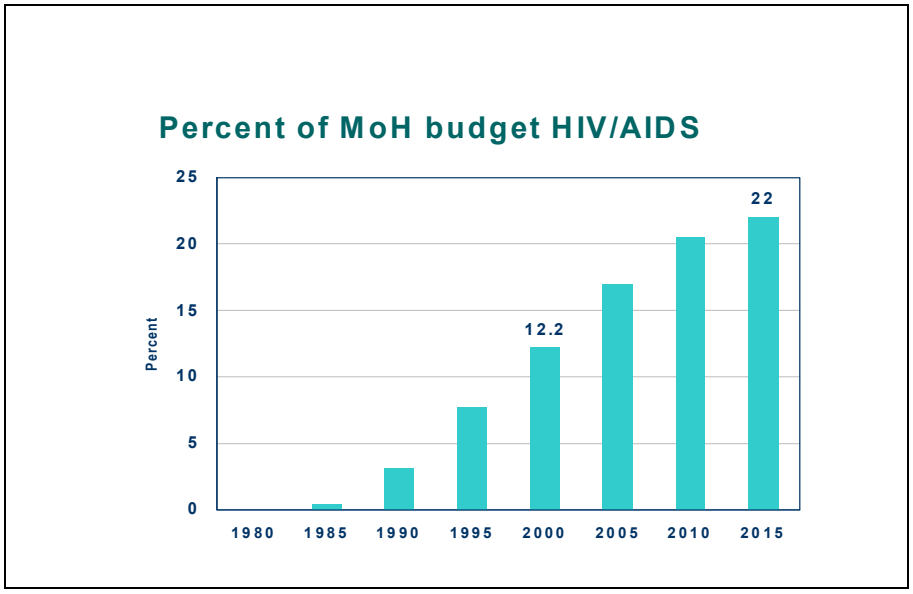
6: Number of AIDS Orphans



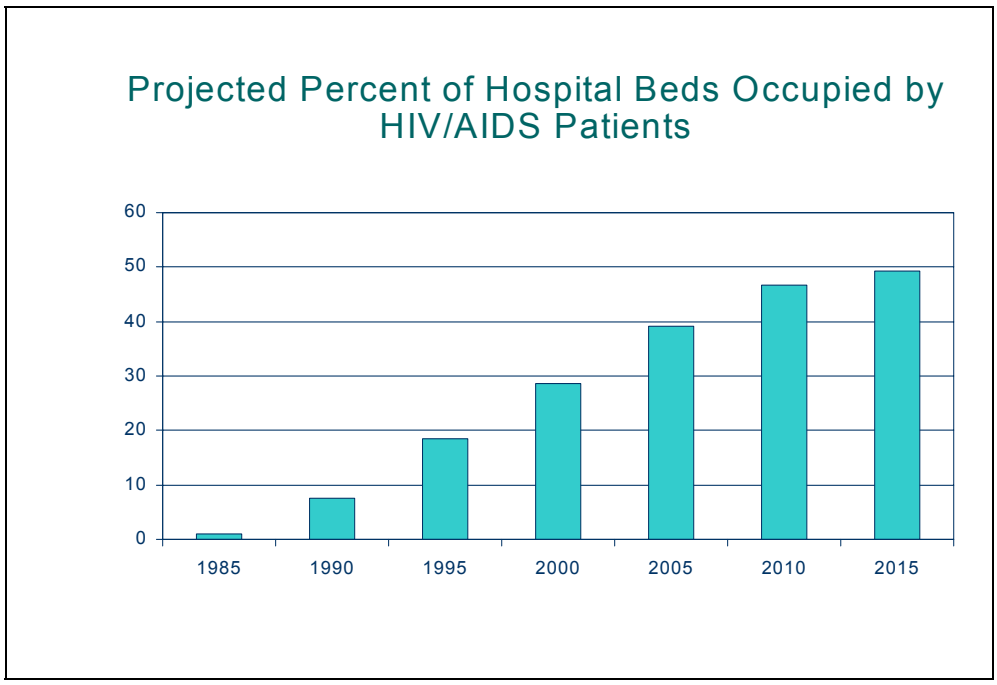
7: Annual AIDS Care Expenditure



8: Percent of Ministry of Health Budget for HIV/AIDS Related Activities



9: Projected Percent of Hospital Beds Occupied by HIV/AIDS Patients



10: Predicted Loss in Life Expectancy Due to HIV/AIDS